

A forgotten species from Angola, described as *Phenacovolva patriciae* (Mollusca: Gastropoda: Ovulidae)

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Keywords: OVULIDAE, *Phenacovolva patriciae*, Angola, new species.

Abstract: The first representative of *Phenacovolva* Iredale, 1939 off the coast of West Africa is described. Till now it was only known from a figure and a description in W.R. Liltved (1989) as *Phenacovolva* sp. indet. A.

Abbreviations:

FN: Private collection of Frank Nolf.

RBINS: Royal Belgian Institute for Natural Sciences.

Introduction: The Angolan marine fauna is far from well known in spite of the numerous recent papers introducing new species from that region. Gofas, Pinto Afonso & Brandao (1986) as well as Rolán & Ryall (1999) show lists containing a lot of taxa mentioned as unidentified and possibly undescribed. Few species of Ovulidae are recorded from Angolese waters. Bettencourt (1975) mentions *Simnia spelta* (Linnaeus, 1758) and Oliveira *et al.* (1975) *Ovula nicaeensis* Risso, 1826. Gofas *et al.* (1986) state the presence of at least five unidentified species simply and solely within the genus *Neosimnia* whereas Rolán & Ryall (1999) recognise two species, *Delonovolva senegalensis* (Schilder, 1931) and *Cymbovula bebae* Fernandes & Rolán, 1996. Furthermore, Rolán & Ryall (1999) mention *Neosimnia* sp. and *Phenacovolva* sp. as waiting for identification. We were lucky to obtain two specimens of an unidentified species in exchange from Luis Francisco Coelho in 1975. Later on these shells were described and figured as *Phenacovolva* sp. indet. A (Liltved, 1989), based upon material from S. Gofas. It concerned three specimens, one juvenile and two adults. All these shells came from the same area, Luanda Island, Angola.

Type material:

Holotype: Luanda Island, Angola. Dredged by fishermen on *Gorgonia* sp., at a depth of 50 m. 1974. 11.42 mm (RBINS).

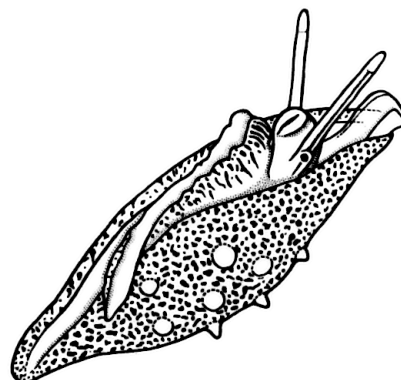
Paratype: Luanda Island, Angola. Dredged by fishermen on *Gorgonia* sp., at a depth of 50 m. 1974. 13.06 mm (FN).

Description:

Phenacovolva patriciae sp. nov. (Pl. I, figs 1-4)

The shell is broadly ovate, spindle-shaped. The posterior terminal is rounded apically and slightly longer than the obliquely angled anterior terminal. Extreme fine, oblique, concentric striae are restricted to the apices of each terminal, whereas the remainder of the transparent dorsum is smooth and glossy. The rounded rod-like labrum is of even width, slightly tapers at the extremities, and flares anteriorly. Terminals attenuated and rather narrow. Base glossy and bulbously ovate. The columellar peristome is slightly thickened, especially anteriorly, and bears a single cord-like funicular pleat. The body whorl is translucent from off-white to cream-rose, and its labrum is opaque off-white to a light café-au-lait.

Living animal: According to W.R. Liltved (1989) and S. Gofas (personal communications to Liltved), the mantle of the animal is densely marked with small and large unpigmented conical papillae arising from surrounding unpigmented circles interrupted by closely-spaced wine-red and violet–brown spots (see the text-figure below from Liltved (1989) and Plate I, Figs 1-2). The siphon appears to be lilac with a darker apical band. A fine violet line on the outer side of each slender cephalic tentacle crosses the eye and terminates several millimetres beneath its rounded apex. The oral disc of the bulbous proboscis is encircled by purple pigment. Both sides of the slender undulated foot are provided with red lines, dashes and dots.



Measurements: From 9 to 13 mm in length.

Derivation of name: The species name '*patriciae*' refers to my youngest daughter, Patricia, who spent so many moments of intensive collecting shells in different countries (Egypt, France, New Zealand and South Africa).

Habitat: In muddy sand at a depth of 40-70 m.

Locus typicus: Luanda Island, Angola. It lives on a thread-like gorgonian, *Leptogorgia rioudouroi* (Styasny, 1937), at a depth of 40-60 m.

Geographic range: Only known from Ilha de Luanda area, Luanda Province, Angola, Atlantic Ocean.

Discussion:

This is the first record of a *Phenacovolva* Iredale, 1939 from the coasts of West Africa.

It is not easy to compare *Phenacovolva patriciae* with any other *Phenacovolva* species, due to the lack of unique conchological characteristics.

Following is a short comparison between this new species and other Ovulidae-species from the Indian and Pacific Ocean also occurring in South African waters.

***Phenacovolva weaveri* Cate, 1973**

(Plate II, Figs 5-6).

Known from Japan, Hawaii, the Philippines and South Africa (Cate, 1973; Liltved, W.R., 1989).

This species is slenderer and larger than *P. patriciae* and its aperture is expanded anteriorly. A lighter stain, flanked on either side by a darker brown or purple blotch, interrupts the white or lilac ground colour of the body whorl medially. A bright orange line encircles the shell at the side margins.

***Phenacovolva gracilis* (A. Adams & Reeve, 1848)**

(Plate II, Figs 7-8).

Known from Japan, the Philippines and Borneo, Persian Gulf (Cate, 1973).

This species has the same lateral brownish markings as *P. weaveri*, but the shell is still larger and slenderer. *P. weaveri* is more roundly and bulbously inflated dorsally and on the base. Both species can be differentiated from *P. patriciae* at a glance.

***Phenacovolva hirasei* (Pilsbry, 1913)**

(Plate II, Figs 9-10).

Known from Japan, Taiwan, the Philippines and South Africa. (Cate, 1973; Liltved, W.R., 1989). Of all Ovulidae-species occurring in South African waters this is perhaps the one nearest to *P. patriciae*, because of its symmetrically

fusiform shell. However, the smooth glossy body whorl is very thin, often virtually transparent in adult shells. The larger body whorl is also creamish white, but the terminal extremities are lemon yellow.

***Phenacovolva rehderi* Cate, 1973**

(Plate II, Figs 11-12).

Known from Japan, the Philippines and South Africa (Cate, 1973; Liltved, W.R., 1989). This shell differs from *P. hirasei* by possessing longer terminals and being transversely striate overall. The margins of *P. hirasei* and *P. patriciae* are not delineated by a yellow line and the base is not thickened.

P. rehderi has a thin, translucent shell and the terminals are less recurved.

***Phenacovolva rosea* (A. Adams, 1854)**

(Plate II, Figs 13-14).

This species is widely distributed throughout the Indo-Pacific: Japan, Taiwan, the Philippines, the coast of the Chinese mainland, Papua New Guinea, NW Australia and South Africa (Cate, 1973; Liltved, W.R., 1989).

This is a totally different shell, compared to *P. patriciae*, though it is in fact a very variable species: shells may be light, slender and recurved or thickened with shorter terminals. The width of the aperture also varies considerably. Typical characteristics are a large, rather bulky shell, with a more open, curving aperture. The colour varies from pale rose, lavender, and various shades of orange to reddish brown with the right upper lip margin off-white.

***Phenacovolva brevirostris* (Schumacher, 1817)**

(Plate II, Figs 15-16).

Synonym: *Phenacovolva zuidafrikaana* (Cate, 1975) (= *Subsimnia zuidafrikaana* Cate, 1975).

(Plate II, Figs 17-18).

Known from Japan, coasts of the Chinese mainland, Taiwan, the Philippines, Hawaii, Cook Islands and South Africa (Cate, 1973; Liltved, W.R., 1989).

Similar to *P. fusula* Cate & Azuma, 1973 in general colour and form, but differing by being slightly less inflated than the latter, which possesses additional ill-defined lightly pigmented bands on either side of the medio-dorsal band, whereas *P. patriciae* has a milky white colour. Moreover, *P. brevirostris* has a much larger shell than the latter and has the typical, prominent, cord-like funicular single pleat.

Cate replaced the name *Subsimnia smithi* (Bartsch, 1915) with *S. zuidafrikaana*, but a comparative study of the radula by Liltved (1989) resulted in considering the latter as a synonym of *P. brevirostris*.

Specimens from South Africa only differ in being smaller than the Pacific representatives.

***Phenacovolva fusula* Cate & Azuma, 1973
(Plate II, Figs 19-20).**

Known from Japan and South Africa (Cate, 1973; Liltved, W.R., 1989). Shells of this species are less inflated than those of *P. brevirostris*. The latter has additional ill-defined pigmented bands

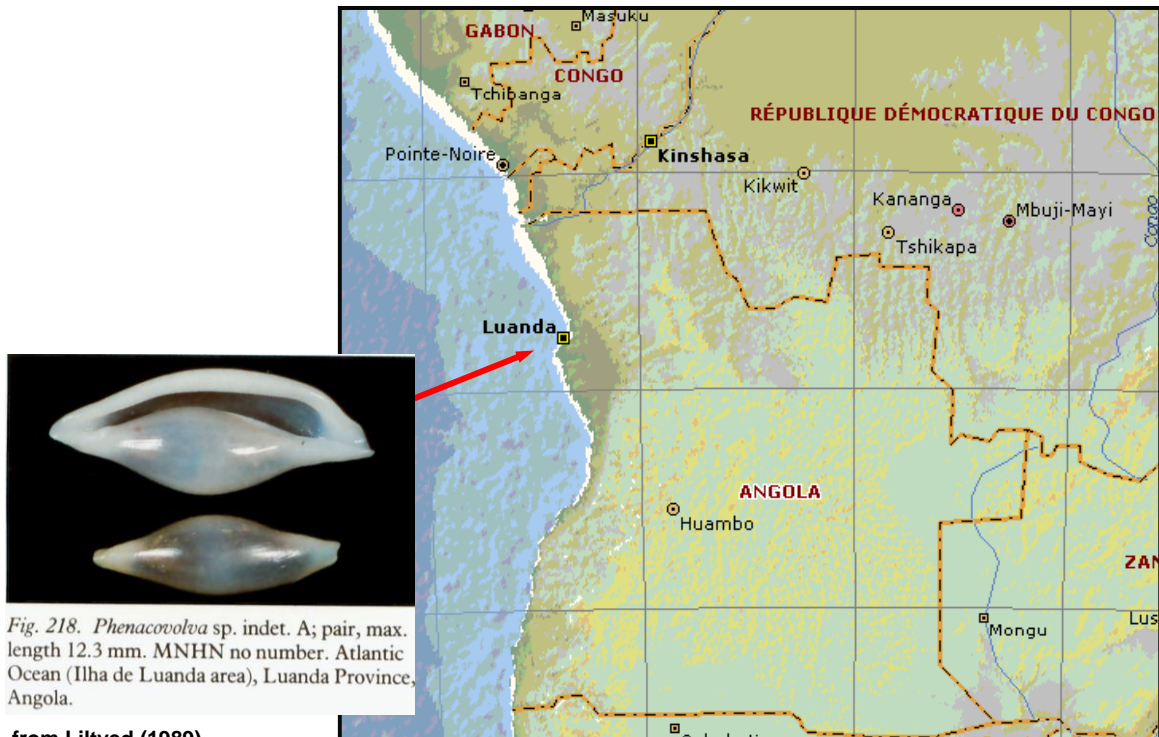
on either side of the medio-dorsal region. These characteristics allow us to differentiate both from the evenly creamy white coloured shell of *P. patriciae*.

Acknowledgements: I thank Johan Verstraeten (Oostende, Belgium) and David Monsecour (Aarschot, Belgium) for carefully perusing the English text.

