

***Clavatula nathaliae* (Mollusca: Gastropoda: Conoidea: Turridae) a new species from Gabon: an old mystery finally elucidated**

Frank Nolf

Pr. Stefanieplein, 43/8 – B-8400 Oostende
frank.nolf@pandora.be

Key words: GASTROPODA, TURRIDAE,
Clavatula nathaliae, *Clavatula gabonensis*,
Gabon, new species.

Abstract: In recent literature confusion originated after J. Knudsen's misidentification of some shells belonging to the 'Atlantide' Expedition material as *Clavatula gabonensis*. The real *C. gabonensis* Melvill, 1923 is illustrated here and a new species-name is introduced for a mollusc living from Ghana to Gabon. Comparison is made with the related *Clavatula strebeli* Knudsen, 1952.

Abbreviations:

FN: Private collection of Frank Nolf, Oostende, Belgium.

PEMARCO: Pêche maritime du Congo.

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

ZMC: Universitets Zoologisk Museum, Copenhagen, Denmark.

Introduction: On p.242 in their 'Compendium of Seashells' Abbott & Dance (1982) illustrated a shell called '*Clavatula gabonensis* Melvill, 1923. Senegal. Offshore; uncommon.' In fact they took over a misinterpretation by J. Knudsen (1952) in his report on the shells dredged by the 'Atlantide' Expedition. A few years later P. Bernard (1984) figured the same shell in '*Coquillages du Gabon*' as '*Clavatula strebeli* f.' He described the shell as follows: '*Turreted shell with elongated siphonal canal and two raised spiral cords on the keel. Colour pale pink with small well spaced brown blotches on the cords. Trawled in the equatorial zone.*' All these authors illustrated the same species under different names, but none of them took the opportunity to describe it as new to science. In this paper it will be demonstrated that the new species is very different from the real *Clavatula gabonensis* Melvill, 1923 as well as from *Clavatula strebeli* Knudsen, 1952.

From: Bernard, P.A., 1984. *Coquillages du Gabon*, pl. 48, fig. 181



Gaboon Turrid (1.4") 3.5 cm
Clavatula gabonensis Melvill, 1923. Senegal. Offshore; uncommon.

From: Abbott & Dance, 1982. *Compendium of Seashells*, p. 242

***Clavatula nathaliae* sp. nov.**

(Plate I, figs 1-8; Plate II, figs 9-15; Plate III, figs 16-19; Plate IV, figs 20-23)

Type material:

Holotype: 30.8 mm (ZMC) - Ghana, West Africa (5°37' N. 0°38' E.). Dredged in grey mud at a

depth of 50 m. 30 January 1946. 'Atlantide' Expedition (Station 85).

Paratypes: 1. 24.4 mm (ZMC) - Ghana, West Africa (5°37' N. 0°38' E.). Dredged in grey mud at a depth of 50 m. 30 January 1946. 'Atlantide' Expedition (Station 85).

2. 27.2 mm (ZMC) - Nigeria, West Africa (5°59' N. 4°36' E.). Dredged in mud at a depth of 17 m. 15 February 1946. 'Atlantide' Expedition (Station 101).

3. 32.7 mm (ZMC) - Ghana, West Africa (3°55' N. 6°08' E.). Dredged in mud at a depth of 55-88 m. 18 February 1946. 'Atlantide' Expedition (Station 106).

4. 25.3 mm (FN) - off Libreville, Gabon, West Africa. Trawled at a depth of 30 m.

5. 25.4 mm (FN) - off Libreville, Gabon, West Africa. Trawled at a depth of 30 m.

6. 26.3 mm (FN) - off Libreville, Gabon, West Africa. Trawled at a depth of 30 m.

7. 28.4 mm (FN) - off Libreville, Gabon, West Africa. Trawled at a depth of 30 m.

8. 29.5 mm (FN) - trawled at 20 m off Lagos, Nigeria.

Description: Shell turreted with 11 whorls and an elongated siphonal canal. The protoconch consists of one or two whorls. The following two whorls have about 20 slightly developed, oblique ribs on the lower part. Two raised spiral cords run on the keel, a prominent ridge is followed by a lower less conspicuous one, just above the distinct suture. The upper part of the body whorl is smooth, but on the lower part and partly on the siphonal canal, a number (about 10-12) of spiral ridges are present. No axial sculpture, except for numerous close-set growth lines, which are flexuous across the subsutural band. The surface of the shell is rather shiny. The colour is pale pink or white, with fluctuate brown lines or flames and small well spaced brown blotches on the cords. The brown colour is stronger on the carinae than on the remaining part of the whorl.

Derivation of name: The species-name is derived from the name of my oldest daughter Nathalie. For convenience sake the last vocal 'e' in 'Nathalie' has been omitted.

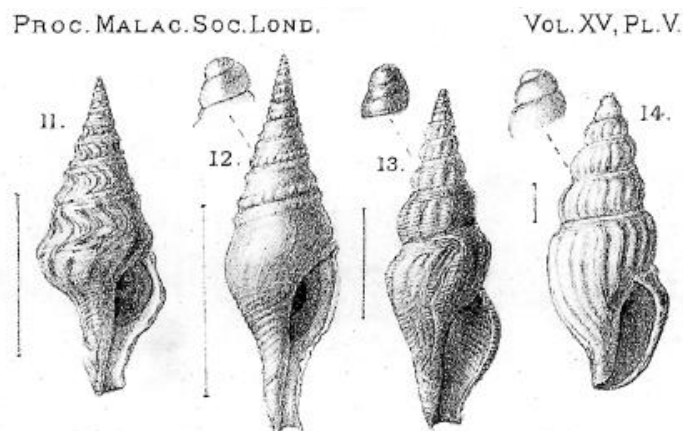
Habitat: From 15 to 90 m, in mud.

Geographic range: From Ghana to Gabon (West Africa).

Discussion: In the shell literature of the past fifty years, *Clavatula nathaliae* has been confused with *C. gabonensis* Melvill, 1923 and *C. strebeli* Knudsen, 1952. As all problems started with the misidentification of J. Knudsen in his description of the samples from the 'Atlantide' Expedition, I here reproduce the original text and figure of *Clavatula gabonensis* by Melvill (1923): 'Shell pyramidate, smooth throughout, eleven whorled, the two nuclear white, plain, and bulbous, the remainder concave, well exhibiting incremental lines of growth, elegantly and regularly ornamented with fluctuate brown lines, and, on the body-whorl, longitudinal flames; the periphery is conspicuously angular and bicarinate, mouth ovate, outer lip with median angle, sinus wide, canal moderate, very slightly recurved, columellar margin straight. Long. 25, lat. 10 mm.

Hab. Gaboon, West Africa.'

Melvill continues: 'To this the only allied species is *C. lelieuri*, Récluz. Both species agree in complete smoothness of surface, with no sign of tubercles or spines which characterize all others of the genus. But it differs from the species just named in the very conspicuous bicarinate angle at the periphery of the body-whorl, thereby rendering the shell attenuate at either extremity, while the character and disposition of the brown markings differ likewise.'



From: Melvill, J.C., 1923. Descriptions of twenty-one species of Turridae (Pleurotomidae) from various localities in the collection of Mr. E.R. Sykes. *Proceedings of the Malacological Society of London*, vol. XV, part IV, Pl. V.

Fig. 11: *Clavatula gabonensis* Melvill, 1923.



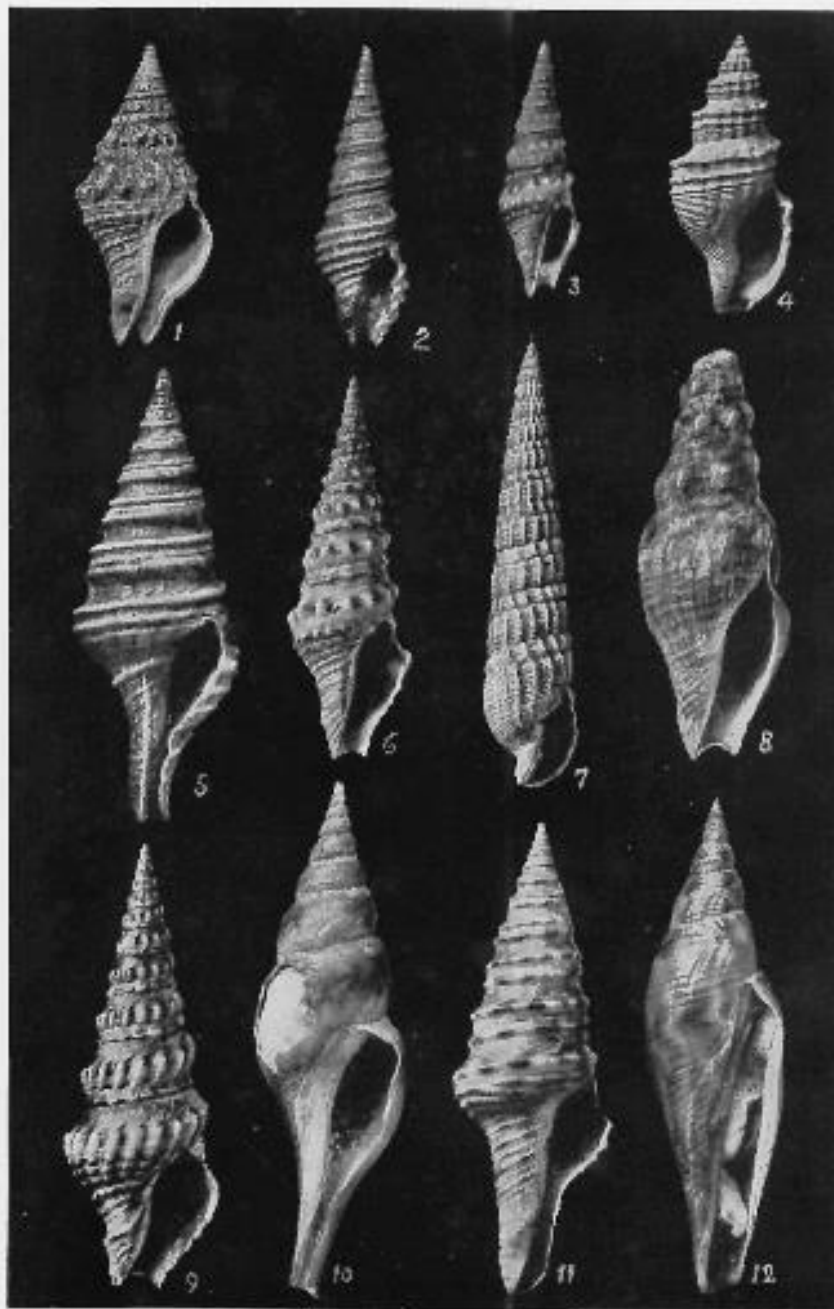
Clavatula gabonensis Melvill, 1923
 Cape Fria, Namibia, SW Africa. Trawled by Belgian fishermen
 (PEMARCO).



C. gabonensis Melvill, 1923
 Type – Gabon, West Africa



'*C. gabonensis*' by
 J. Knudsen



Fuchs & Ganss phot.

'*Clavatula gabonensis* Melvill, 1923'

From: Knudsen, J., 1952. Marine Prosobranchs of Tropical West Africa collected by the "Atlantide" Expedition 1945-46. *Vidensk. Medd. fra Dansk naturh. Foren.* Bd. 114: pl. I, fig. 11.