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Distributional map:



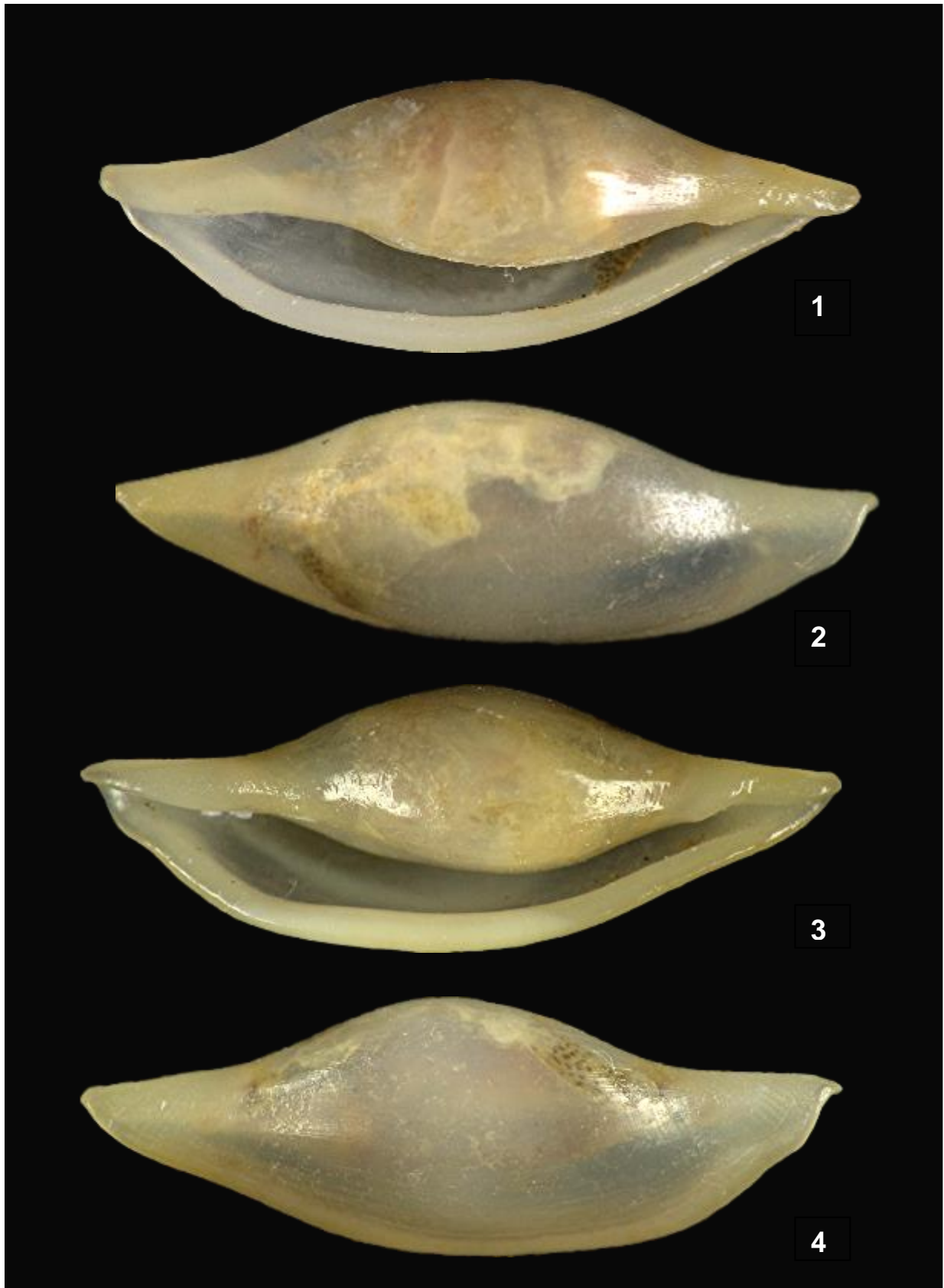


Plate I. Figs 1-4: *Phenacovolva patriciae*. Luanda Island, Angola. Dredged by fishermen; on *Gorgonia* sp. at a depth of 50 m. 1974; 1-2: 11.42 mm. Holotype (RBINS); 3-4: 13.06 mm. Paratype (FN).

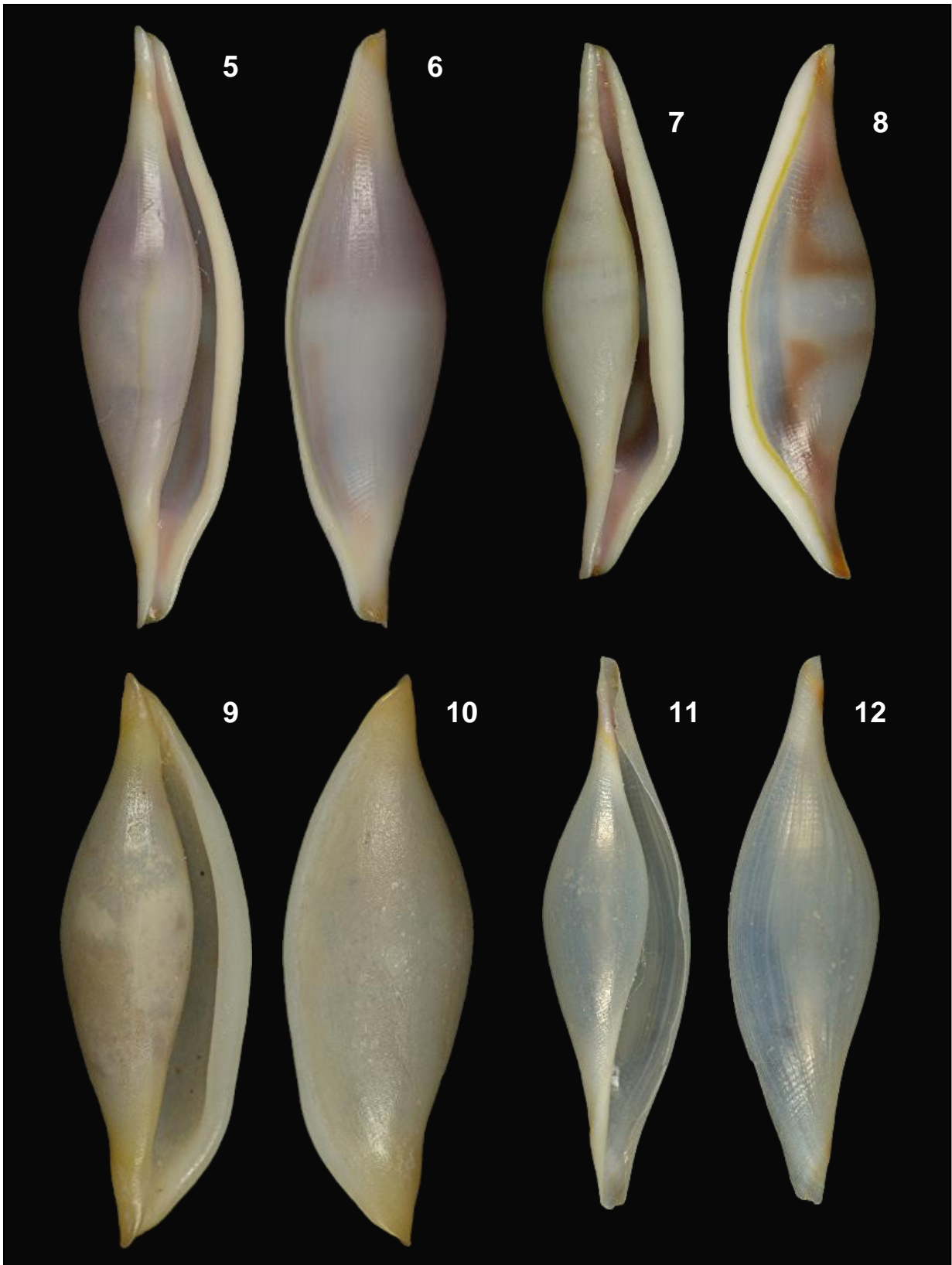


Plate II. Figs 5-6: *Phenacovolva weaveri* Cate, 1973. Wakayama Prefecture, Japan. Dredged by fishermen at a depth of 70 m. 24.75 mm. Figs 7-8: *Phenacovolva gracilis* (A. Adams & Reeve, 1848). Balicasag Island, Bohol, Philippines. In tangle net, at a depth of 180 m. November 1998. 17.13 mm. Figs 9-10: *Phenacovolva hirasei* (Pilsbry, 1913). SW Taiwan. Trawled by coral-fishermen at a depth of 183 m. 23.19 mm. Figs 11-12: *Phenacovolva rehderi* Cate, 1973. Balicasag Island, Bohol, Philippines. In tangle net, at a depth of 180 m. November 1998. 19.63 mm.



Plate III. Figs 13-14: *Phenacovolva rosea* (A. Adams, 1854). Mikawa, Aichi Prefecture, Japan. Trawled by fishermen at a depth of 35 m. May 1993. 28.09 mm. Figs 15-16: *Phenacovolva brevirostris* (Schumacher, 1817). Manila Bay, Philippines. 32.36 mm. Figs 17-18: *Phenacovolva zuidafrikaana* (Cate, 1975). Fullers Bay, Cape Province, South Africa. October 1996. 20.67 mm. Figs 19-20: *Phenacovolva fusula* Cate & Azuma, 1973. Nada-Cho, Wakayama Prefecture, Japan. Trawled by fishermen at a depth of 37 m. May 1993. 19.18 mm.

**A study on the true identity of
Clavatula martensi von Maltzan, 1883 (Mollusca: Gastropoda:
Clavatulidae) resulting in the description of a new species,
*Clavatula matthiasi***

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Keywords: GASTROPODA, CLAVATULIDAE, *Clavatula caerulea*, *Clavatula martensi*, *Clavatula matthiasi*, new species.

Abstract: The real status of *Clavatula caerulea* (Weinkauff, 1875) and *Clavatula martensi* von Maltzan, 1883 is established and differences between the two species are discussed. A new species *Clavatula matthiasi* from Senegal, showing some similarity with *C. martensi*, is introduced.

Abbreviations:

FN: Private collection of Frank Nolf.

RBINS: Royal Belgian Institute for Natural Sciences.

ZMC: Universitets Zoologisk Museum, Copenhagen, Denmark.

Material:

The shells, investigated in this paper, labelled as '*Clavatula martensi* von Maltzan, 1883' and dredged by the "Atlantide" Expedition, were kindly offered on loan by the ZMC. Knudsen (1952) mentioned five specimens, of which four items were made available for study. These shells were compared with a sample of two shells dredged at a depth of 25 m off Dakar (Senegal). The latter proved to belong to an undescribed species.

Discussion:

***Clavatula caerulea* (Weinkauff, 1875)**

(Plate I, Figs 1-7; Plate II, Figs 8-13)

Original description by Weinkauff (1875):

'*Testa anguste-fusiformis, granuloso-carinata, caerulea carina albo-purpureoque articulata; spira turrita, acuminata, anfractibus 11 acute carinatis, carina granulosa granis crassis, suturis marginatis, marginibus granulosis, apex acutus, ecarinatus, glaber anfr. 3. Apertura angusta, intus albida, cauda breviuscula, labrum acutum, mediocriter curvatum, superne in aream infrasuturalem profunde sinuosum.*

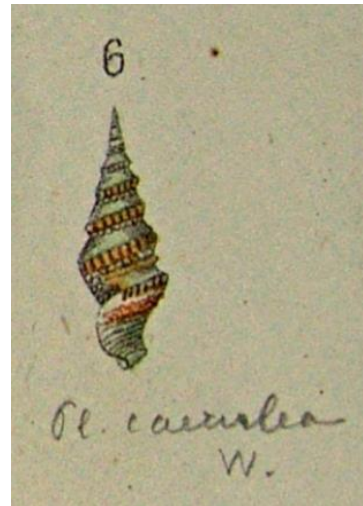
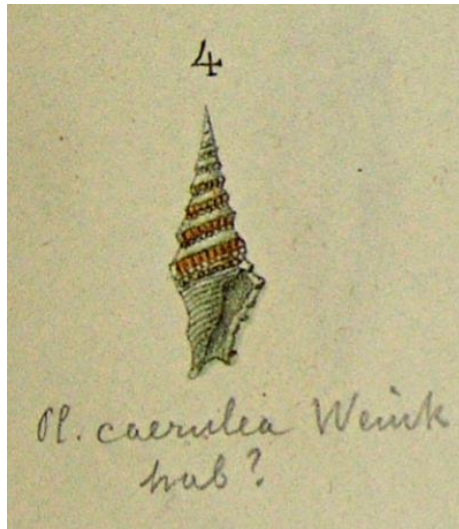
Long. 20 Mm., diam. maj. 6 Mm. Apert. c. c. 8 Mm.'

The shell is narrow and elegant with a turreted spire containing 11 incised whorls. The

protoconch consists of 3.5 smooth whorls and is milky white. The suture is relatively deep but set with a series of very small nodules. Below there is a second row of larger, creamy brown knobs followed by a shallow excavation. The carina of the last whorl is covered with thick and white ovoid nodules (17-18 on the last whorl). The growth lines are very conspicuous, particularly across the subsutural band. The main part of the last whorl, below the carina, is covered with about 7 rows of tiny wax-white nodules connected with faint vertical ribs. Aperture rather broad. Columella slightly convex. Sinus deep, situated at some distance from the suture. Outer lip nearly straight, or slightly concave in some shells. Siphonal canal short and broad, somewhat reflected.