According to Knudsen the specimens dredged by the 'Atlantide' Expedition (three samples: station 85, station 101 and station 106) 'could easily be identified from the description and figure of Melvill'. That means the specimens illustrated on p. 3 all represent the same species, but already at first glance it is evident this is a wrong conception. In spite of his statement 'could easily be identified' the Danish scientist must have been in serious doubt, because in his remarks he goes on with an enumeration of several characteristics that are different in both shells: 'The present shells are, however, somewhat more slender and have a longer canal than the single specimen on which the original description is based.' He continues: 'on the basis of the present material a number of details not mentioned by Melvill can be described: The protoconch consists of about 2 somewhat inflated whorls. The successive whorl has about 20 slightly developed, oblique ribs on the lower part. The ribs are crossed by a small number (2-4) of very delicate spiral lines. On the remaining part of the shell a fine spiral sculpture can be seen under the microscope. It consists of a number of incised spiral lines, particularly distinct on the middle of the whorl, but they are also found on both the upper and lower carina. On the lower part of the body whorl and partly on the siphon, a number (about 10) of spiral ridges are

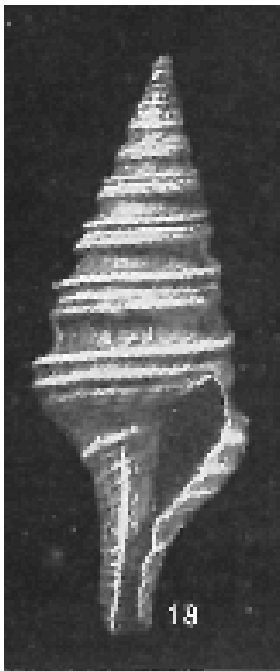
present. Most of the shell is completely without an axial sculpture, except numerous close-set growth lines, which are flexuous across the subsutural band. The colouration is as described by Melvill except that the brown colour is stronger at the carinae than on the remaining part of the whorl.'

From the above text, we can conclude that Knudsen was clearly influenced by Melvill's expression 'the very conspicuous bicarinate angle at the periphery of the body whorl', which is in fact not conspicuous at all but obtuse and indistinct. Instead of completing the description by Melvill, J. Knudsen added a number of differences, which in fact results in the description of another species. I thus conclude the shells of the 'Atlantide' Expedition belong to a species different from the real *C. gabonensis* Melvill, 1923. *C. nathaliae* is a much slenderer shell with the typical two spiral cords on the shoulder and 10-12 spiral cords on the lower part of the body whorl. *C. gabonensis* only has one raised spiral cord near the suture. Anyway the surface of *C. gabonensis* is mostly smooth.

Another species very close to *C. nathaliae* is ***Clavatula strebeli* Knudsen, 1952.**

(Plate V, figs 24-31; Plate VI, figs 32-37; Plate VII, figs 38-49).

We hereby illustrate the real ***Clavatula strebeli*** compared to the figure of '***C. gabonensis***' by Knudsen.



From: Knudsen, J., 1955. Marine Prosobranchs of Tropical West Africa (Stenoglossa). In: *Atlantide Report*, n°3, *Scientific Results of the Danish Expedition to the Coasts of Tropical West Africa 1945-1946*, Copenhagen, pl. IV, fig. 18.



'*Clavatula gabonensis* Melvill, 1923'

From: Knudsen, J., 1952. Marine Prosobranchs of Tropical West Africa collected by the "Atlantide" Expedition 1945-46. *Vidensk. Medd. fra Dansk naturh. Foren.* Bd. 114: pl. I, fig. 11.

Clavatula strebeli has a turriform shell, consisting of about 9 whorls. The whorls immediately below the protoconch have a slightly developed axial sculpture consisting of arcuate ribs. On the

remaining part of the shell no axial sculpture is present except for the irregular growth lines which are fairly distinct across the subsutural band.

The spiral sculpture is very characteristic and consists of two prominent spiral ridges, one on the upper part of the body whorl and one on the lower part. The interstices between the ridges are strongly concave. Some specimens develop a third ridge just above the lower suture on the penultimate whorl.

It is almost as strong as the two other ridges, but sometimes, like in the type it is poorly developed. The body whorl has 3-5 additional ridges on the lower part of the whorl. The one situated closest to the siphon is more distinct than the other ones. Besides this strong sculpture a number of fine, incised lines, particularly distinct in the interstices between the spiral ridges, are present. The outer lip is simple and has a broad deep sinus at some distance from the suture. The siphonal canal is moderately long and in some specimens it is slightly recurved at the end. The colouration is cream to light brown. Spiral ridges are whitish. The inside of the aperture is purplish-brown and the white spiral ridges can be seen from the inside.

C. nathaliae should not be confused with **C. strebeli**. Following are the main differences between both species:

C. nathaliae is a smaller and slenderer delicate shell. It is shiny and thin shelled. The siphonal

canal comprises about half of the total length. Spiral ridges are almost of the same width.

C. strebeli is heavier and completely dull. The siphonal canal is smaller and does not exceed half of the total length. Spiral cords are stronger, especially those (usually 2) on the shoulder and the one or two in the middle of the last whorl. These ridges are often creamy white or completely white in comparison with *C. nathaliae* where they are of the same colour as the whole shell. The ridges in *C. strebeli* usually show through the aperture.

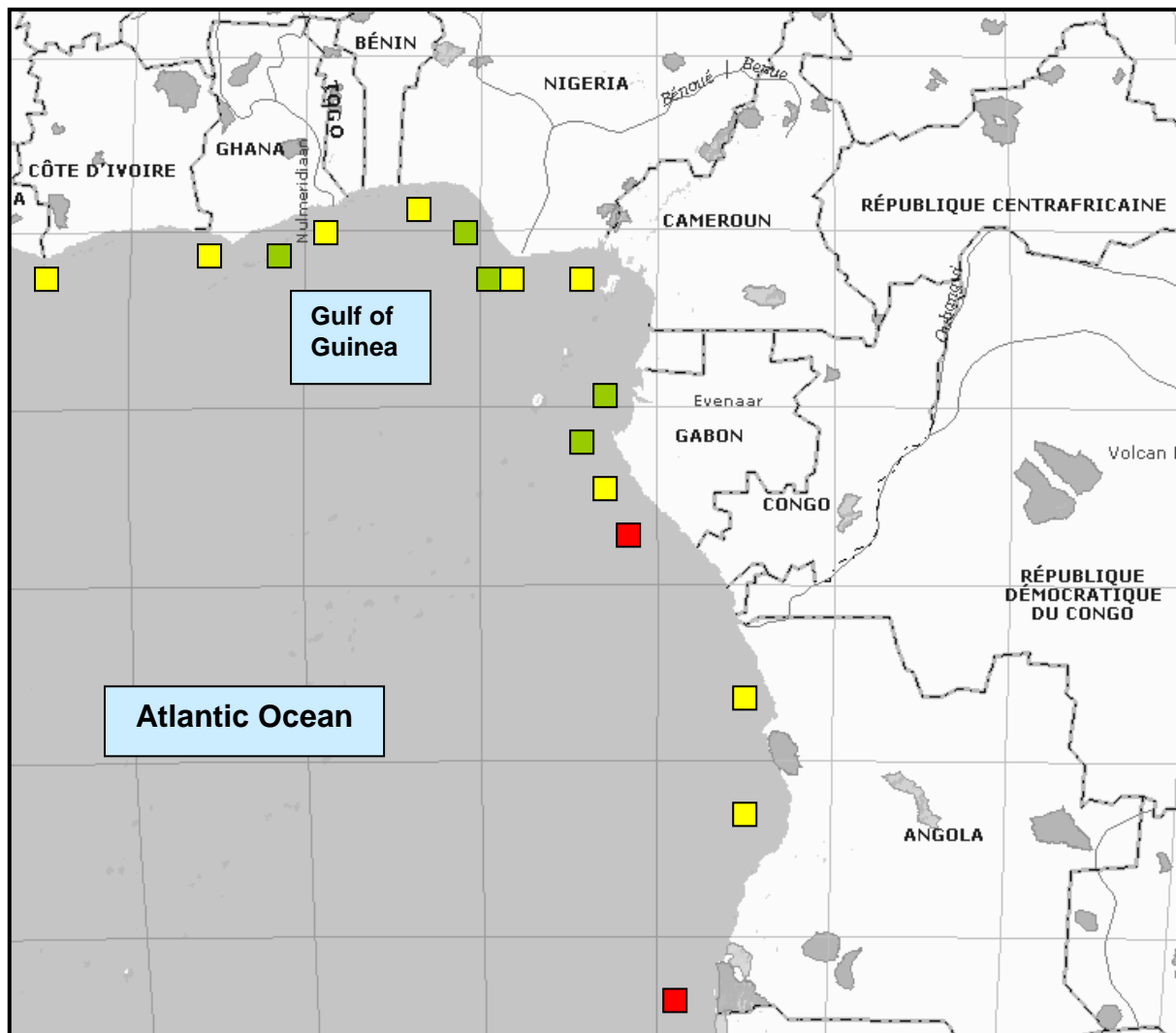
C. nathaliae is white or pinkish-violet coloured, decorated with fine brown streaks. In *C. strebeli* the flammules are much more important and cover the main part of the shell surface.

Conclusion: *Clavatula nathaliae* is a species living from Ghana to Gabon. It is clearly different in all aspects from *C. gabonensis* (Gabon – Namibia) and *C. strebeli* (Ivory Coast - Angola).

Acknowledgements: I thank David Monsecour and Johan Verstraeten, both from Belgium, for carefully reading and correcting the manuscript. Annie Vedelsby (ZMC) was so kind as to promptly send all requested specimens from the 'Atlantide' Expedition when needed.

References:

- Abbott, R.T. & Dance, S.P., 1982. *Compendium of Seashells*. New York. 411 pp.
- Bernard, P.A., 1984. *Coquillages du Gabon*. Libreville. 140 pp.
- Knudsen, J., 1952. Marine Prosobranchs of Tropical West Africa collected by the "Atlantide" Expedition 1945-46. *Vidensk. Medd. fra Dansk naturh. Foren.* **Bd. 114**: 129-185, pls I-III.
- Knudsen, J., 1955. Marine Prosobranchs of Tropical West Africa (Stenoglossa). In: *Atlantide Report, n°3, Scientific Results of the Danish Expedition to the Coasts of Tropical West Africa 1945-1946*, Copenhagen, p. 7-110, pls I-IV.
- Melvill, J.C., 1923. Descriptions of twenty-one species of Turridae (Pleurotomidae) from various localities in the collection of Mr. E. R. Sykes. *Proceedings of the Malacological Society of London*, **vol. XV**, part IV: 162—171, pls IV-V.
- Odhner, N. Hj., 1923. Contribution to the Marine Molluscan Faunas of South and West Africa. *Meddelanden fran Göteborgs Musei Zoologiska Avdelning*, **23**, 1-39, pl.1.
- Sykes, E.R., 1905. Descriptions of new forms of Marginellidae and Pleurotomidae. *Proceedings of the Malacological Society of London*, **vol. VI**: 315-318, pl. XVII.



Distributinal map of *Clavatula nathaliae* ■ *Clavatula gabonensis* ■ and *Clavatula strebeli* ■

Plate I. Figs 1-8. *Clavatula nathaliae*

- Figs 1 & 2: Holotype (ZMC; 30.8 mm). Ghana, West Africa (5°37' N. 0°38' E.). Dredged in grey mud at a depth of 50 m. 30 January 1946. 'Atlantide' Expedition (Station 85).
 Figs 3 & 4: Paratype 1 (ZMC: 24.4 mm). Ghana, West Africa (5°37' N. 0°38' E.). Dredged in grey mud at a depth of 50 m. 30 January 1946. 'Atlantide' Expedition (Station 85).
 Figs 5 & 6: Paratype 2 (ZMC: 27.2 mm). Nigeria, West Africa (5°59' N. 4°36' E.). Dredged in mud at a depth of 17 m. 15 February 1946. 'Atlantide' Expedition (Station 101).
 Figs 7 & 8: Paratype 3 (ZMC: 32.7 mm) - Ghana, West Africa (3°55' N. 6°08' E.). Dredged in mud at a depth of 55-88 m. 18 February 1946. 'Atlantide' Expedition (Station 106).