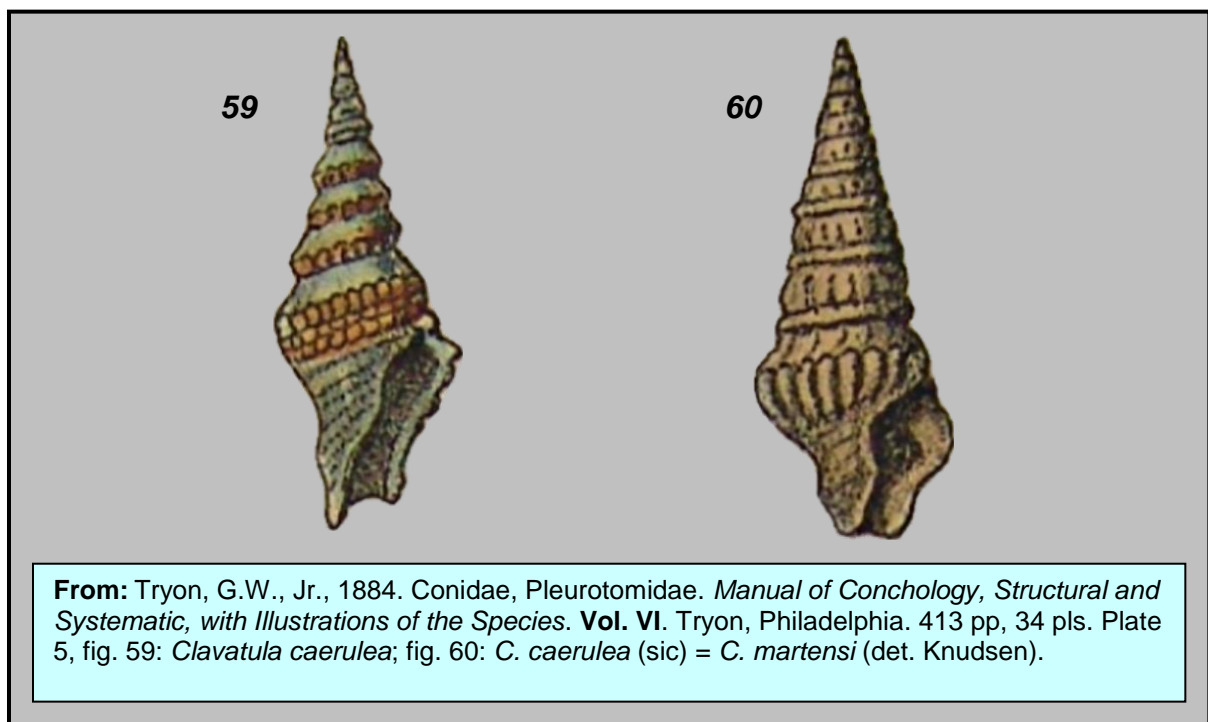
Colour: Adult shell light brown to lilac brown with two broad whitish bands on each whorl, one in the subsutural zone and the second across the nodules of the periphery. Between the latter dark brown spots are present.

C. caerulea was originally described as *Pleurotoma caerulea* by Weinkauff (1875) and illustrated by two similar specimens on plate 7, figs 4 and 6. Later on he misspelled it as *C. coerulea* (1877). This name was erroneously used by Nicklès (1947, 1950), Knudsen (1952) and Bernard (1984). Von Martens (1881-1885) redescribed that species because the type locality was unknown to Weinkauff and also because of the poor quality of the original figures. Moreover, he states the subgenus '*Surgula*', as used by Weinkauff had to be changed into the correct name '*Surcula*'. Unfortunately von Martens (1881-1885) figured another species different from *C. caerulea* on plate 21, figs 5-9 resulting in a useless and confusing description. This mistake was remarked by von Maltzan (1883) and he proposed the name *Clavatula martensi* for the species identical to the excellent figure accompanying the description of von Martens, concluding *C. martensi* is a species which is quite different from *C. caerulea* Weinkauff. Tryon (1884) figured two specimens of *C. caerulea* (plate 5, figs 59 and 60), one of them (fig. 60) obviously being *C. martensi*.



From: Weinkauff, H.C, 1877. Catalog der Arten des Genus *Pleurotoma* s. st. *Jahrbücher der Deutschen Malakozologischen Gesellschaft*, 4, 1-10. Plate 7, figs 4 and 6: *Clavatula caerulea*.

Text figure 1



Text figure 2

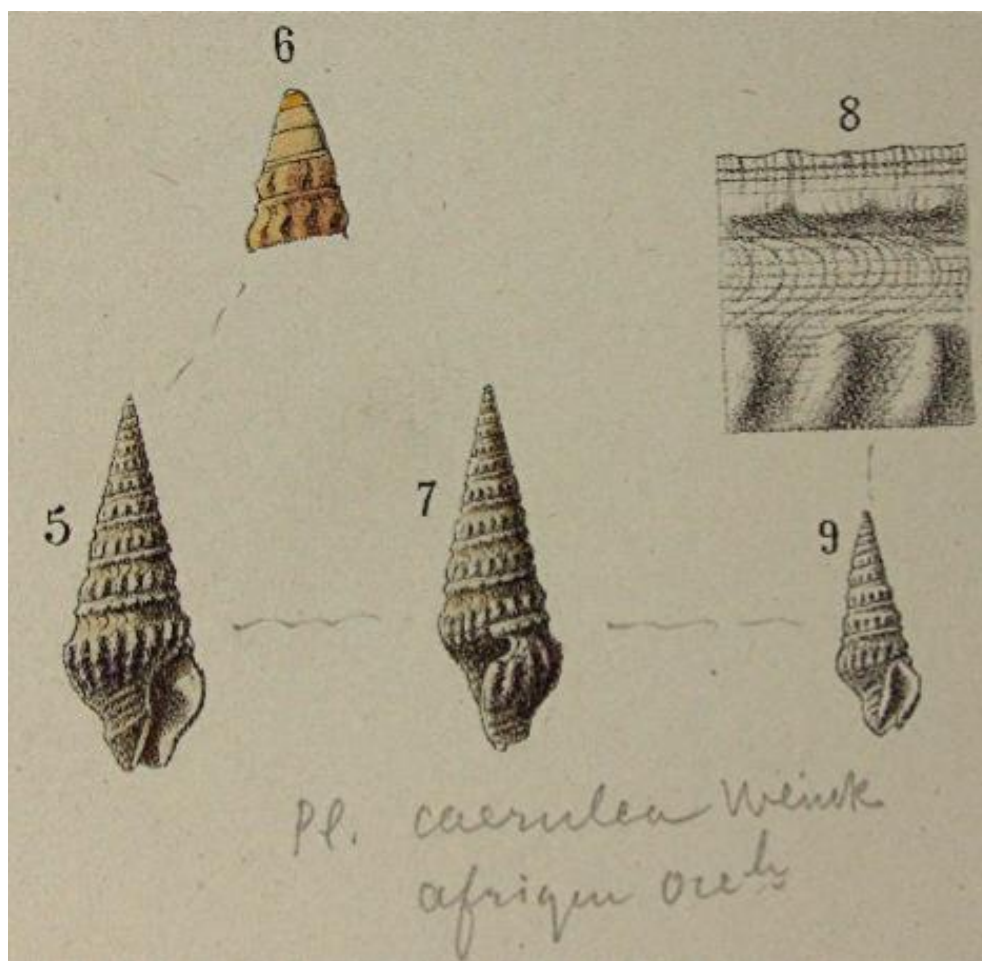
***Clavatula martensi* von Maltzan, 1883**
(Plate III, Figs 14-17; Plate IV, Figs 18-21)

Following is the original description of *Clavatula martensi* by von Maltzan (1883):

'*T. turrata*, gracillima, brevicauda, albida, fasciis duabus caerulescenti-corneis ornata, altera zonam sinuatam mediam inter carinam et suturam sitam exhibente; altera latissima inframediana, cinguliformi tuberculorum

acutorum rotundatorum insigni. Anfr. 11 superne concaviusculi, sutura distincte nodulifera; ultimus basi attenuatus, seriebus 4 granulorum cinctus. Apert. subelongata, sinu distincto, rotundato, inter suturam et cingulum tuberculiferum intermedio, intus alba et late fusco-taeniata. Canalis breviusculus, apertus, ab apertura satis distinctus.

Alt. 17, diam. 6, alt. apert. incl. canali 7 mm.'



Text figure 3

From: Martens, E. von, 1881-85. *Conchologische Mittheilungen als Fortsetzung der Novitates Conchologicae*. Vol. 2. Theodor Fischer, Cassel. Plate 21, figs 5-9.

Turreted shell with a short but broad siphonal canal. About 12 whorls, the first two rather smooth, the next broader. The conspicuous suture is supported by a spiral ridge consisting of a series of rounded, merging knobs. The subsutural excavation below is rather broad and deep. About 5 very faint spiral lines intersect it. The body whorl has about 19-20 regular protruding ribs on its lower part, obliquely placed towards the longitudinal axis of the shell. At the periphery elongated oblique knobs are created at the intersection with the spiral ribs. The lower part of the last whorl also shows a fine spiral sculpture, consisting of 4-6 rows of smaller nodules. Numerous close-set irregular growth lines are present. Aperture rather small. Columella reflected, almost straight. Sinus rather deep and broad.

Colour: Live caught shells are probably bluish grey (von Martens, 1881-1885) with a broad brown band on the lower part of the whorls. The subsutural excavation is greyish to light brown.

According to von Martens (1881-1885), *C. martensi* occurs in Nigeria and Gabon.

In subsequent papers and books *C. martensi* was no longer figured, probably because of the confusion with *C. caerulea* and the similarity with *C. pyramidata* (Kiener, 1840). Another reason certainly is the rarity of that species and the fact that so few shells are gathered from fishermen operating in the Gulf of Guinea. We had to wait till the publication of the results of the "Atlantide" Expedition (Knudsen, 1952) to again get acquainted with this mysterious species. Knudsen (1952) described the specimens dredged by the "Atlantide" and figured one specimen in black and white. Recently Ardovini and Cossignani (2004) illustrated a species in colour under the name *C. martensi* but unfortunately it concerned another turrid species. The latter is probably an undescribed species.

Thanks to the kind cooperation with the ZMC, samples off *Clavatula martensi*, trawled by the "Atlantide", were received on loan.

From the five shells mentioned by Knudsen (1952), four were studied:

- Station 109: Dredged in mud at a depth of 15 m, off Doves Island, Niger delta, Nigeria. 21 February 1946. 2 shells: 16.67 mm and 16.83 mm;
- Station 111: Dredged in mud at a depth of 20 m, off Bonny-river, Niger Delta, Nigeria. 2 February 1946. 2 shells (from a sample of 3): 11.80 mm and 13.03 mm.

The two shells from Station 109 are rather corroded and in both specimens the protoconch and the uppermost whorls of the adult shell are broken off. However, the lower part of the shells is relatively well preserved and the specimens fairly well look like the original description and figures by von Martens.

Figures of *C. petzyae* Boyer & Ryall, 2006 (Plate IV, Figs 22-23) are added to clearly display the differences between these two related species. Moreover, this study has resulted in the discovery of an undescribed species, showing a certain similarity to *C. martensi*.

Clavatula matthiasi sp. nov.
(Plate V, Figs 24-28)

Type material:

Holotype: Gorée Island, Dakar, Senegal. Dredged at a depth of 23 m. 18.67 mm. RBINS.

Paratype: Gorée Island, Dakar, Senegal. Dredged at a depth of 23 m. 18.75 mm. FN.

Description:

Turreted shell with about 10-12 whorls, and a short but rather narrow siphonal canal. The protoconch consists of 2.5 whorls. Below the clear suture runs a spiral-corrugating ridge, followed by a subsutural excavation which is rather narrow and deep. About 3-5 very faint spiral lines intersect the latter. Below the excavation, the whorls are ornamented with regular obliquely set ridges, reaching a number

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of about 18-21 on the lower part. They are crossed by parallel spiral ribs (10-11 on the body whorl and some 5 more on the canal), making tiny nodules on the intersections. Numerous close-set irregular growth lines are present. The aperture is rather small, and the columella is only slightly reflected. The sinus is shallow and small. Colour: Uniformly brown all over the whorls. The inside of the aperture is bluish grey to light brown and the spiral ribs are showing through at the edge of the mouth.

Size: About 20 mm.

The animal has not been studied.

Etymology: The name '*matthiasi*' refers to '*Matthias*', the youngest of my grandchildren.

Habitat: Probably living at a depth of 20-25 m. Other conditions are unknown.

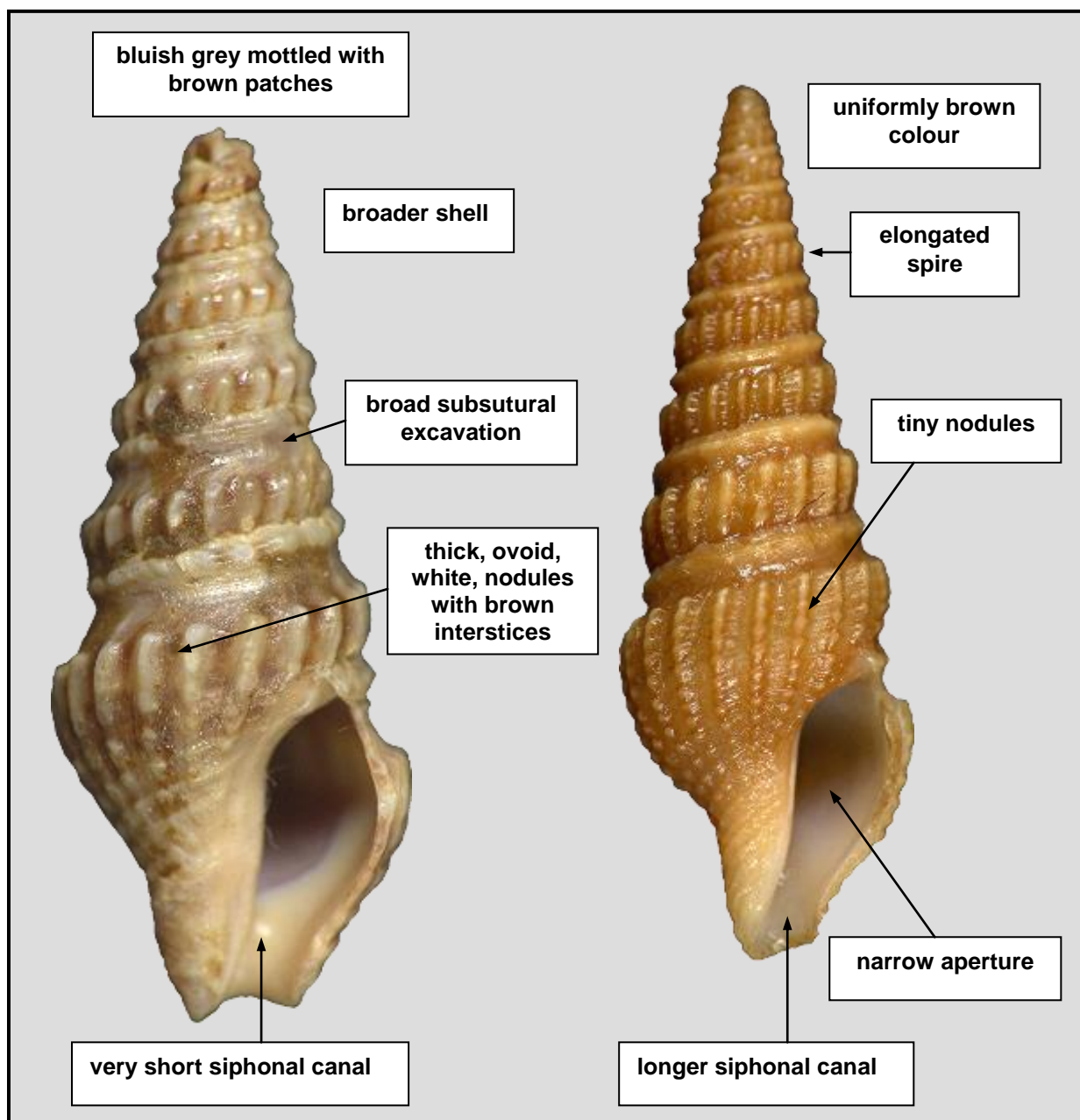
Locus typicus: Gorée Island, Dakar, Senegal.

Geographic range: At present only known from the type locality (Senegal).

Remarks: Among all other West African turrids *C. matthiasi* can only be compared with *C. martensi*. However, its slender shell, the uniformly brown colour and the longer siphonal canal can easily differentiate it. *C. martensi* has a broader shell with thicker oblique ribs and larger nodules, especially on the first row of the last whorl below a broader subsutural band. *C. martensi* is bluish grey and has cream-white nodules alternating with large brown dots on the oblique ribs.

Acknowledgements: I am very grateful to the staff of the ZMC for the loan of samples, dredged by the "Atlantide" Expedition, particularly to Mrs. Annie Lone Vedelsby. As usual Johan Verstraeten was a kind co-operator as a revisor of the text and David Monsecour was a careful controller of the English translation.

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Text figure 4: Comparison between *C. martensi* and *C. matthiasi*



Plate I. Figs 1-7: *Clavatula caerulea* (Weinkauff, 1875). Dredged off Pointe Sarène, Senegal. May 1977. FN; 1-2: 14.98 mm; 3: 18.90 mm; 4: protoconch; 5-6: 19.08 mm; 7: 21.76 mm.



Plate II. Figs 8-13: *Clavatula caerulea* (Weinkauff, 1875); 8-9: Trawled by fishermen at a depth of 50 m, 40 km south off Luanda, Angola. 1993. FN. 19.80 mm; 10-13: Gambia. Dredged at a depth of 7 m. FN; 10-11: 19.03 mm; 12-13: 16.74 mm.

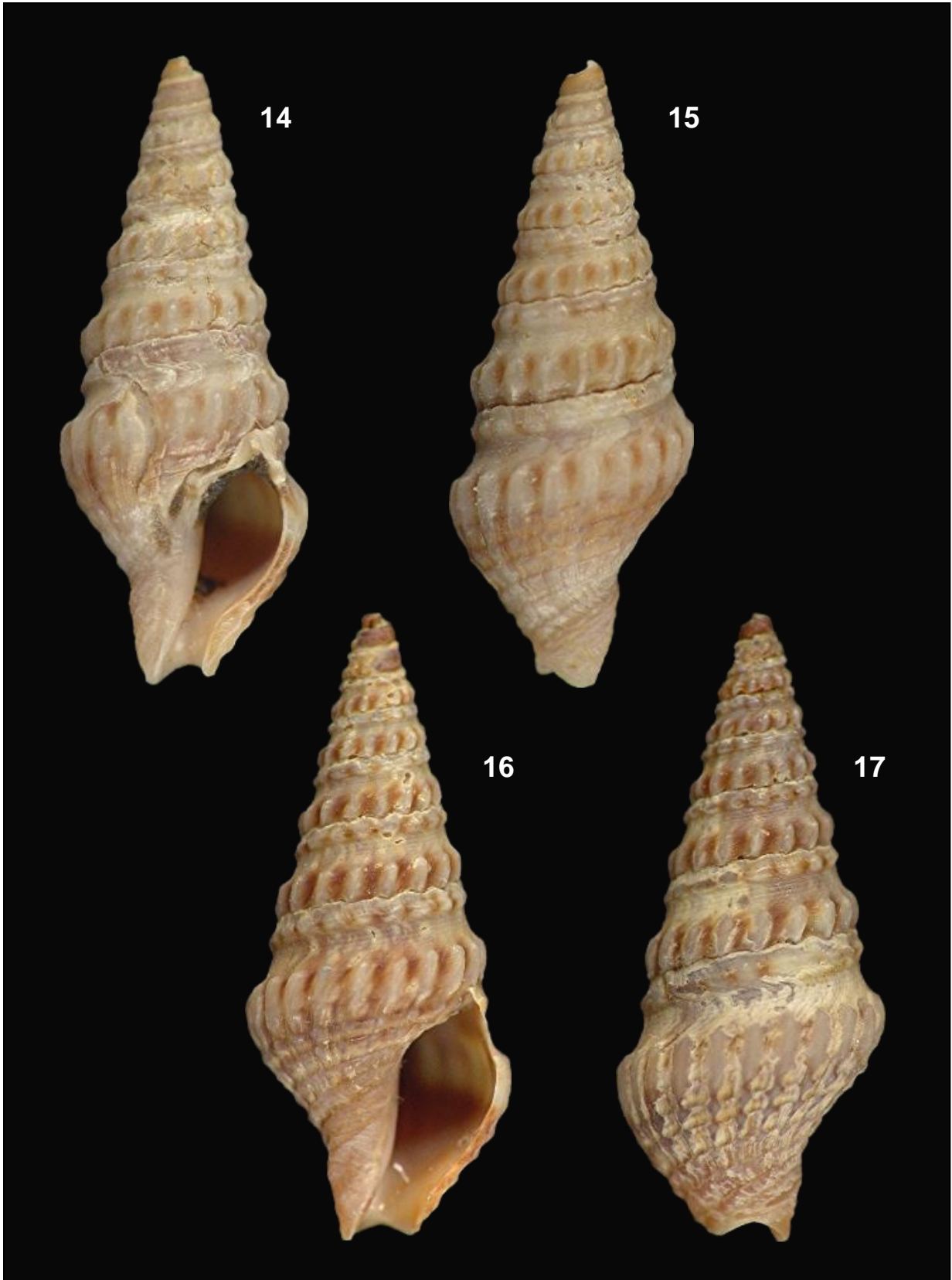


Plate III. Figs 14-17: *Clavatula martensi* von Maltzan, 1883. "Atlantide" Expedition. Station 111: Dredged in mud, off Bonny-river at a depth of 20 m, Niger Delta, Nigeria. 2 February 1946. ZMC; 14-15: 11.80 mm; 16-17: 13.03 mm.

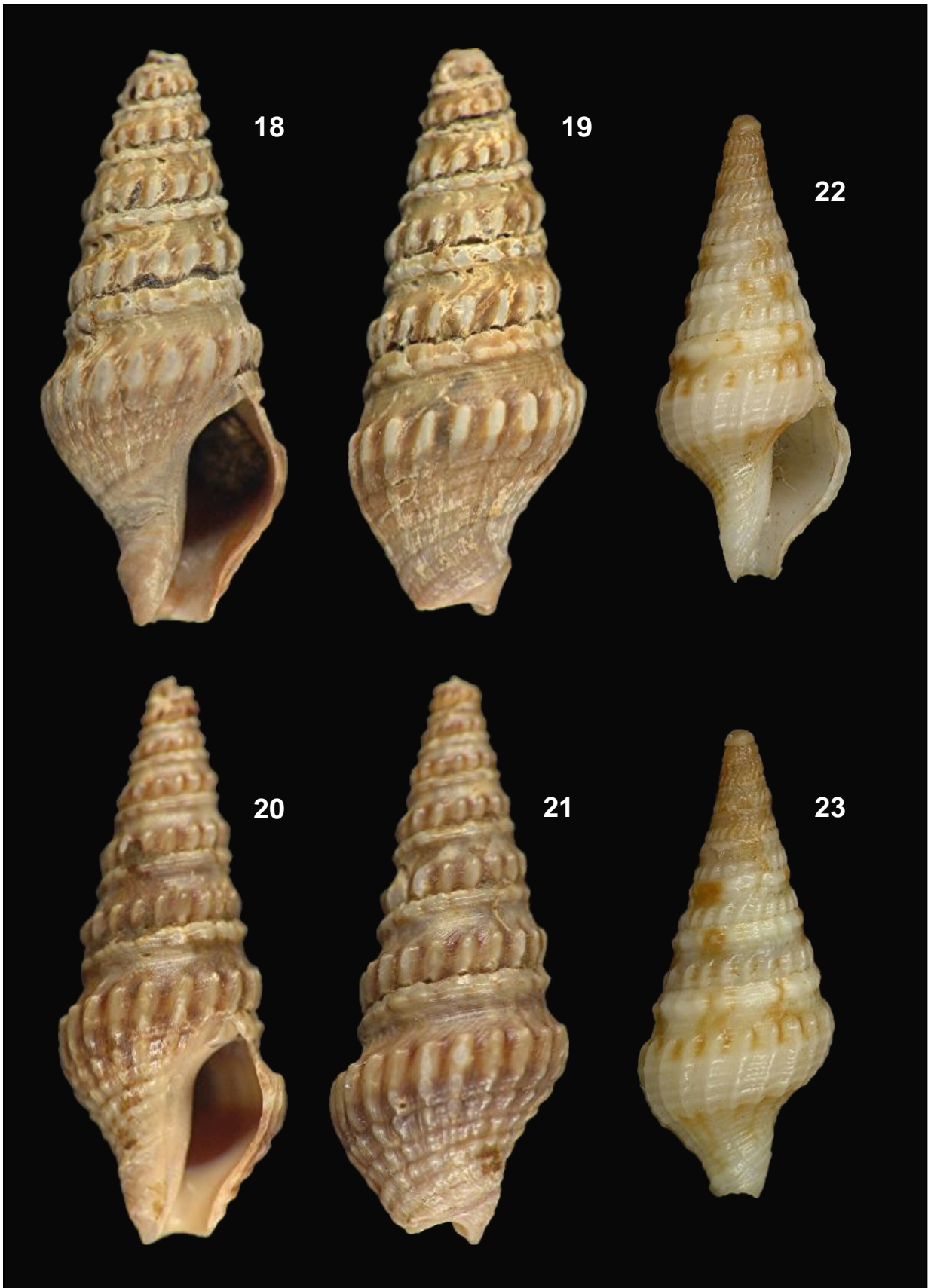


Plate IV. Figs 18-21: *Clavatula martensi* von Maltzan, 1883. "Atlantide" Expedition. Station 109, off Doves Island, Niger Delta, Nigeria. Dredged in mud at a depth of 15 m. 21 February 1946. ZMC; 18-19: 16.83 mm; 20-21: 16.67 mm. Figs 22-23: *Clavatula petzyae* Boyer & Ryall, 2006. Off Ajua Bay, Ghana. Dived in fine sand under rock at a depth of 10 m. 10.98 mm. FN.