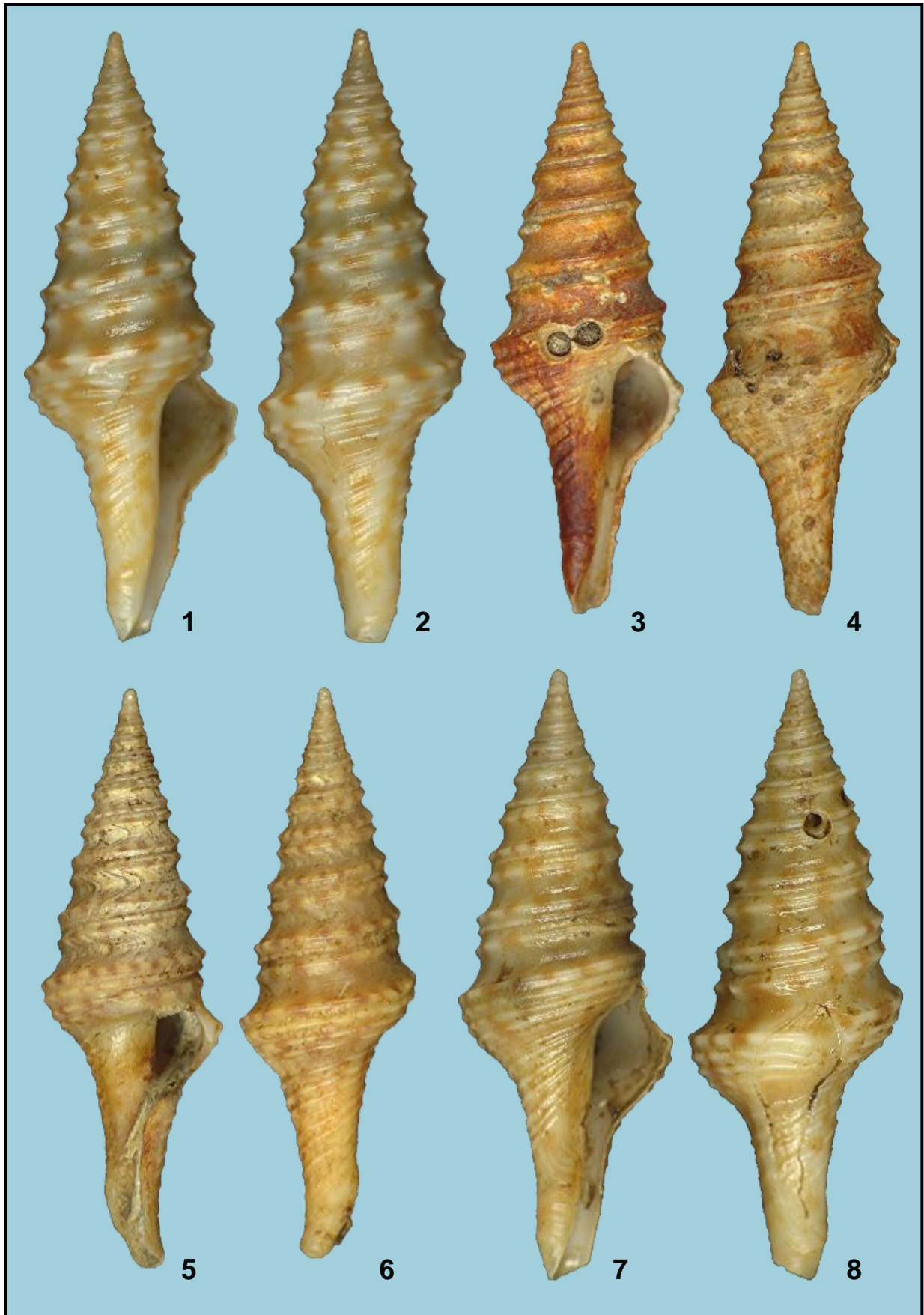


Plate I. Figs 1-8. *Clavatula nathaliae* Nolf, 2006.

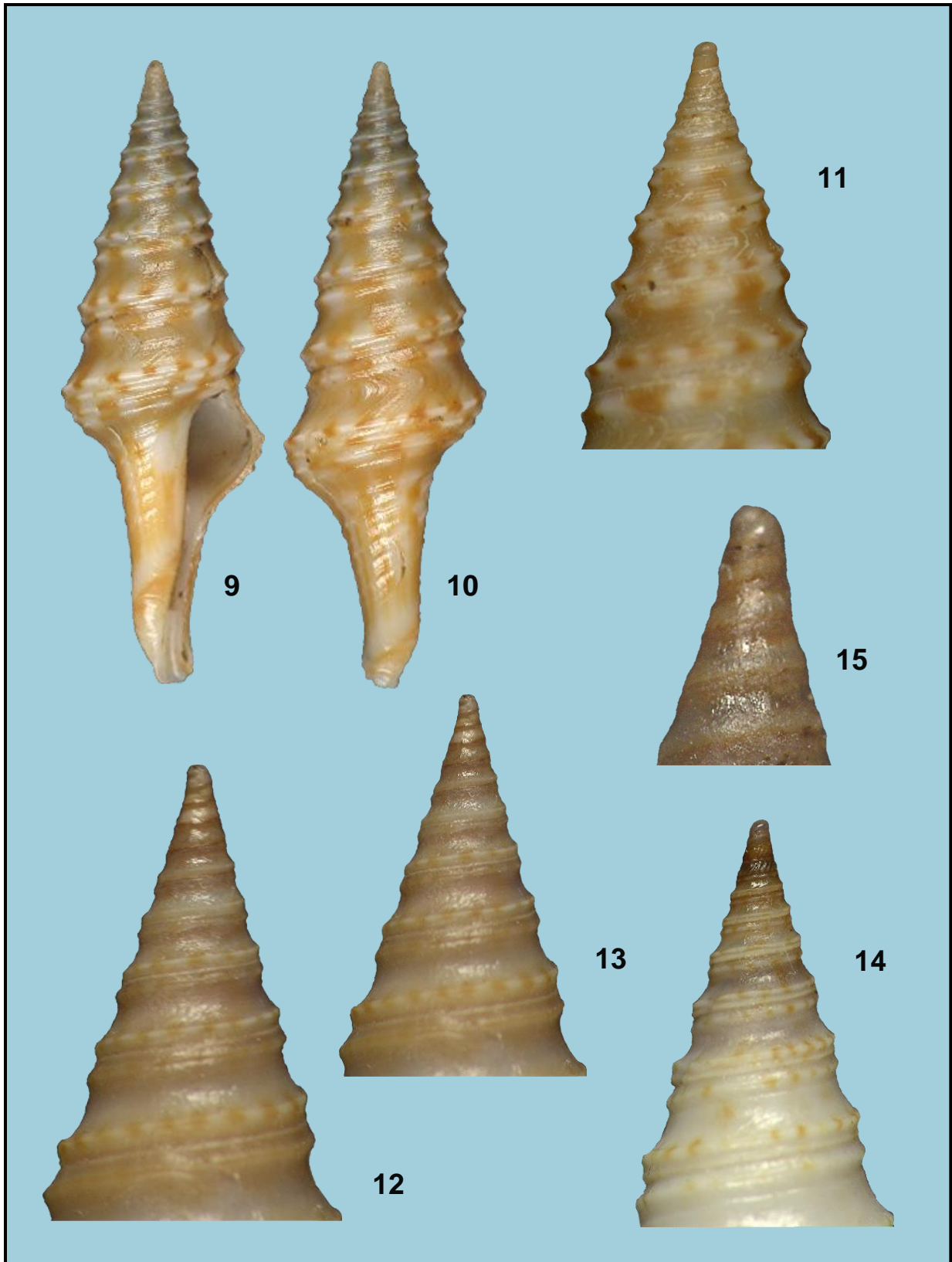


Plate II. Figs 9-15. *Clavatula nathaliae* Nolf, 2006.

Figs 9 & 10: Paratype 8 (FN; 29.5 mm). Trawled at 20 m off Lagos, Nigeria.

Fig. 11: spire of holotype (ZMC).

Figs 12, 13 & 14: spire of paratypes 4, 5 & 7 (FN).

Fig. 15: protoconch of paratype 4 (FN).



Plate III. Figs 16-19. *Clavatula nathaliae* Nolf, 2006.
Dredged at a depth of 30 m off Libreville, Gabon, West Africa.
Figs 16 & 17: Paratype 4 (FN; 25.3 mm).
Figs 18 & 19: Paratype 5 (FN; 25.4 mm).



Plate IV. Figs 20-23. *Clavatula nathaliae* Nolf, 2006.
Dredged at a depth of 30 m off Libreville, Gabon, West Africa.
Figs 20 & 21: Paratype 6 (FN; 26.3 mm).
Figs 22 & 23: Paratype 7 (FN; 28.4 mm).

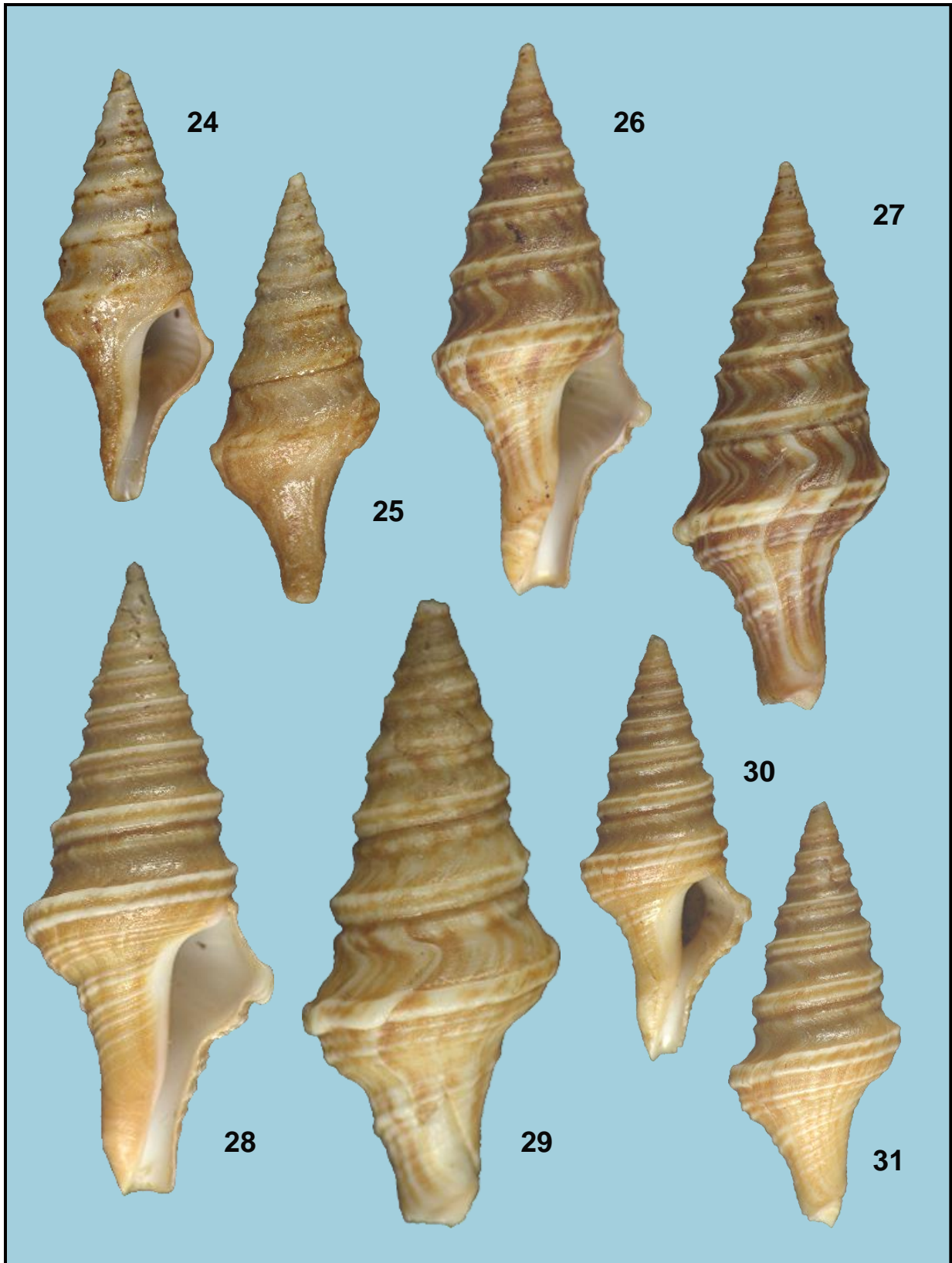


Plate V. Figs 24-31. *Clavatula strebeli* Knudsen, 1952.

Cape Morro, Angola. Trawled by Belgian fishermen (PEMARCO) at a depth of 40 m. 1973.

Figs 24 & 25: 21.76 mm (FN).

Figs 26 & 27: 26.50 mm (FN).