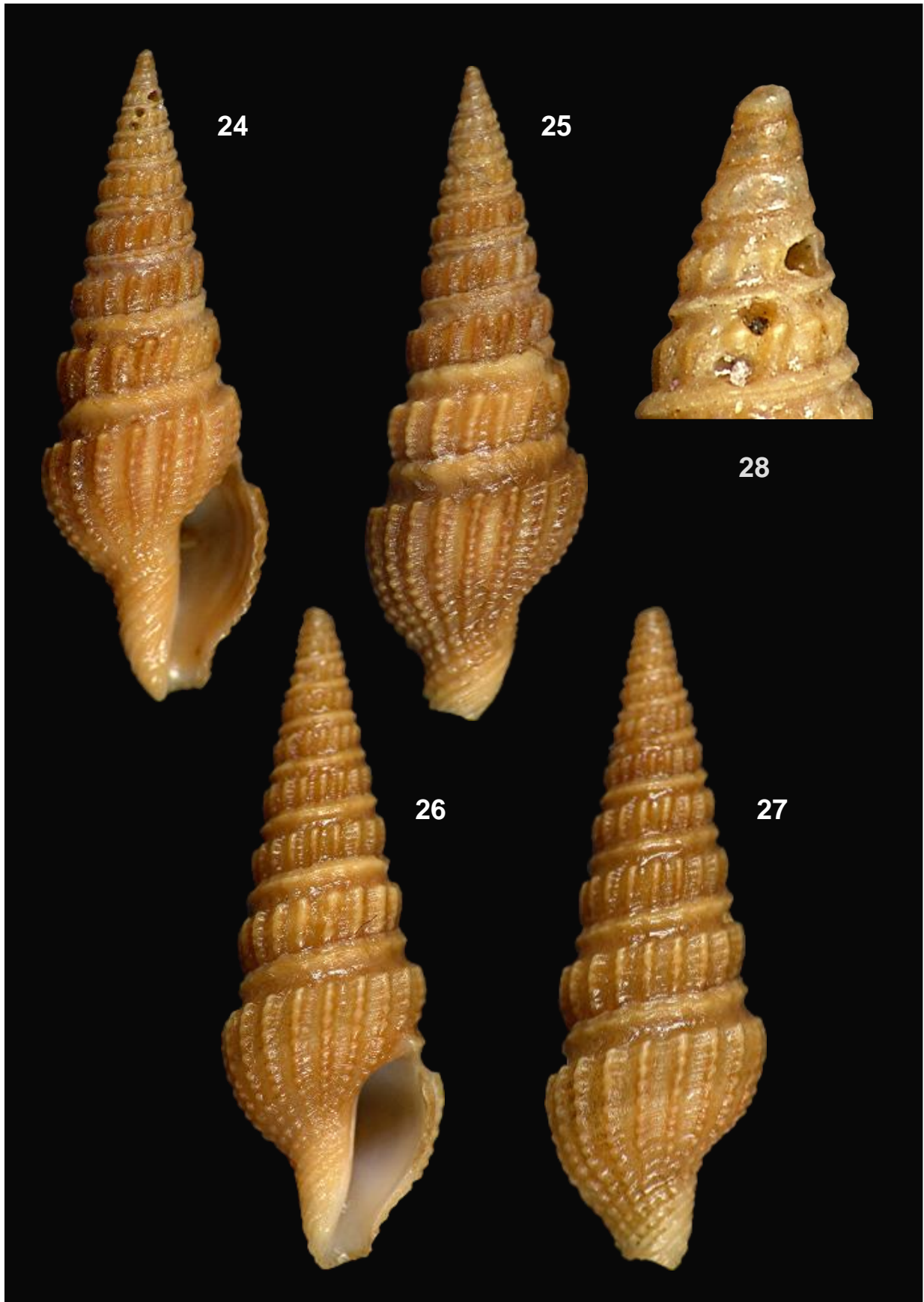


Plate V. Figs 24-28: *Clavatula matthiasi*. Dredged at a depth of 23 m, off Gorée Island, Dakar, Senegal; 24-25: holotype (RBINS) - 18.67 mm; 26-27: paratype (FN) - 18.75 mm; 28: protoconch.

Two new turrid species from Congo-Brazzaville: *Clavatula hattenbergeri* and *Clavatula congoensis* (Mollusca: Gastropoda: Clavatulidae)

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Keywords: GASTROPODA, CLAVATULIDAE, *Clavatula hattenbergeri*, *Clavatula congoensis*, new species, Congo-Brazzaville.

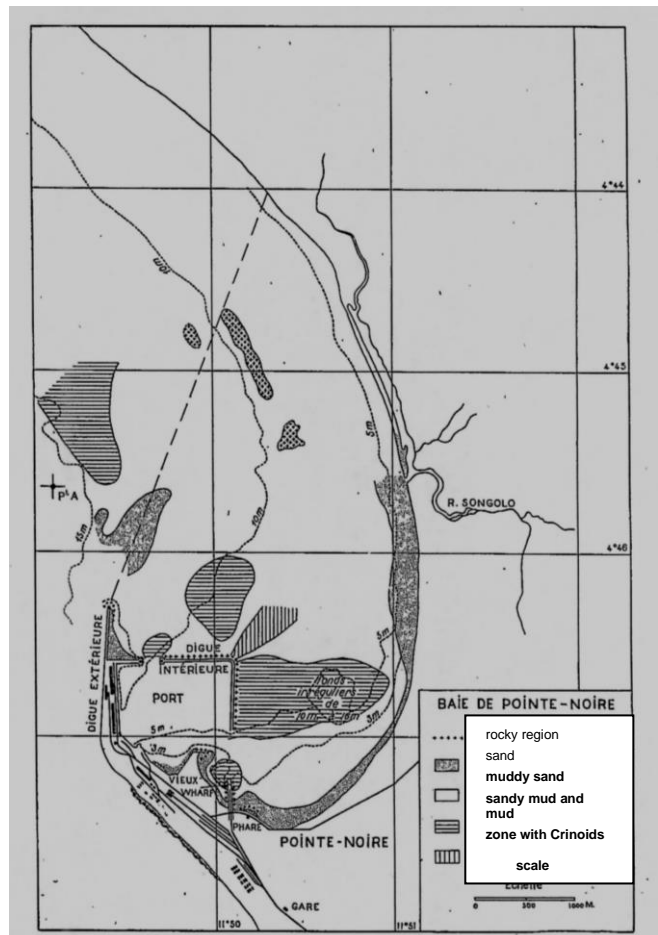
Abstract: Two new turrid species from Congo-Brazzaville are described and figured. The samples were collected in muddy sand at Pointe-Noire in the mouth of the Songolo-river. These animals seem to be endemic for that locality as no other similar shells are recorded from other West African areas.

Abbreviations:

FN: Private collection of Frank Nolf.
JV: Private collection of Johan Verstraeten.
PHAT: Private collection of Paul-Henri Hattenberger.
PR: Private collection of Peter Ryall.
RBINS: Royal Belgian Institute for Natural Sciences.

Introduction: Several dredges were done under the leadership of Jean Collignon (1960) in the Bay of Pointe-Noire (Congo-Brazzaville) during the period 1955-1960. The type of the different zones was characterised by a survey of the Invertebrata (Echinodermata, Mollusca) and especially by a profound study of Gastropoda. More than 150 different species were identified living in an area of about 20 square kilometres, limited in the east and the south by the coast of the mainland and the harbour of Pointe-Noire, and in the north by the rocky bank of the Songolo-river. The swell from the Atlantic Ocean can only penetrate into the bay from north-western and western direction. However only 6% of the annual winds comes from these sectors of which 2.1% exclusively from the NW. So, the southern side of the bay is always very quiet, inducing the formation of important amounts of mud. The intercoastal zone is narrow from a few metres up to maximum 30 m wide, due to the weak amplitude of tides in this region (1.70 m). In the southern part of the bay depth is limited to 6 m, except in the harbour itself, where depths fluctuate between 8 and 10 m. North of the

harbour depths vary from 12 to 15 m. A few rocky areas – a number of five in water of 8 m deep in the north of the mouth of the Songolo-river - disturb the regular outlook of the muddy bottom. The bottom of the bay generally consists of sedimentary substances. The beach is sandy passing to a rather sandy mud all over its length, depending on the kind of the area. The rocky parts are very limited and are natural in the extreme south of the harbour at the lighthouse or artificial as at the harbour establishments.



Map of the Bay of Pointe-Noire (from: Collignon, 1960)

The French shell collector Paul-Henri Hattenberger gathered a lot of turrid shells by snorkelling at Pointe-Noire (Congo-Brazzaville) in the mouth of the Songolo-river during the period 1990-1995. Some shells were found attached to a piece of wood washed ashore, but most of them were caught dead and housed by hermit crabs, crawling in mud. At first glance they appeared to belong to only one species as colour and structure were hidden by a black substance. After cleaning it was clear that at least two new species were present, described and figured in this paper.

Clavatula hattenbergeri

(Plate I, Figs 1-6; Plate II, Figs 7-12; Plate III, Figs 13-19)

Type material:

Holotype: Koraf Beach, Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville. Collected at a depth of 4-6 m. 18.71 mm. RBINS.

Paratypes : All from Koraf Beach, Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville. Dredged/dived at a depth of 4-6 m:

1. 17.85 mm (FN).
2. 20.02 mm (PHAT).
3. 21.96 mm (PHAT).
4. 24.26 mm (JV).
5. 24.34 mm (FN).
6. 25.27 mm (JV).
7. 20.4 mm (PR).
8. 18.5 mm (PR).

Description: Shell with 10-11 glossy whorls. The protoconch consists of 2.5 nearly smooth whorls. The body whorl occupies more than half of the shell's length and its profile shows a rather straight sloping outline. The suture is distinct and slightly undulating, sustained below by a rather angular ridge and a shallow subsutural excavation. Oblique ribs run over the lower part of the whorls, extending just above the lower suture. On the last whorl their number is 17-23. On the lower part of the body whorl and the siphonal canal about 15-17 spiral ridges run over the surface of the shell, the uppermost 5-8 of these are more distinct. The intersection of the oblique ridges and the spiral ribs creates tiny nodules. On the upper part of the whorl only traces of spiral lines can be seen, the subsutural area being rather glossy.

Colouration: Greyish white dispersed with irregular cream-white and brown blotches. The subsutural area is darker and blotched with brown dots or flammules. The carina of the body whorl is milky white and below a grey band encircles the last whorl. The series of small

granules on the last whorl is greyish white. The inside of the aperture is dark bluish brown.

Size: 18-26 mm.

No animals were detected for study.

Etymology: Named after the French shell collector Paul-Henri Hattenberger (St. Jean de Blaignac, France), who submitted the specimens for identification to us.

Habitat: Probably living in sandy mud in the littoral and sublittoral zone from 2 to 10 m.

Locus typicus: Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville.

Geographic range: At present only known from the type locality (Congo-Brazzaville).

Discussion: This new species is quite unique and very special compared to the other CLAVATULIDAE in the West African area. It has some very special characteristics, differentiating it at a glance from similar *Clavatula*-species. First of all, the straighter outline of the last whorl compared to the generally more curved shape in other species. Second, the glossy shell surface. Other characteristics are the angular ridge below the suture versus the rounded cord in *C. congoensis* Nolf & Verstraeten, 2007 (see this paper) and the weaker oblique ribs compared to both *C. congoensis* and *C. lelieuri* (Recluz, 1851) (Plate V, Figs 37-40). The latter has a larger shell (25-40 mm) compared to *C. hattenbergeri* (17-26 mm). The subsutural area is more excavated in *C. lelieuri*, which results in a more conspicuous carina. The colouration of both species is different. *C. hattenbergeri* is darker bluish grey irregularly mottled with brown blotches, streaks or flammules, whereas *C. lelieuri* has a light bluish grey or light brown background decorated with small brown dots between the white knobs on the carina.