Figs 28 & 29: 32.83 mm (FN).

Figs 30 & 31: 21.93 mm (FN).

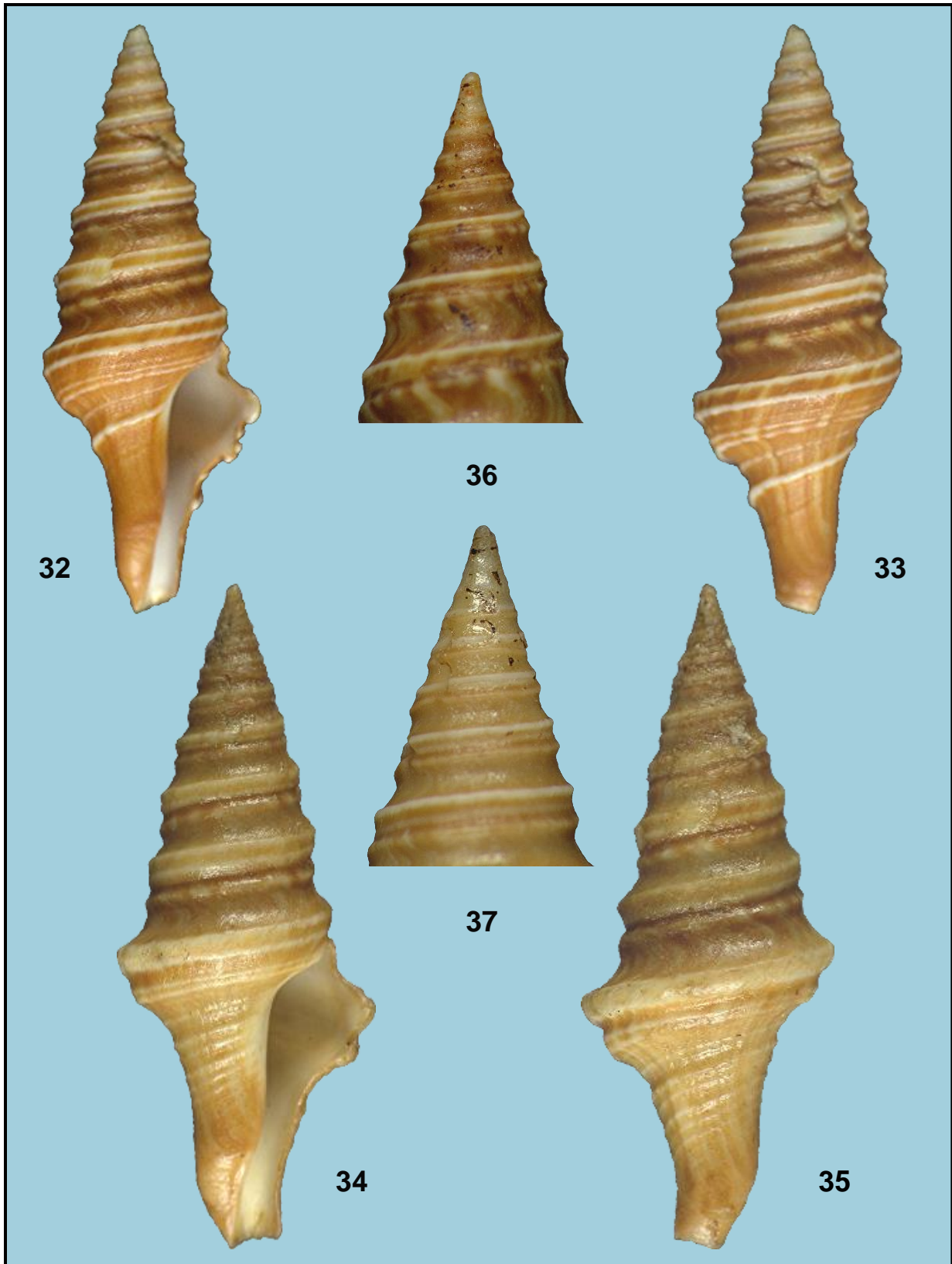


Plate VI. Figs 32-37. *Clavatula strebeli* Knudsen, 1952.
Cape Morro, Angola. Trawled by Belgian fishermen (PEMARCO) at a depth of 40 m. 1973.
Figs 32 & 33: 35.42 mm.
Figs 34 & 35: 38.34 mm.
Figs 36 & 37: part of the spire, including protoconch.

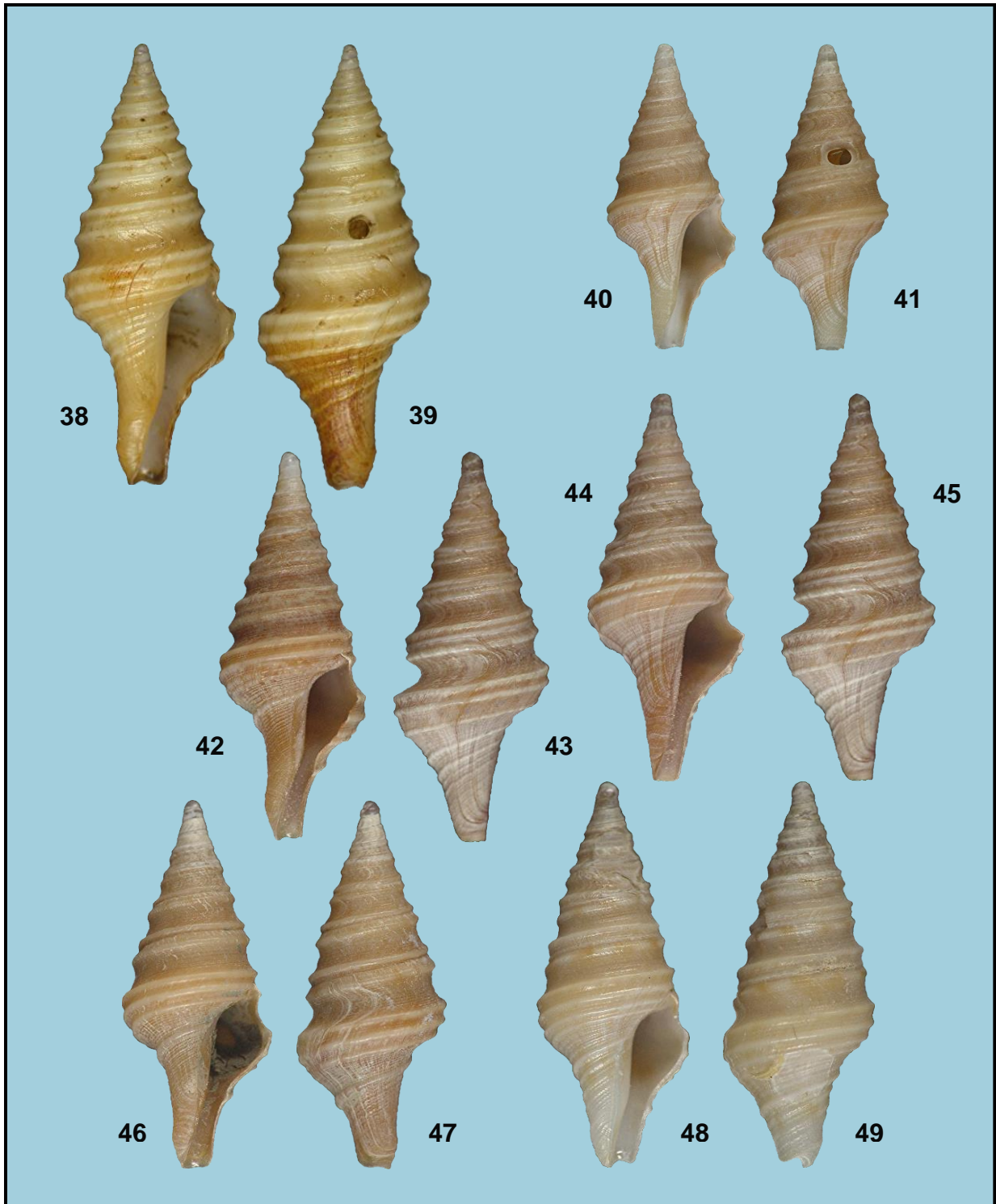


Plate VII. Figs 38-49. *Clavatula strebeli* Knudsen, 1952.

Figs 38 & 39: Off Lagos, Nigeria. Trawled at a depth of 20 m. 21.2 mm (FN).

Figs 40 & 41: 'Atlantide' Expedition, station 98. Nigeria: 5°56' N., 4°26' E. Dredged in mud at a depth of 100 m. 15 February 1946. 11.1 mm (ZMC).

Figs 42 & 43, 44 & 45: 'Atlantide' Expedition, station 106. Nigeria: 3°55' N., 6°08' E. Dredged in sandy mud at a depth of 53 m. 18 February 1946. 14.0 mm; 14.3 mm (ZMC).

Figs 46 & 47: 'Atlantide' Expedition, station 116. Nigeria: 4°01' N., 7°56' E. Dredged at a depth of 66 m. 23 February 1946. 12.9 mm (ZMC).

Figs 48 & 49: 'Atlantide' Expedition, station 123. Gabon: 2°03' N., 9°05' E. Dredged in mud at a depth of 50 m. 5 March 1946. 13.2 mm (ZMC).

Recognition of two new *Clavatula* species (Mollusca: Gastropoda: Conoidea: Turridae) in a complex group from Gabon and North Angola

Frank Nolf¹ & Johan Verstraeten²

¹ Pr. Stefanieplein, 43/8 – B-8400 Oostende
frank.nolf@pandora.be

² Warschaustraat, 48 – B-8400 Oostende

Key words: GASTROPODA, TURRIDAE, *Clavatula quinteni*, *Clavatula xanteni*, West Africa, new species.

Abstract: The species figured as *Clavatula* sp by Bernard in 'Coquillages du Gabon' and later on wrongly mentioned in recent literature as '*Clavatula mourei*' or *Clavatula marginata* is introduced here as the new species *Clavatula quinteni*. It is compared with *Clavatula xanteni* another new species from North Angola. These shells have a close affinity with each other, *Clavatula quinteni* living in Gabonese waters, and *Clavatula xanteni* is found off the mouth of the Congo-river and in North Angola.

Abbreviations:

FN: Private collection of Frank Nolf, Oostende, Belgium.

JV: Private collection Johan Verstraeten, Oostende, Belgium.

PEMARCO: Pêche maritime du Congo.

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

ZMC: Universitets Zoologisk Museum, Copenhagen, Denmark.

Introduction: In 'Coquillages du Gabon' P. Bernard (1984) illustrated an unknown *Clavatula* sp. on Plate 49 (fig.184). Later on this species was mentioned as *Clavatula mourei* Bernard, 1984 by Rolán & Ryall (1999) in their 'Checklist of Angolese Marine Molluscs' (personal communication by P. Ryall). We have never found the name '*Clavatula mourei*' in literature, except in 'West African Seashells' by Ardovini & Cossignani (2004) where it was copied from the checklist of Rolán & Ryall (1999). In addition no traces of this name are present in the excellent work of Tucker (2004). It seems Bernard has never published a '*Clavatula mourei*' and so, we regard it as an unavailable manuscript name. In their 'Compendium of Seashells' (p. 241) Abbott & Dance (1982) identified the same shell of Bernard as '*Clavatula bimarginata* (Lamarck, 1822). West Africa. Offshore; uncommon.'

In fact this shell was already well known to all collectors specializing in West African seashells. A considerable number became available from Gabon, but specimens from Angola are not always recognized to belong to this species. On Pl. IV, figs 24-26 and Pl. V, figs 30-35 we show two representatives from North Angola. Even albino specimens are known (Pl. III, figs 20 & 21). P. Bernard figured four completely white specimens in 'Coquillages du Gabon', but identified them as *Clavatula pfefferi* (Strebel, 1912). Moreover, he noted the similarity with his *Clavatula* sp. (fig.184): 'Solid fusiform shell with double sutural cord identical to that of *C. sp.* (n. 184).' It is obvious the specimens illustrated in fig. 184 and fig. 186 are very similar and in our opinion Bernard had to conclude both are the same species. It can be questioned why Bernard omitted to mention the differences between the problematic shells, certainly because *C. pfefferi* was originally described by Strebel (1912) as a brown coloured shell and not as a typically white species.



From: Bernard, P.A., 1984. *Coquillages du Gabon*, pl. 49, fig. 186



From: Bernard, P.A., 1984. *Coquillages du Gabon*, pl. 49, fig. 184



From: Abbott & Dance, 1982. *Compendium of Seashells*, p. 241

***Clavatula quinteni* sp. nov.**

(Pl. I, figs 1-5; Plate II, figs 6-13; Plate III, figs 14-21; Plate IV, figs 22-29; Plate V, figs 30-35)

Type material:

Holotype: Gabon, West Africa. Trawled by fishermen. 1981. 37.6 mm. ZMC.

Paratypes:

1. 39.5 mm (FN). Off Libreville, Gabon.
2. 40.5 mm (FN). Off Libreville, Gabon.
3. 37.8 mm (JV). Off Port Gentil, Gabon.
Trawled by local fishermen at about 40 m.
4. 39.1 mm (JV). Off Port Gentil, Gabon.
Trawled by local fishermen at about 40 m.
5. 30.6 mm (JV). Off Port Gentil, Gabon.
Trawled by local fishermen at about 40 m.
6. 33.6 mm (JV). Off Port Gentil, Gabon.
Trawled by local fishermen at about 40 m.
7. 36.3 mm (JV). Gabon, West Africa.
Trawled by fishermen. 1981.
8. 36.5 mm (JV). Gabon, West Africa.
Trawled by fishermen. 1981.
9. 39.1 mm (FN). Libreville, Gabon.
Trawled at 38 m, at 60 km offshore.
10. 41.8 mm (FN). Dredged at a depth of
30 m off Libreville, Gabon.
11. 33.0 mm (FN). Cape Morro, Angola.
1973. Trawled at 73 m by fishermen
(PEMARCO).
12. 35.5 mm (FN). Cape Morro, Angola.
1973. Trawled at 73 m by fishermen
(PEMARCO).

13. 36.2 mm (FN). Cape Morro, Angola.
1973. Trawled at 73 m by fishermen
(PEMARCO).

Description: This is a fusiform shell with pointed spire, consisting of 11 whorls and a shiny surface. The protoconch is paucispiral and has 1,5 whorls. At the top of each whorl a granulose ridge is present, alternatively coloured with brown and white dots, and making a sharply decurrent groove with the suture on top of the body whorl. At the base of the whorls another cord surrounds the suture making it sinuous in appearance. Sometimes it is present at a short distance from the suture, but it does not overlap. The spiral cord changes in a row of parallel axial ridges flecked with brown and white in the middle of the body whorl. In certain specimens these nodulose axial ribs are well developed. Traces of very fine spiral lines (8-9) are visible by magnification on the upper part of the body whorl. The siphonal canal is relatively long and the mouth is elongated oval, coloured light purplish brown with the spiral ridges of the last whorl showing through. The colour of the shell is orange brown and the spiral cords are spotted with white dots alternating with dark brown markings. Operculum horny and translucent, closing completely the aperture of the shell.

Derivation of name: The name is derived from the first name of Quinten Vandenberghe, the first author's oldest grandson, who acquired the love for shells from him.

Habitat: In mud and sand at a depth of 35-75 m.

Geographic range: Gabon and North Angola.

Discussion: This shell is broader in outline, especially the body whorl. It is more solid and larger compared to the similar species *Clavatula pfefferi* (Strebel, 1912) (Plate IX, figs 56-63) and *Clavatula hupferi* (Strebel, 1912) (Plate X, figs 64-71) which are more fragile, slenderer and glossy. The latter two species are much more delicate in structure and they are missing the series of the strongly developed parallel spiral cords on the lower part of the last whorl. *Clavatula quinteni* is darker coloured demonstrating a mosaic of orange-brown and white dots.

***Clavatula xanteni* nov. sp.**

(Pl. VI, figs 36-43; Plate VII, figs, 44-51; Plate VIII, fig. 55)

Type material:

Holotype: Trawled by Belgian fishermen (PEMARCO) at a depth of 25 m, off the mouth of the Congo-river, off Moita Seca, North Angola. 1968. 22.5 mm. ZMC.

Paratypes:

1. 20.7 mm (FN)
2. 21.0 mm (FN)
3. 25.2 mm (FN)
4. 25.7 mm (FN)
5. 29.0 mm (FN)
6. 29.8 mm (FN)
7. 30.1 mm (FN)
8. 31.3 mm (FN)
9. 32.7 mm (FN)
10. 30.4 mm (JV)

All specimens were trawled by fishermen (PEMARCO) at a depth of 25 m, off the mouth of the Congo-river off Moita Seca, North Angola. 1968.

Description: Shell turritiform and slender with 9-11 whorls. Dull surface, never shiny. Protoconch consists of 2,5 slightly foliated whorls. On the whorls below the protoconch a slightly developed axial sculpture is present, consisting of arcuate ribs. This sculpture gradually disappears and in the lower part no more traces of it can be found, except for irregular growth lines. The only prominent structure is a flattened subsutural ridge, but a subsutural groove has never been found in any specimen studied. The spiral cord is not granulose as in for instance *Clavatula pfefferi* (Strebel, 1912) and it is coloured with alternating brown and white dots. A white band surrounds the suprasutural zone, ending in the middle of the body whorl. So, no thickened spiral cord is

found in this species as in many similar species, e.g. *Clavatula nathaliae* Nolf, 2006, *Clavatula pfefferi* (Strebel, 1912) or *C. hupferi* (Strebel, 1912). Each whorl has 15-18 very fine spiral threads, and on the body whorl some 50 spiral lines are found, the last ones more prominent on the siphonal canal. The latter are brown with white dots. The siphonal canal is relatively short and the mouth is wide and subangularly oval. The outer lip is simple with a broad and deep sinus at some distance from the suture. The colour is yellowish-brown and the aperture is pale violet or creamy white.

Derivation of name: The name is derived from the first name of Xanten Vandenberghe, brother of Quinten and grandson of the first author.

Habitat: In mud and sand at a depth of 20-30 m.

Geographic range: Off the mouth of the Congo-river, off Moita Seca, North Angola. No other localities are known at present.

Discussion: This new species can be compared with two similar species, namely *C. pfefferi* and *C. hupferi*, both described by Strebel (1912). *C. hupferi* and *C. pfefferi* are slenderer shells differing by several characteristics that will be enumerated in a later paper (2007). *C. quinteni* Nolf & Verstraeten, 2006 is a more fusiform shell with an elongated siphonal canal, two very distinct spiral cords, one at the base of each whorl making the suture undulate and another sharp looking one at the top of the body whorl creating a shallow groove. The lower part of the body whorl is ornamented with parallel spiral cords crossed by nodulose axial ribs, an absent structure in *C. xanteni*. The latter has a typical white band along the suprasutural zone, ending in the middle of the body whorl and only possesses traces of spiral cords in the sutural area and on the surface of the body whorl. The mouth in *C. xanteni* is wide and subangularly oval, a characteristic only seen in *C. subspirata* (von Martens, 1902) from SW Africa. Operculum and animal absent in all studied specimens.

Conclusion: The text above clearly shows the whole of differences between *Clavatula xanteni* and its look-alikes. This species is restricted to the waters of Congo and North Angola.

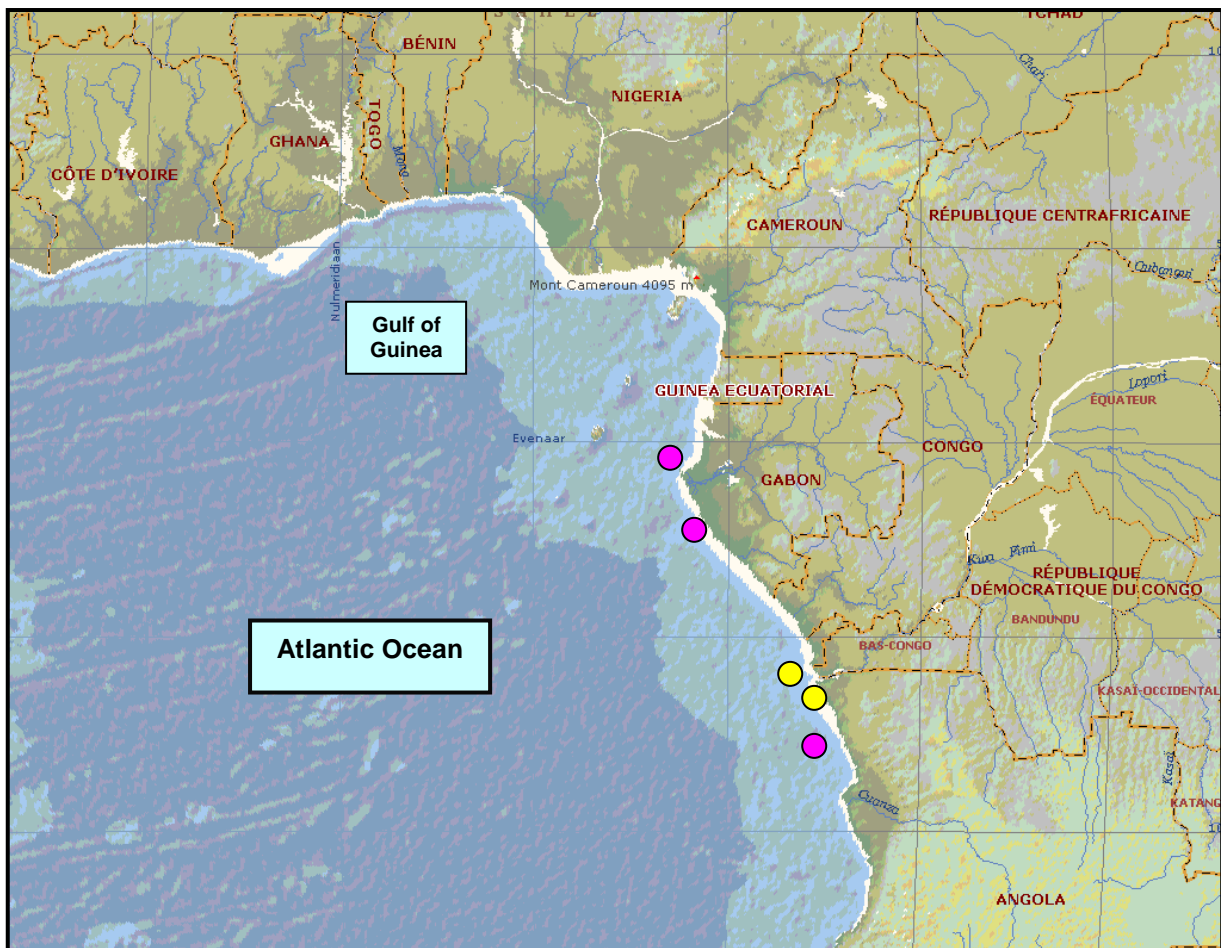
Acknowledgements: David Monsecour was so kind as to carefully check the English manuscript. Annie Lone Vedelsby (ZMC) supplied promptly us with different samples of the 'Atlantide' Expedition, preserved in the rich collections of the Zoological Museum of the University of Copenhagen.