Clavatula congoensis

(Plate IV, Figs 20-25; Plate V, Figs 26-31; Plate VI, Figs 32-36)

Type material:

Holotype: Koraf Beach, Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville. Dredged at a depth of 4-6 m. 15.34 mm. RBINS.

Paratypes : All from Koraf Beach, Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville. Collected at a depth of 4-6 m:

1. 14.56 mm (PHAT).
2. 15.02 mm (FN).
3. 15.95 mm (PHAT).

4. 19.52 mm (JV).
5. 21.35 mm (PHAT).
6. 23.09 mm (PHAT).
7. 23.11 mm (FN).
8. 25.78 mm (JV).

Description: Shell with 11 whorls in the largest specimens. The protoconch consists of three smooth whorls. The suture is undulate. Flexuous ribs, whose upper parts gradually disappear, being developed as rounded, nodulose ribs on the lower part of the whorl run all over the whorls. These ribs are slightly oblique and extend downwards to just above the lower suture. Their number is 17-20 on the last whorl. The growth lines are irregular and distinct. The spiral structure at first consists of a distinct undulating cord below the suture, followed by a shallow excavation. On the lower part of the body whorl and the siphonal canal about 15-18 spiral ridges run over the surface of the shell, the uppermost 4-5 of these being prominent and coarse. On the upper part of the whorl a series of very fine threads can be seen by magnification and on the lower part of the whorl they are only distinct between the ribs. Numerous undulating lines are also present on the lower part of the body whorl and on the siphon.

Colouration: Orange-brown throughout. The area below the suture, including the spiral cord and the upper part of the excavation, is of a dark bluish grey, irregularly blotched with brown dots. The lower part of the subsutural zone and the protruding shoulder are cream coloured with regularly spaced light brown dots just above the angular ribs. The lowest series of distinct nodules in the middle of the body whorl is creamy white. The inside of the aperture is purplish brown.

Size: 14-26 mm.

As hermit crabs inhabited the specimens, no animals were available for study.

Etymology: The name '*congoensis*' refers to the type locality (Congo-Brazzaville) of this new species.

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- Knudsen, J., 1956. Marine Prosobranchs of Tropical West Africa (Stenoglossa). In: *Atlantide Report, n°4, Scientific Results of the Danish Expedition to the Coasts of Tropical West Africa 1945-1946*, Copenhagen, p. 7-110, pls I-IV.

Habitat: Probably living in sandy mud in the littoral and sublittoral zone from 2 to 10 m.

Locus typicus: Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville.

Geographic range: At present only known from the type locality (Congo-Brazzaville).

Discussion: *Clavatula congoensis* is relatively small (14-26 mm) and appears to be rather unique among the other West African representatives of the family CLAVATULIDAE. It can only be compared with *Clavatula lelieuri* (Recluz, 1851) (Plate VII, Figs 37-40), which has a larger turriculated shell (25-40 mm). The body whorl of the latter has a more excavated profile and a longer siphonal canal, giving the shell a more elegant appearance. The subsutural zone in *C. lelieuri* is also more excavated and it is often provided with brown oblique flammules. Anyway, the colouration of both species is different.

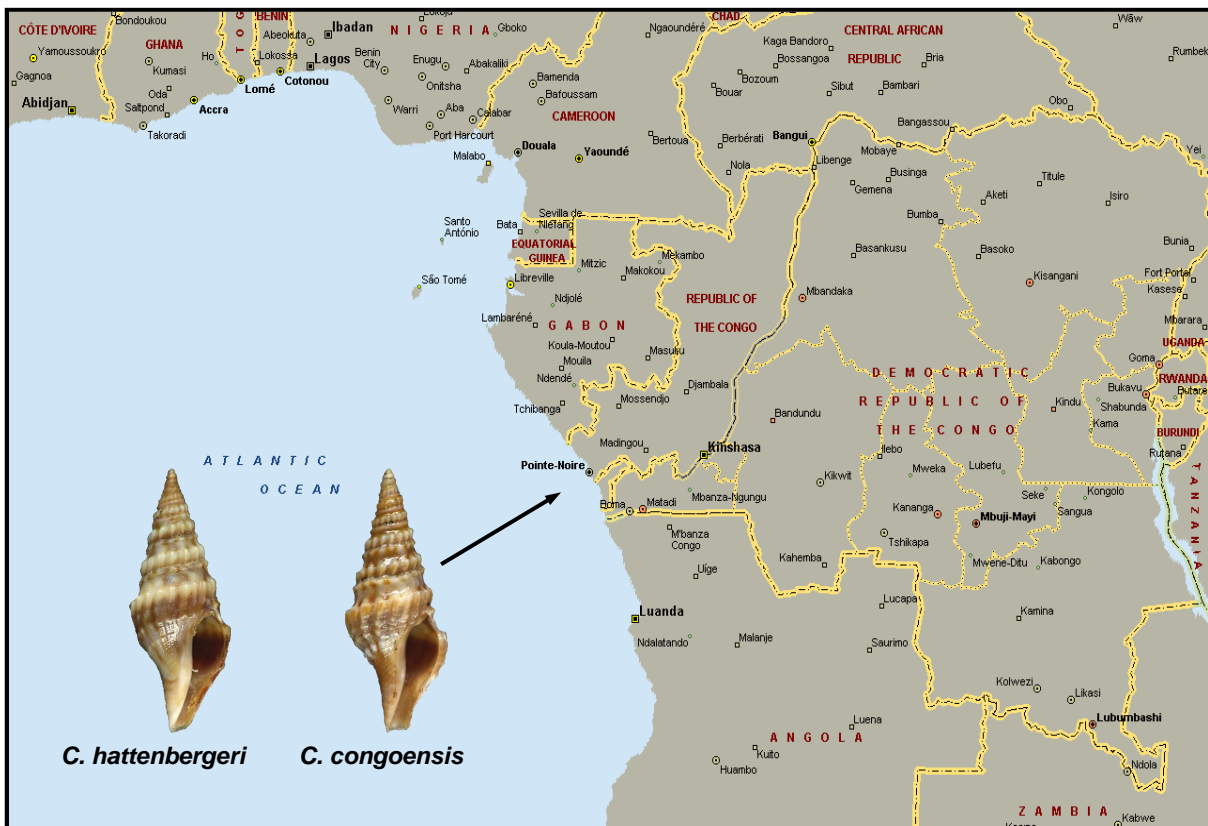
C. lelieuri has a sharp subsutural ridge instead of an undulating cord as in *C. congoensis*, whereas the latter has coarser nodules on the last whorl. In *C. rubrifasciata* (Reeve, 1845) (Plate VIII, Figs 42-49) the oblique folds are reduced to a series of small knobs below each whorl, whereas the body whorl has a more protruding carina with a row of angular knobs, very often separated from the double row of white nodules below by an orange-brown or creamy white zone.

For comparison's sake we have illustrated a specimen of the recently described *Clavatula nathaliae* Nolf & Verstraeten, 2006 (Plate VII, Fig. 41), which is a much slenderer turrid shell, living in the Gulf of Guinea.

Acknowledgements: First of all we want to thank Paul-Henri Hattenberger (St. Jean de Blaignac, France) for the loan of specimens in order to study them. Peter Ryall (Maria Rain, Austria) provided photographs and was very helpful in discussing several problems during the preparation of this paper. As usual David Monsecour was so kind to supply the final touch to the English text.

Recluz, C., 1851. Description de quelques coquilles nouvelles. *Journal de Conchyliologie*, 2: 194-216, pls 5-6.

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Geographic distribution of *C. hattenbergeri* and *C. congoensis*

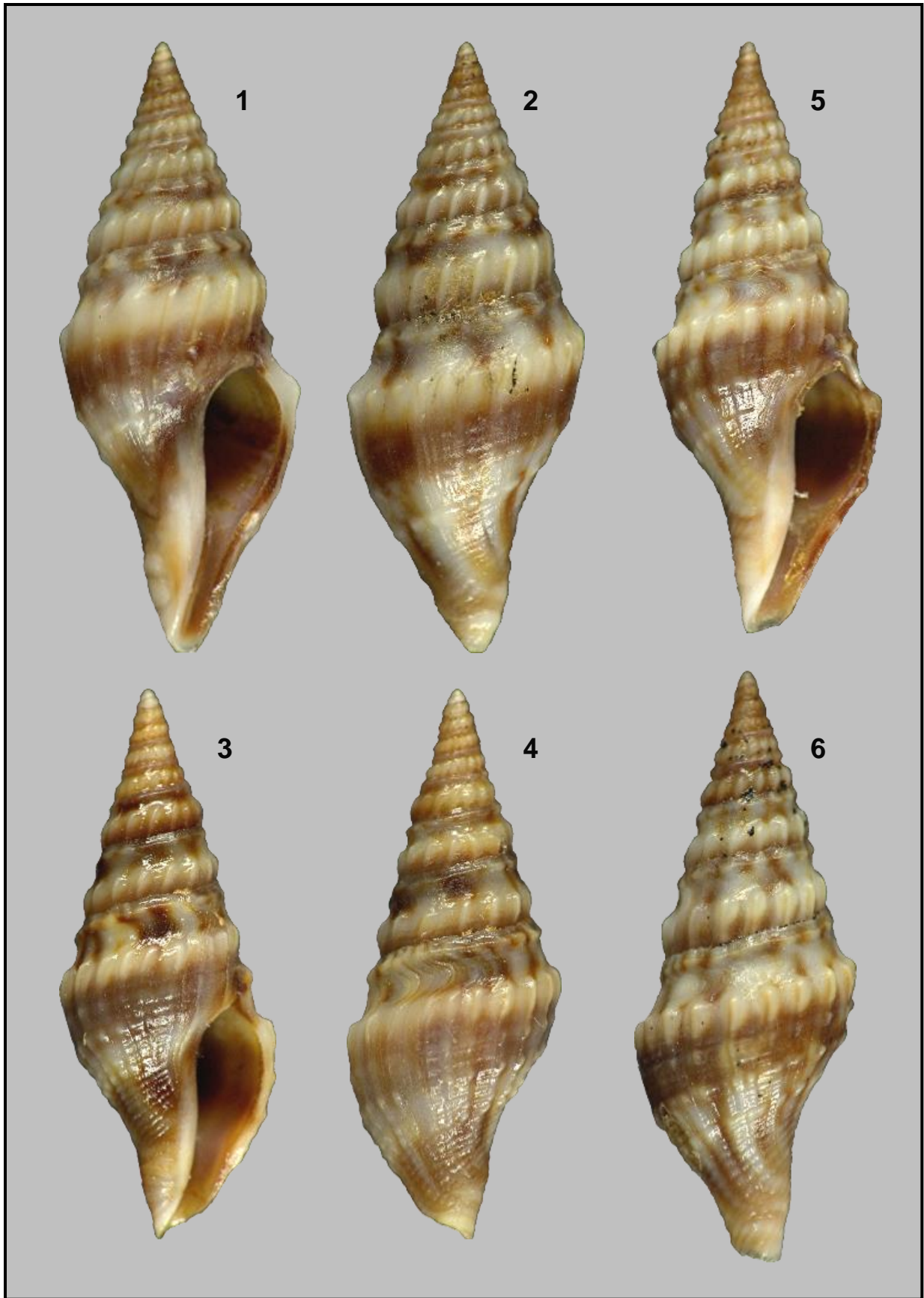


Plate I. Figs 1-6: *Clavatula hattenbergeri*. Koraf Beach, Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville. Collected at a depth of 4-6 m; 1-2: paratype 2 (PHAT) – 20.02 mm; 3-4: paratype 1 (FN) – 17.85 mm; 5-6: holotype (RBINS) – 18.71 mm.