Without her help we would never have succeeded in finishing this difficult study. Jan Haspeslagh and Chilekwa Chisala (Flanders

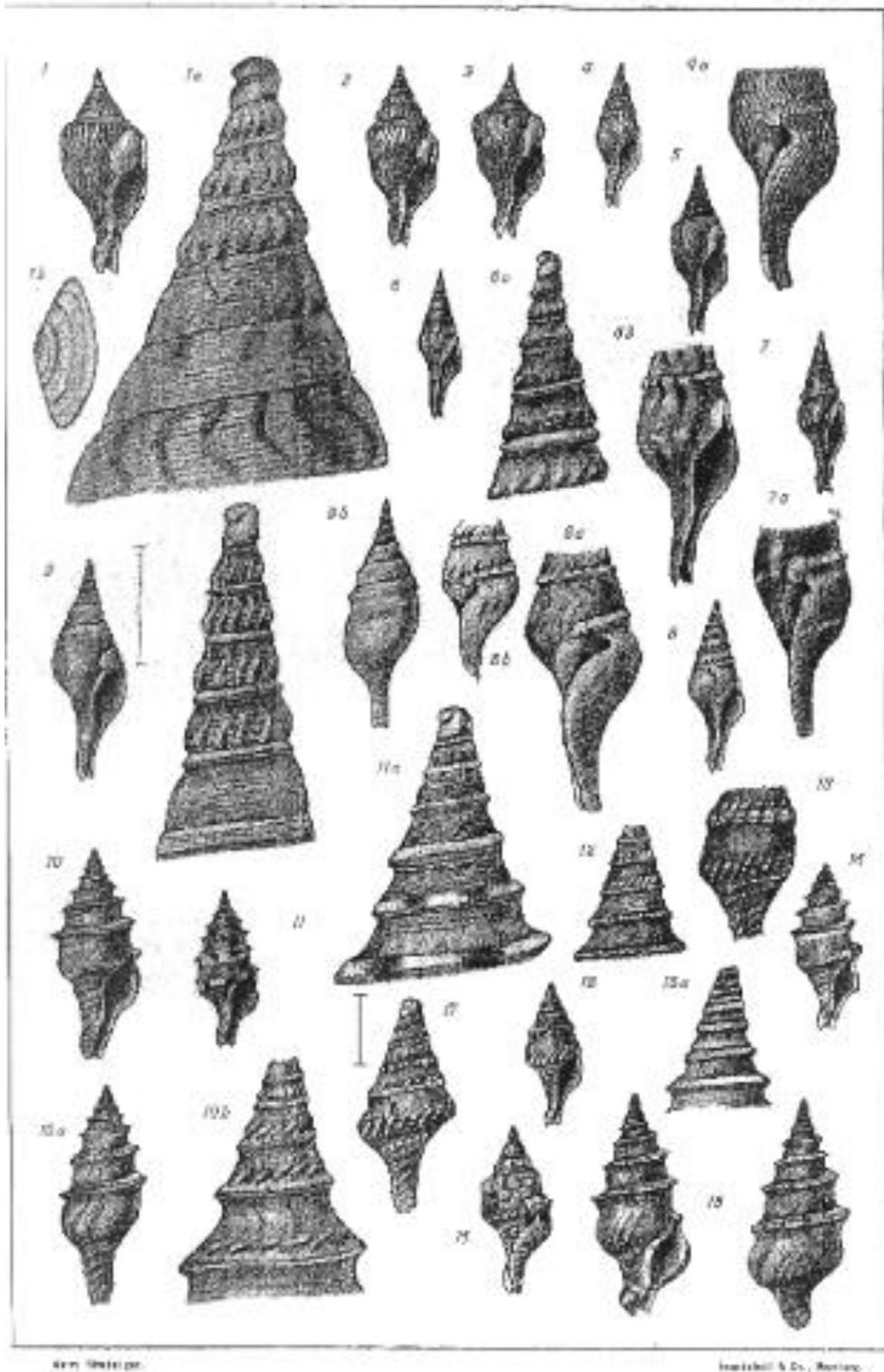
Marine Institute) helped us in obtaining the necessary and very useful literature.

References:

Abbott, R.T. & Dance, S.P., 1982. *Compendium of Seashells*. New York. 411 pp.
 Ardovini, R. & Cossignani, T., 2004. *West African Seashells*. Ancona. 319 pp.
 Bernard, P.A., 1984. *Coquillages du Gabon*. Libreville. 140 pp.
 Knudsen, J., 1952. Marine Prosobranchs of Tropical West Africa collected by the "Atlantide" Expedition 1945-46. *Vidensk. Medd. fra Dansk naturh. Foren. Bd. 114*: 129-185, pls I-III.
 Knudsen, J., 1955. Marine Prosobranchs of Tropical West Africa (Stenoglossa). In: *Atlantide Report, n°3, Scientific Results of the Danish Expedition to the Coasts of Tropical West Africa 1945-1946*, Copenhagen, p. 7-110, pls I-IV.
 Rolán, E. & Ryall, P., 1999. Checklist of the Angolan Marine Molluscs. *Reseñas Malacológicas X*: 5-119; Sociedad Española de Malacología.
 Strebel, H., 1912. Bemerkungen zu den Clavatula-Gruppen Perrona und Tomella. *Jahrbuch der Hamb. Wissensch. Anstalten*, **29**(2): 1-24. Tafel I.
 Tucker, J.K., 2004. *Catalog of Recent and fossil turrids (Mollusca: Gastropoda)*. Zootaxa 682. Auckland. 1296 pp.



Distribution of *Clavatula quinteni* ● and *Clavatula xanteni* ●



.....
Figs 6, 6a & 6b: *Tomella hupferi*
Figs 7 & 7a: *Tomella hupferi* var. *fusca*
Figs 8, 8a & 8b: *Tomella pfefferi*
.....

From: Strebel, H., 1912. Bemerkungen zu den Clavatula-Gruppen Perrona und Tomella. *Jahrbuch der Hamb. Wissensch. Anstalten*, 29(2): 1-24. Tafel I.



Plate I. Figs 1-5. *Clavatula quinteni* Nolf & Verstraeten, 2006.

Dredged at a depth of 30 m off Libreville, Gabon, West Africa.

Figs 1 & 2: Paratype 1 (FN; 39.5 mm).

Figs 3 & 4: Paratype 2 (FN; 40.5 mm).

Fig. 5: Operculum.

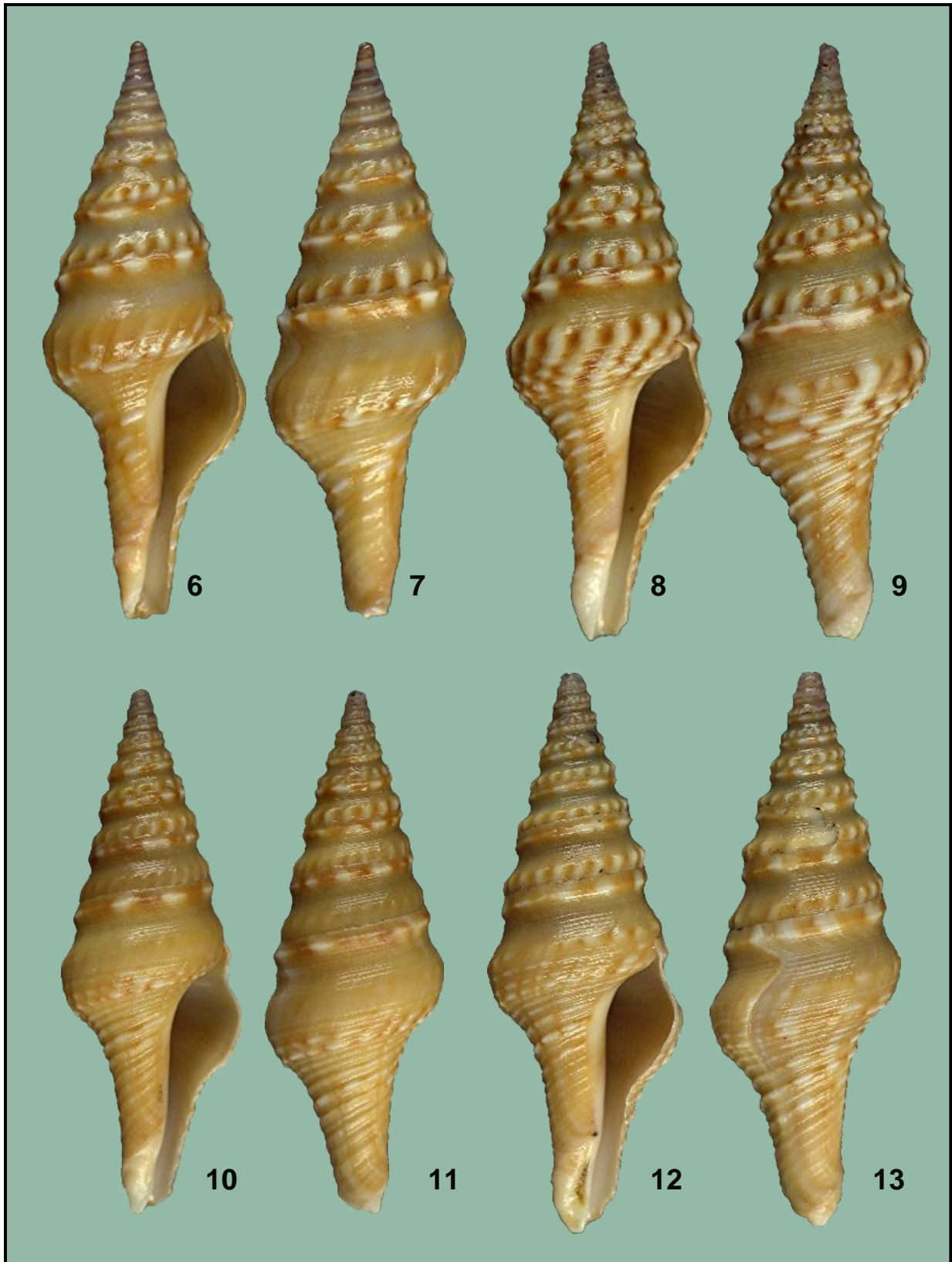


Plate II. Figs 6-13. *Clavatula quinteni* Nolf & Verstraeten, 2006.
Trawled by local fishermen at about 40 m deep, off Port Gentil, Gabon, West Africa.

Figs 6 & 7: Paratype 3 (JV; 37.8 mm).
Figs 8 & 9: Paratype 4 (JV; 39.1 mm).
Figs 10 & 11: Paratype 5 (JV; 30.6 mm).
Figs 12 & 13: Paratype 6 (JV; 33.6 mm).



Plate III. Figs 14-21. *Clavatula quinteni* Nolf & Verstraeten, 2006.
 Figs 14 & 15: Paratype 7 (JV; 36.3 mm). Gabon, West Africa. Trawled by fishermen. 1981.
 Figs 16 & 17: Paratype 8 (JV; 36.5 mm). Gabon, West Africa. Trawled by fishermen. 1981.
 Figs 18 & 19: Holotype (ZMC; 37.6 mm). Gabon, West Africa. Trawled by fishermen. 1981.
 Figs 20 & 21: Paratype 9 (FN; 39.1 mm). Libreville, Gabon, West Africa. Trawled at 38 m, at 60 km offshore.

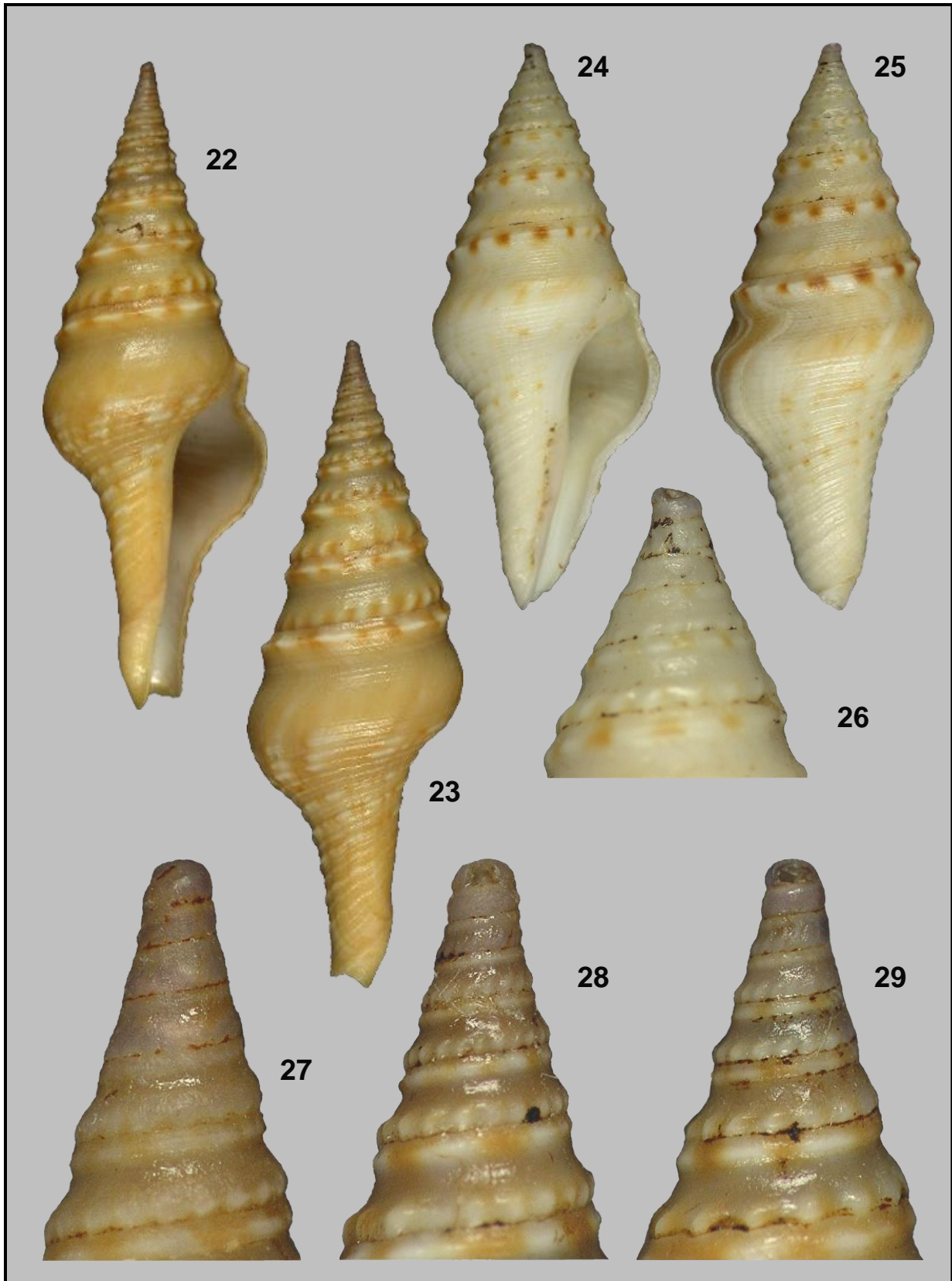


Plate IV. Figs 22-29. *Clavatula quinteni* Nolf & Verstraeten, 2006.
 Figs 22 & 23: Paratype 10 (FN; 41.8 mm). Dredged at a depth of 30 m off Libreville, Gabon.
 Figs 24 & 25: Paratype 11 (FN; 33.0 mm). Cape Morro, Angola. Trawled at 73 m. 1973.
 Fig. 26: Cape Morro, Angola. Trawled by Belgian fishermen at 73 m. 1973. Part of spire. (FN).
 Figs 27, 28 & 29: Dredged at a depth of 30 m off Libreville, Gabon, West Africa. Part of the spire including protoconch. (FN).

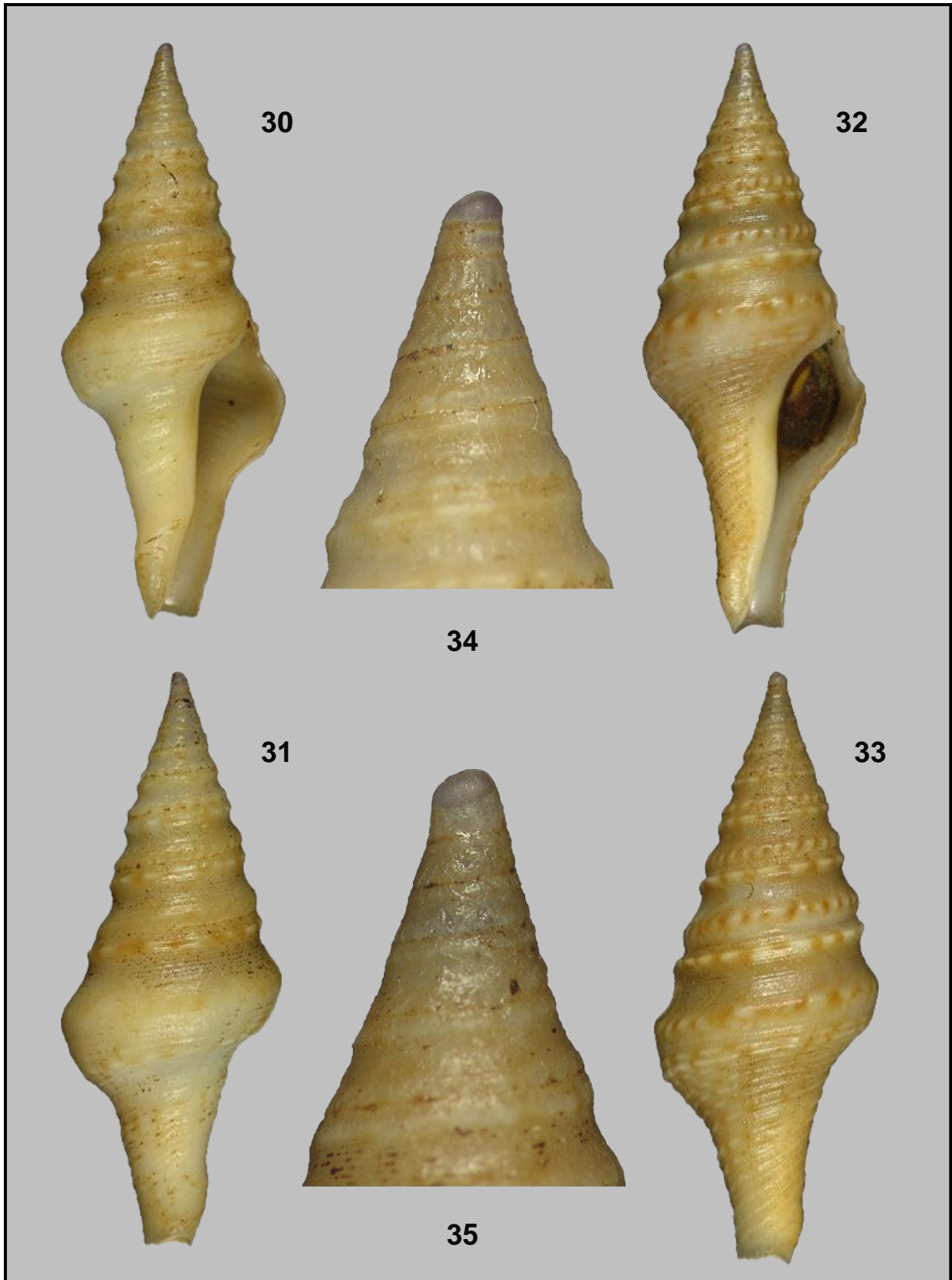


Plate V. Figs 30-35. *Clavatula quinteni* Nolf & Verstraeten, 2006.

Trawled at a depth of 73 m off Cape Morro, Angola, West Africa.

Figs 30 & 31: Paratype 12 (FN; 35.5 mm).

Figs 32 & 33: Paratype 13 (FN; 36.2 mm).

Figs 34 & 35: Part of the spire including the protoconch.

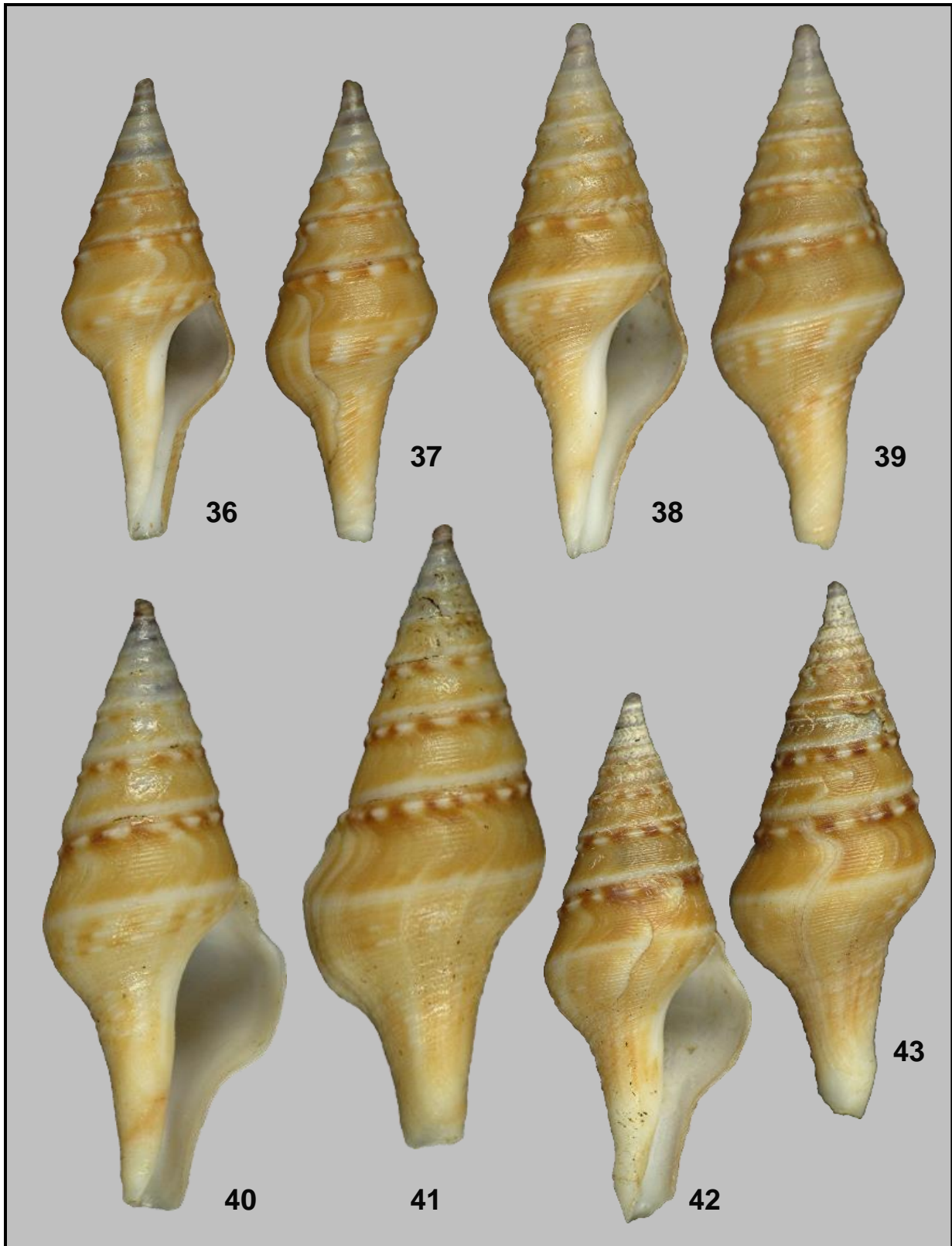


Plate VI. Figs 36-43. *Clavatula xanteni* Nolf & Verstraeten, 2006.
 Off Moita Seca, Angola, West Africa. Trawled by Belgian fishermen (PEMARCO) at a depth of
 25 m, off the mouth of the Congo-river. 1968.

Figs 36 & 37: Holotype: 22.5 mm (ZMC).

Figs 38 & 39: Paratype 4: 25.7 mm (FN).

Figs 40 & 41: Paratype 8: 31.3 mm (FN).

Figs 42 & 43: Paratype 7: 30.1 mm (FN).