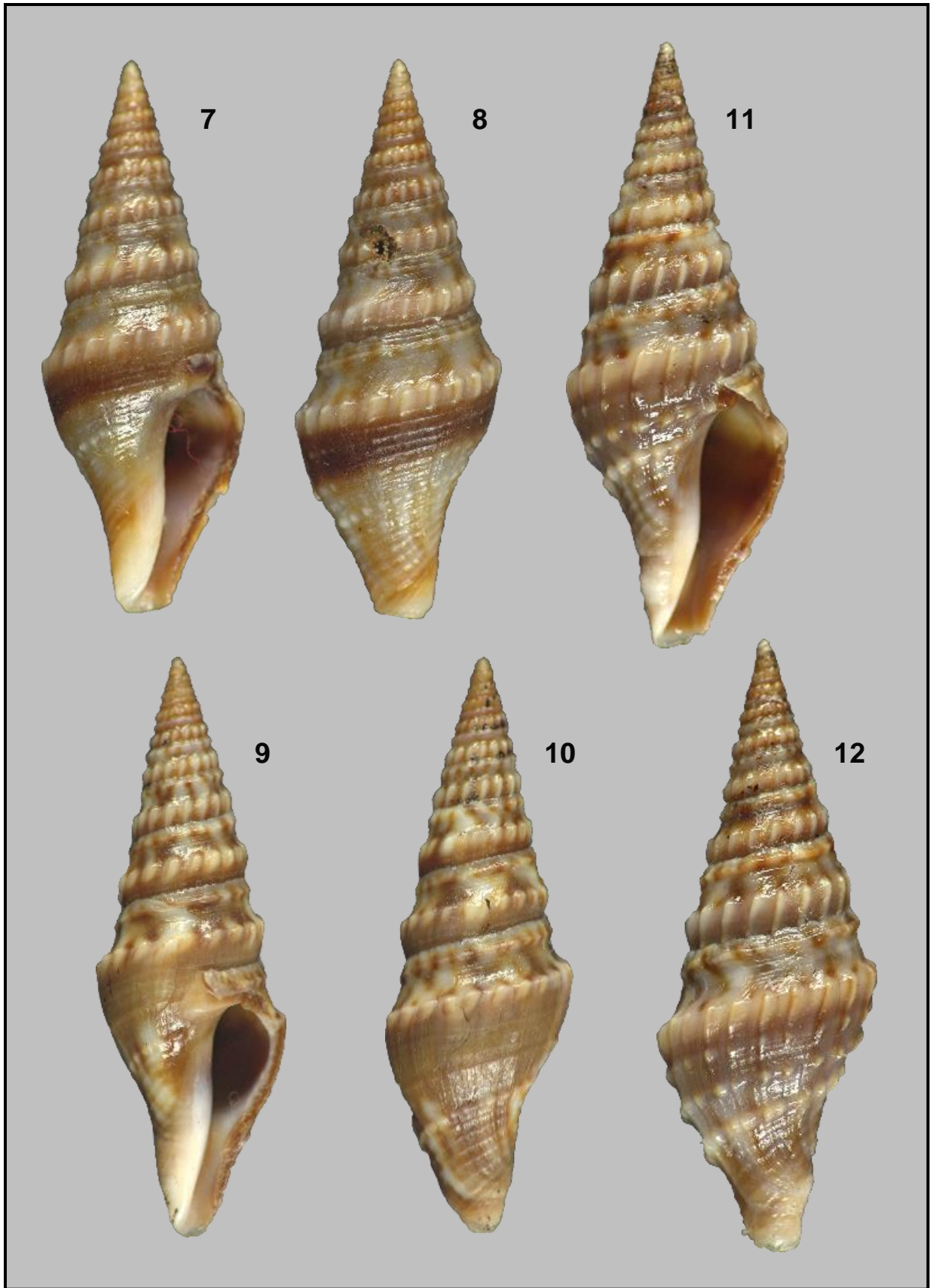


Plate II. Figs 7-12: *Clavatula hattenbergi*. Koraf Beach, Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville. Collected at a depth of 4-6 m; 7-8: paratype 3 (PHAT) – 21.96 mm; 9-10: paratype 4 (JV) – 24.26 mm; 11-12: paratype 6 (JV) – 25.27 mm.

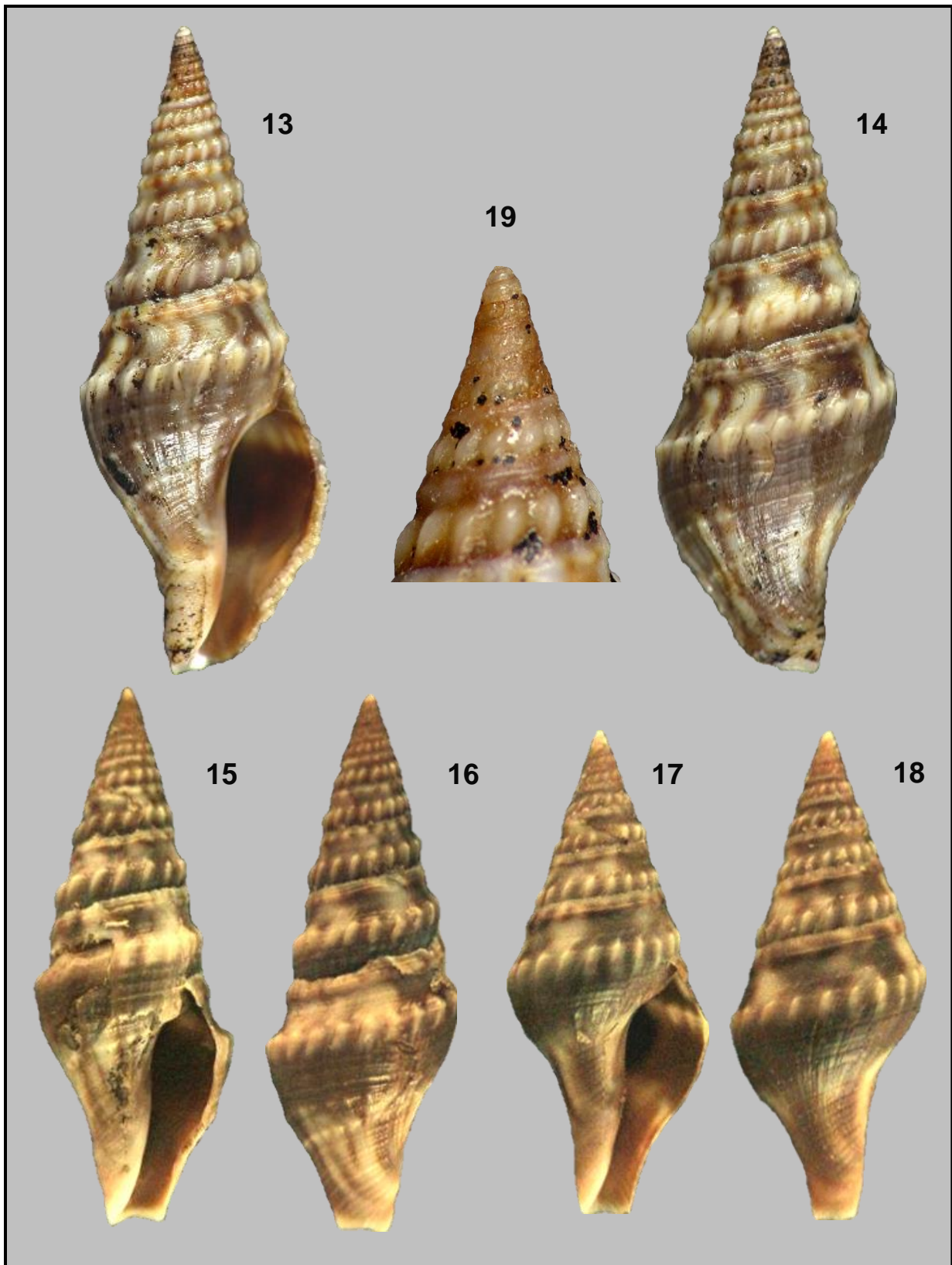


Plate III. Figs 13-19: *Clavatula hattenbergeri*. Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville. Collected at a depth of 4-6 m. 1995; 13-14: paratype 5 (FN) - 24.34 mm; 15-16: paratype 7 (PR) - 20.4 mm (juvenile specimen); 17-18: paratype 8 (PR) - 18.5 mm (juvenile specimen); 19: protoconch.

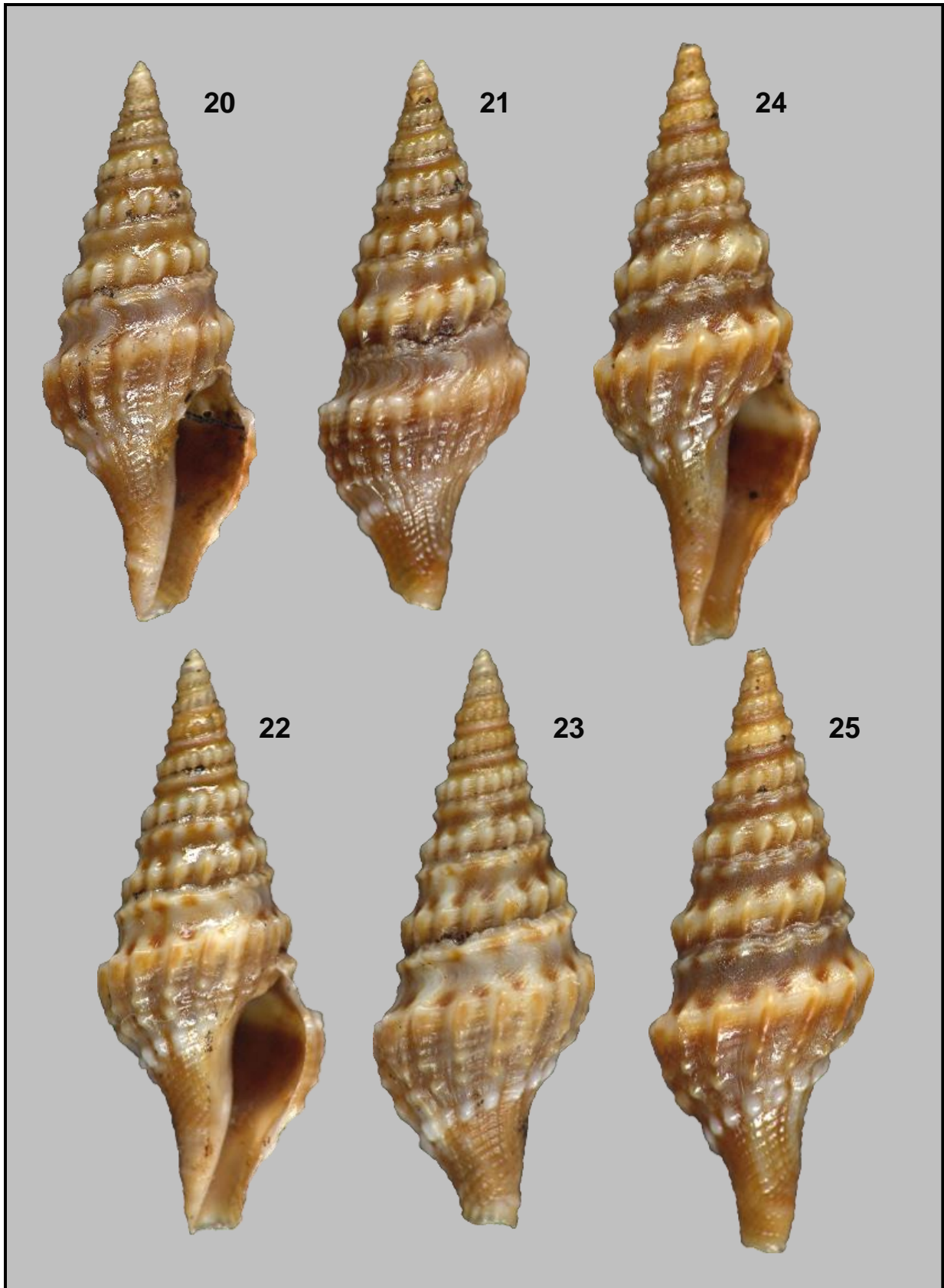


Plate IV. Figs 20-25: *Clavatula congoensis*. Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville. Collected at a depth of 4-6 m. 1995; 20-21: paratype 1 (PHAT) – 14.56 mm; 22-23: holotype (RBINS) – 15.34 mm; 24-25: paratype 2 (FN) – 15.02 mm.



Plate V. Figs 26-31: *Clavatula congoensis*. Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville. Collected at a depth of 4-6 m. 1995; 26-27: paratype 3 (JV) – 15.95 mm; 28-29: paratype 4 (PHAT) – 19.52 mm; 30-31: paratype 5 (PHAT) – 21.35 mm.