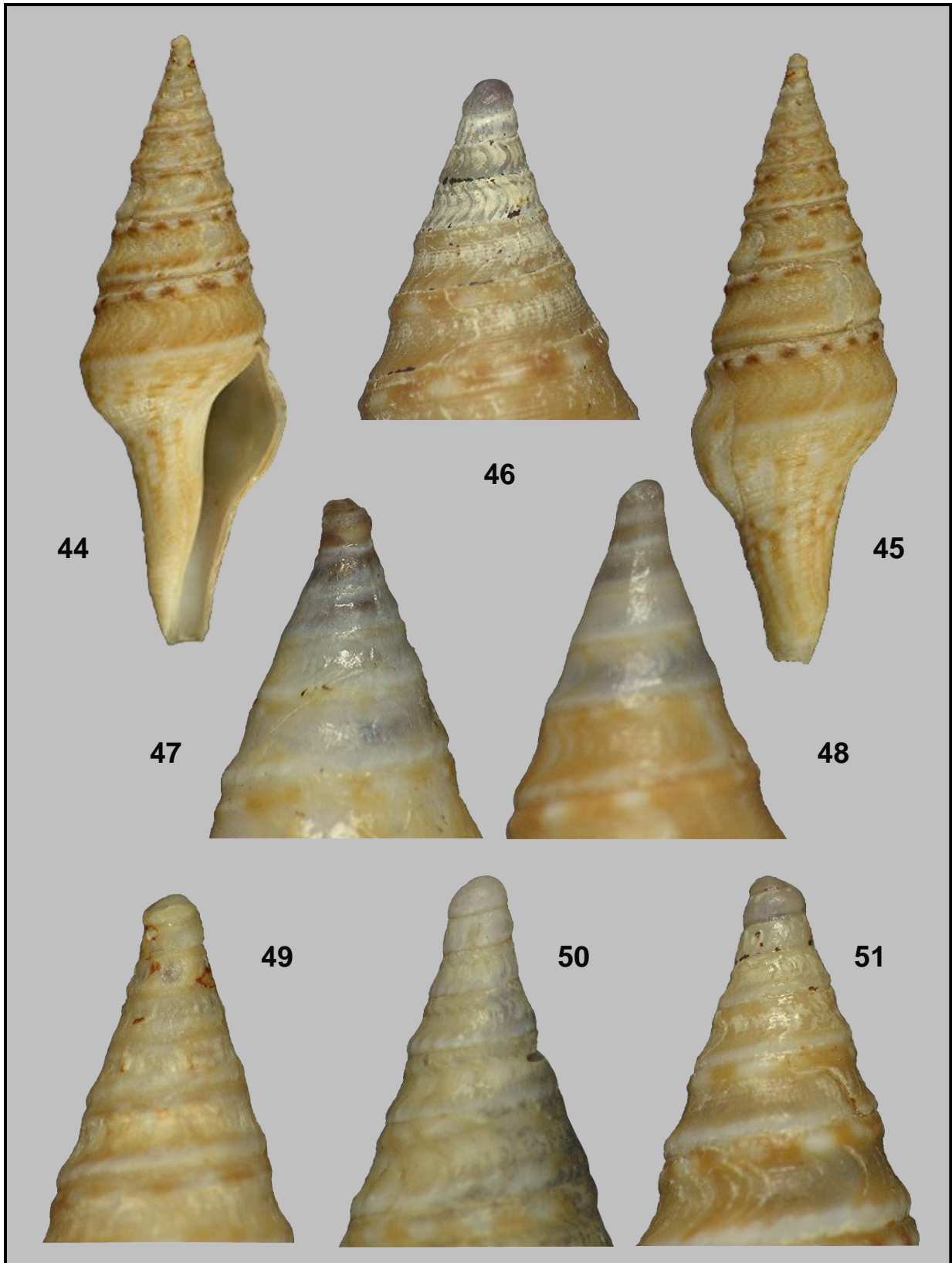


Plate VII. Figs 44-51. *Clavatula xanteni* Nolf & Verstraeten, 2006.
 Off Moita Seca, Angola, West Africa. Trawled by Belgian fishermen (PEMARCO) at a depth of
 25 m off the mouth of the Congo-river 1968.

Figs 44 & 45: Paratype 9: 32.7 mm (FN).
 Figs 46-51: Part of the spire including the protoconch (FN).

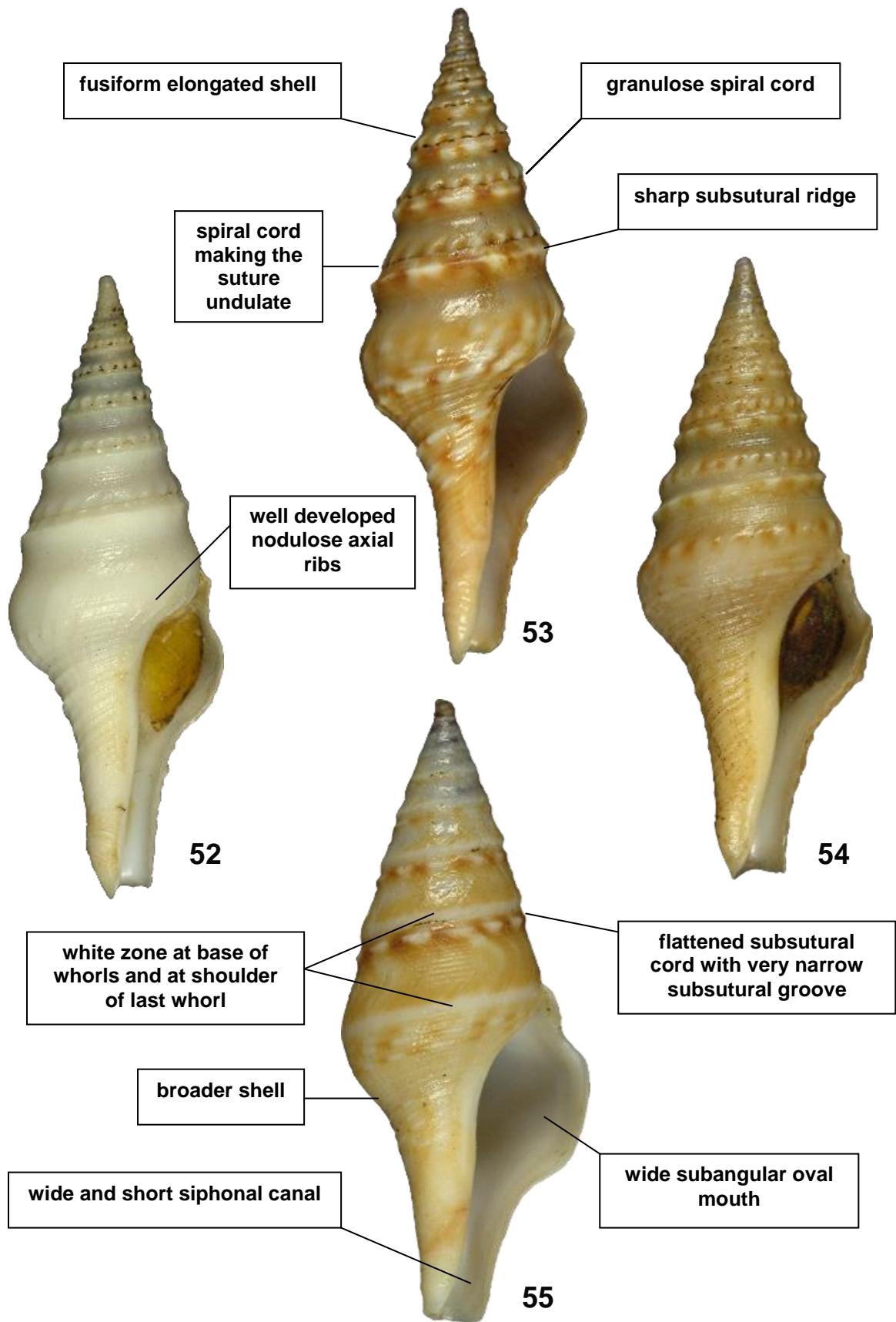


Plate VIII. Comparison between *Clavatula quinteni* (Figs 52-54) and *Clavatula xanteni* (Fig. 55)

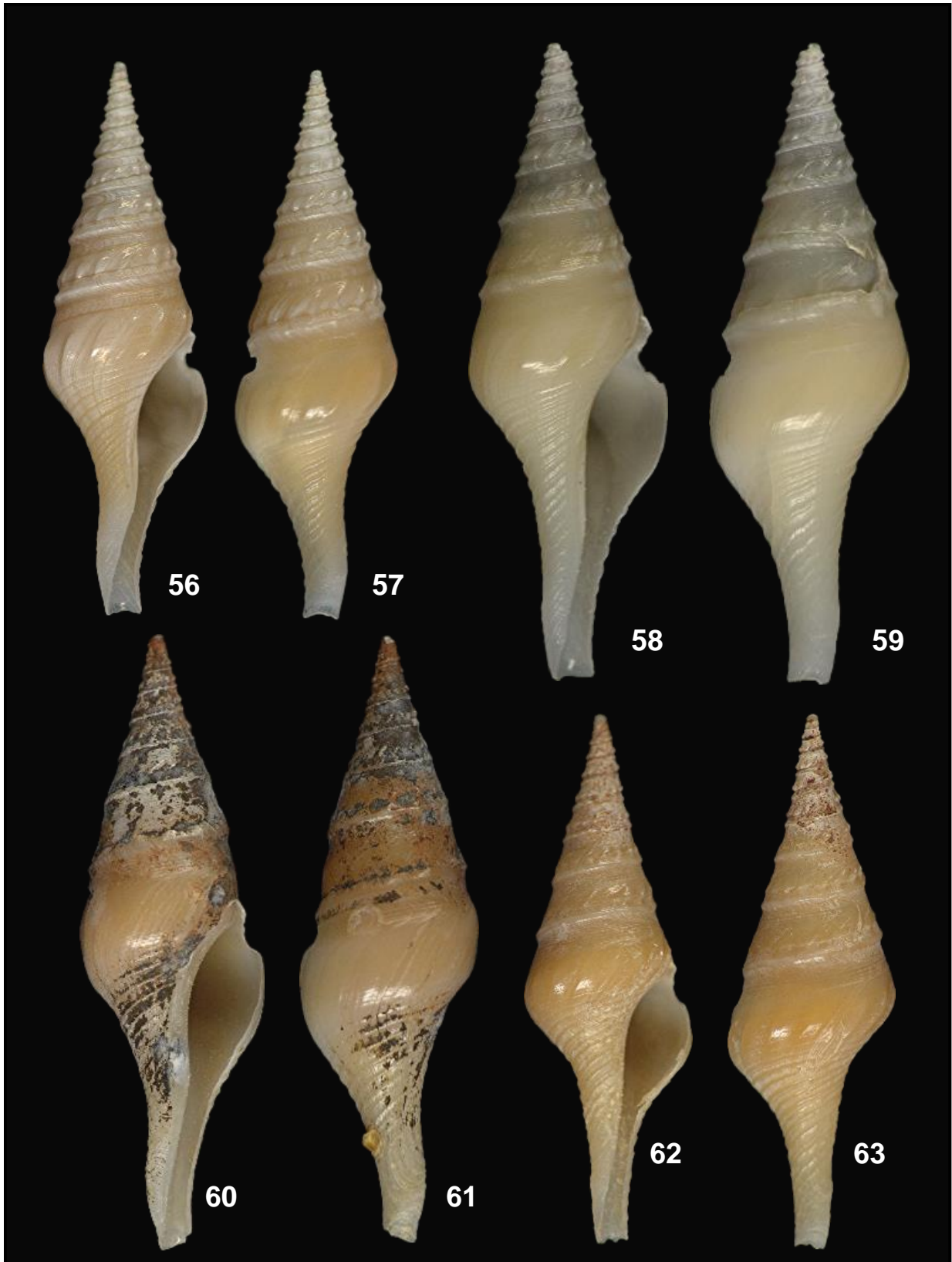


Plate IX. Figs 56-63. *Clavatula pfefferi* (Strebel, 1912).

Figs 56 & 57, 58 & 59: 'Atlantide' Expedition, Station 100, 6°06' N., 4°29' E. Nigeria. Dredged in soft mud at a depth of 29 m. 15 February 1946. 20.4 mm; 25.9 mm (ZMC).

Figs 60 & 61, 62 & 63: 'Atlantide' Expedition, Station 102, 5°34' N., 4°50' E. Nigeria. Dredged in soft mud at a depth of 27-29 m. 16 February 1946. 25.3 mm (ZMC). 30.3 mm; 20.9 mm (ZMC).



Plate X. Figs 64-71. *Clavatula hupferi* (Strebel, 1912).

Figs 64 & 65: 'Atlantide' Expedition, Station 101, 5°59' N., 4°36' E. Nigeria. Dredged in soft mud at a depth of 17 m. 16 February 1946. 23.1 mm (ZMC).

Figs 66 & 67, 68 & 69, 70 & 71: 'Atlantide' Expedition, Station 102, 5°34' N., 4°50' E. Nigeria. Dredged in mud at a depth of 17 m. 15 February 1946. 20.2 mm; 24.1 mm; 26.7 mm (ZMC).