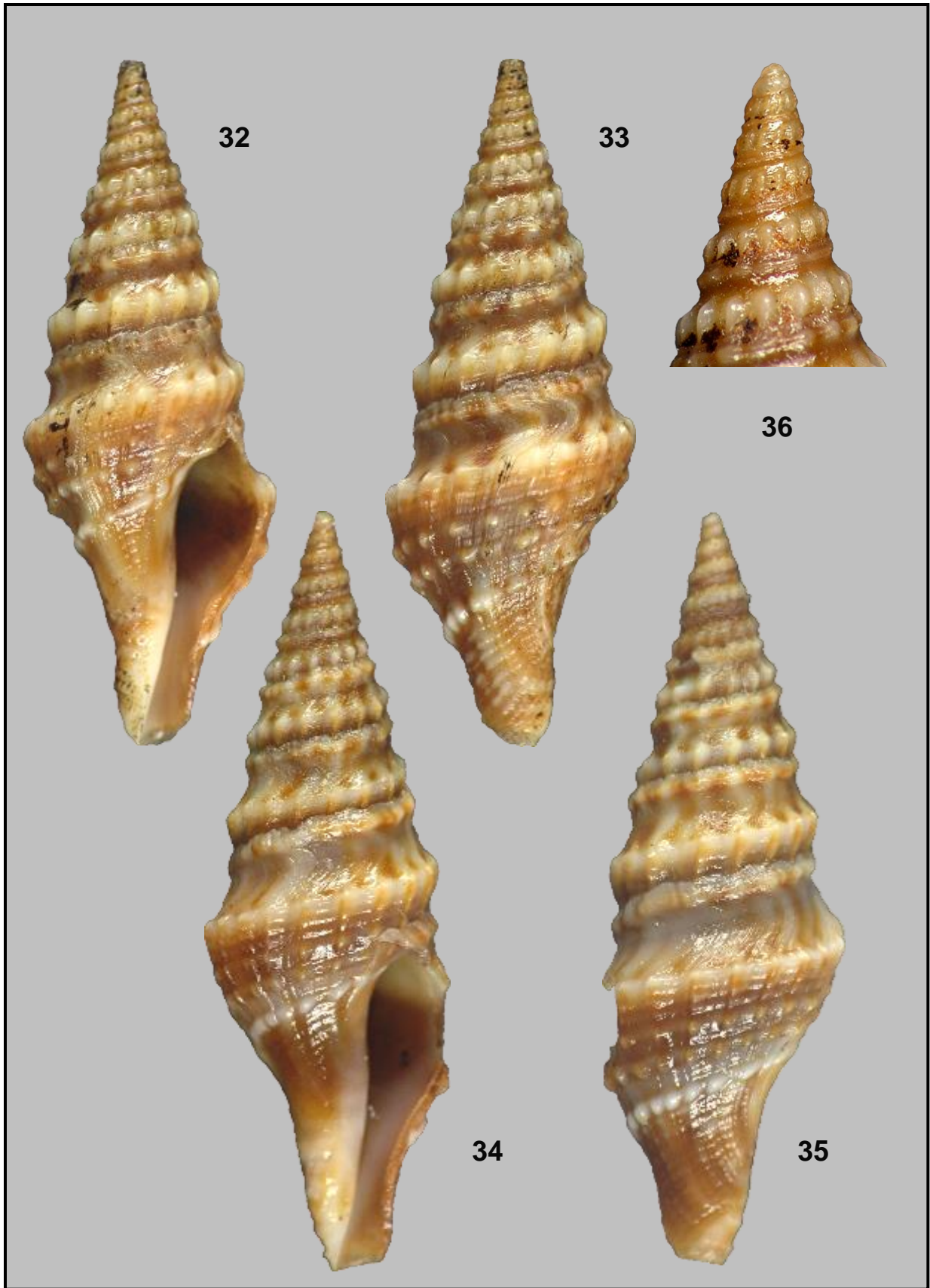


Plate VI. Figs 32-36: *Clavatula congoensis*. Pointe-Noire, mouth of the Songolo-river, Congo-Brazzaville. Collected at a depth of 4-6 m. 1995; 32-33: paratype 6 (FN) – 23.09 mm; 34-35: paratype 7 (JV) – 23.11 mm; 36: protoconch.



Plate VII. Figs 37-40: *Clavatula lelieuri* (Recluz, 1851) (FN); 37-38: 60 km offshore Libreville, Gabon. Trawled by fishermen at a depth of 30 m. 1978. 29.87 mm; 39: Dredged by O.R.S.T.O.M., off Abidjan, Ivory Coast. 39.66 mm; 40: Casamance, Senegal. Trawled by fishermen at a depth of 15 m. 1987. 32.03 mm. Fig. 41: *Clavatula nathaliae* Nolf & Verstraeten, 2006. Dredged at a depth of 30 m, off Libreville, Gabon. 28.45 m. FN.

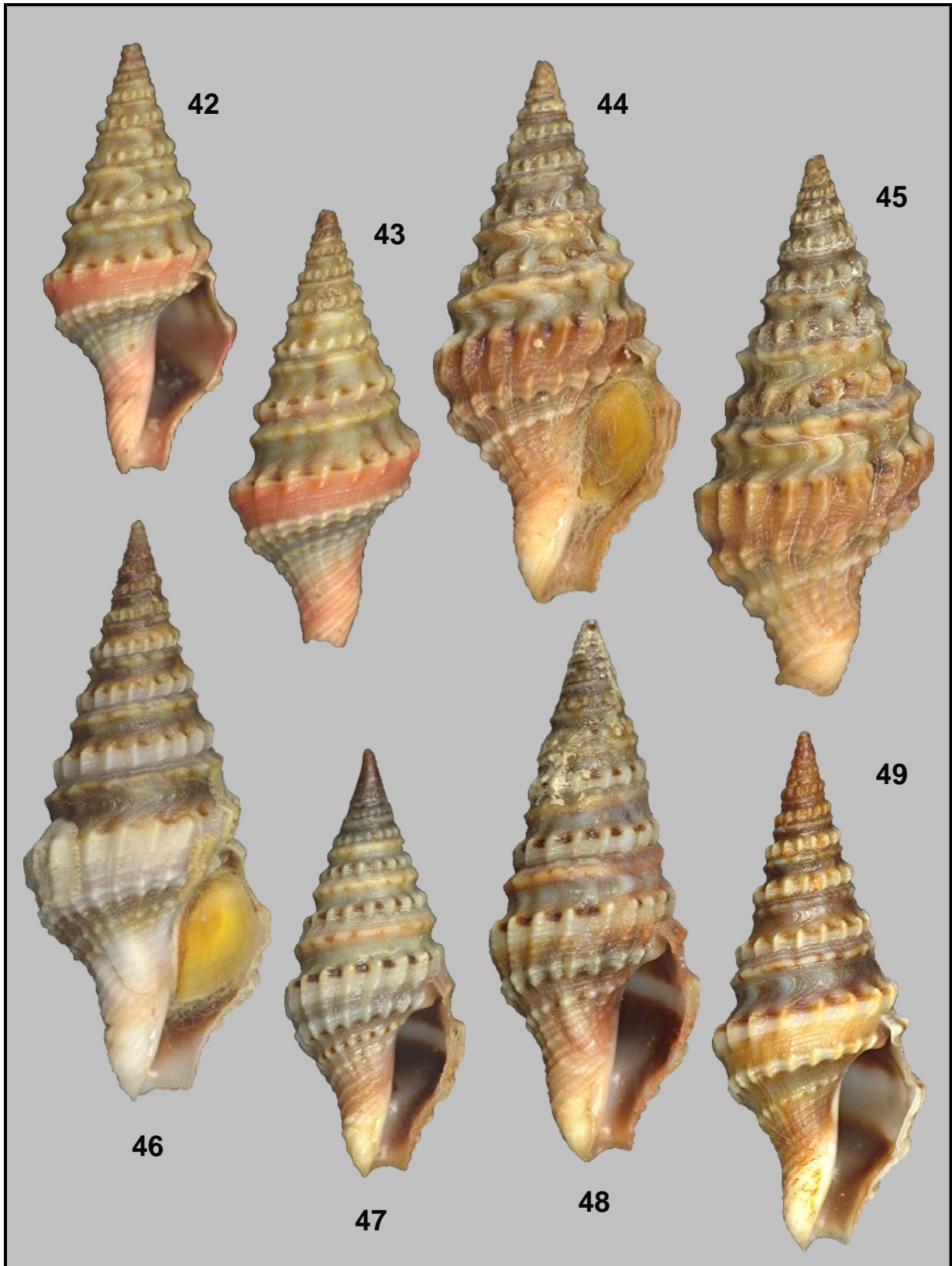


Plate VIII. Figs 42-49: *Clavatula rubrifasciata* (Reeve, 1845) (FN); 42-46: Bay of Gorée, Dakar, Senegal. Collected by pram at a depth of 12 m; 42-43: 19.13 mm; 44-45: 24.66 mm; 46: 26.34 mm; 47-48: Punta Eviondo, Rio Muni, Republic of Equatorial Guinea. 1964; 47: 19.00 mm; 48: 24.47 mm; 49: Cacuaco, off Luanda, Angola. Dredged in muddy bottom at a depth of 30 m. 22.28 mm.

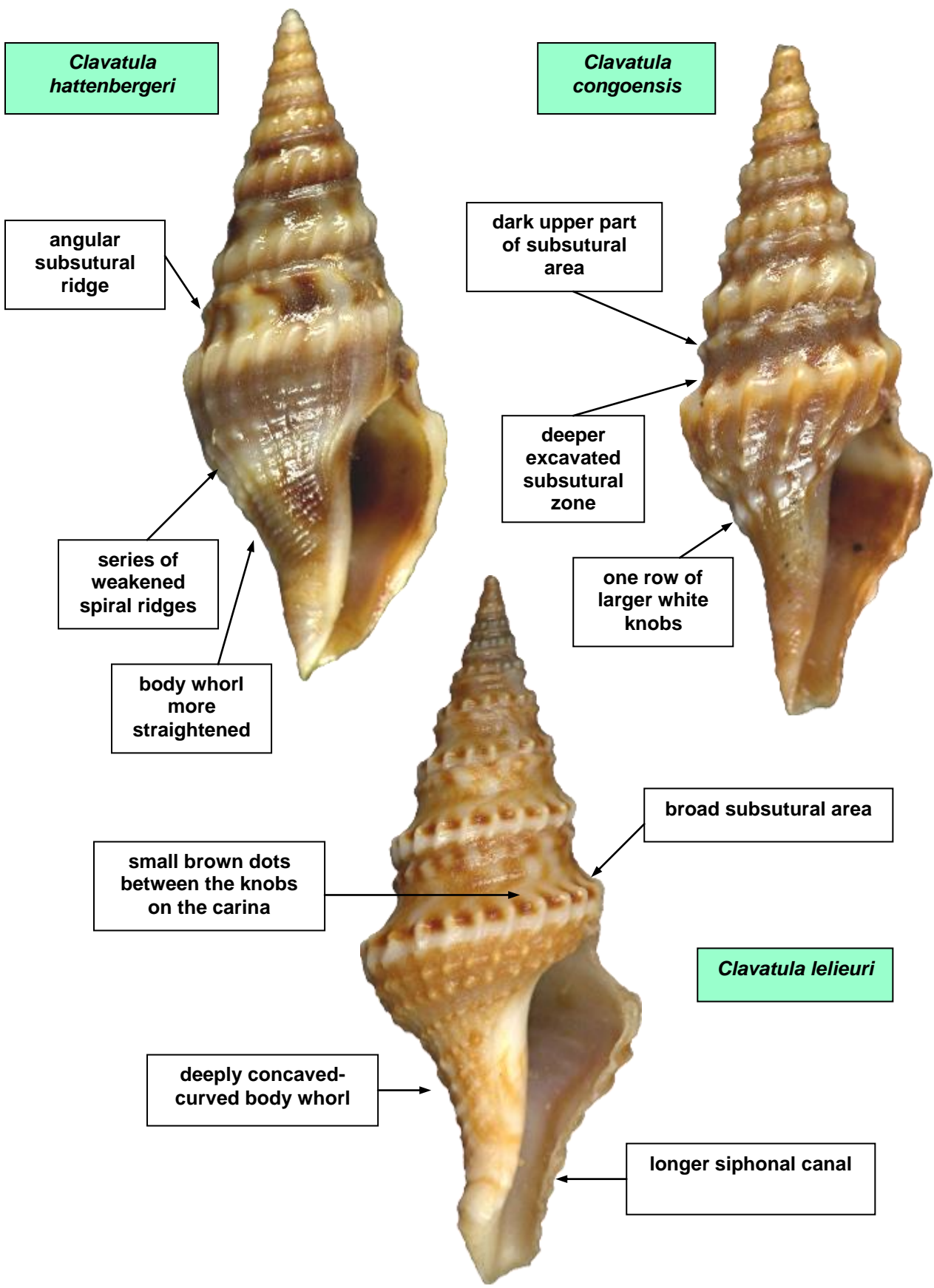


Figure IX: Comparison between *C. hattenbergeri*, *C. congoensis* and *C. lelieuri*