Additional information on the identity of *Clavatula quinteni* Nolf & Verstraeten, 2006 and *Clavatula xanteni* Nolf & Verstraeten, 2006 with a link towards more twin species

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Abstract: This paper is an answer to vague allegations about the identity of *Clavatula quinteni* and *C. xanteni*, both described eight years ago, made by two colleagues in the sister magazine '*Xenophora*'. The underlying reason of this confusing and irrational act is revealed, a thorough comparison of the two species is made resulting in a link to similar problems with regard to identifying twin species.

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)
MNHN: Muséum national d'Histoire naturelle (Paris, France)
PEMARCO: Pêche Maritime du Congo
RBINS: Royal Belgian Institute for Natural Sciences, Brussels, Belgium
ZMC: Universitets Zoologisk Museum, Copenhagen, Denmark

Introduction: A few months ago, Emilio Rolán and Peter Ryall (2014) wrote a very confusing and above all defamatory paper in our sister magazine *Xenophora*. Both authors pilloried colleagues and magazines without stating concrete names, as a result of which any arbitrary person or editor could identify with the accusations made by both authors. The controversial paper begins with an opinion upon '*intraspecific variability and the synonymy of some taxa in turrids*' (why only in turrids?) and ends with a second part on the *'suspicion of the scientific value of some journals*'. It is regrettable that the identity of two turrids (*Clavatula quinteni* and *C. xanteni*) has to support their vague statements while hundreds of other examples could have been chosen. Furthermore, these shells have never been the object of any discussion, until now. We wonder why the authors Johan Verstraeten and Frank Nolf have never been notified about that problem by Rolán and Ryall. It seems that this is a cowardly attack to completely eliminate both authors from the conchological forum, after an earlier try by E. Rolán (2008). In this paper we want to clarify this situation and to reveal the origin of this polemic. The real status of both *Clavatula quinteni* and *C. xanteni* will be clarified followed by a few examples of more twin species.

A historic survey preceding the description of *Clavatula quinteni – C. xanteni*.

Important note: <u>All quotes taken from colleagues' personal messages were literally copied here and therefore sometimes still contain grammatical mistakes</u>.

On 6 May 2006 shells of the later described *Clavatula quinteni* Nolf & Verstraeten, 2006 first became available at the Shell Show in Antwerp (Belgium) when Peter Ryall and I both were both studying some unknown turrids. According to P. Ryall, who sold specimens at 15 to 35 Euro, a so-called '*Clavatula mourei*' was among them.

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

Abbott & Dance (1982) were the first to figure this species in their '*Compendium of Seashells*' with the following caption: '*Clavatula bimarginata* (Lamarck, 1822). West Africa. Offshore; uncommon'.
Later on, P. Bernard (1984) illustrated an unknown *Clavatula sp.* on Plate 49 (fig. 184). In the same year this species was mentioned as *Clavatula mourei* Bernard, 1984 by Rolán & Ryall (1999), but that fictitious name is in fact nowhere present in literature, except in '*West African Seashells*' (Ardovini & Cossignani, 2004) where it was copied form the checklist by Rolán & Ryall. In addition this name could not be traced in the monumental '*Catalog of Recent and fossil turrids (Mollusca: Gastropoda)* (Tucker, 2004). J. Verstraeten and I concluded that Bernard had never published a '*Clavatula mourei*' and so we regarded this name as an unavailable (possibly manuscript) name. This shell was already well known to all collectors specialising in West African seashells. Later on a considerable number became available from Gabon, but specimens from Angola were not always recognised to belong to that species.

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

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

***Clavatula pfefferi* (Strebel, 1912). 06°06' N/ 04°29' E, Nigeria. Dredged in soft mud at a depth of 29 m. 15 February 1946. 20.4 mm. '*Atlantide*' Expedition, Station 100.**

Even albino specimens were known. P. Bernard (1984) figured four completely white specimens in '*Coquillages du Gabon*', but identified them as *Clavatula pfefferi* (Strebel, 1912). Remarkably, 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 that the specimens illustrated in fig. 184 and fig. 186 are very similar and in our opinion Bernard had to conclude both belong to 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 as a brown coloured shell and not as a typically white species by Strebel (1912).
On 3 June 2006 P. Ryall seemed to understand that the name '*C. mourei*' should not be used ('*I am afraid you are correct about this species, it is not published by Bernard in 1984*').
A week later he wrote: '*There is no more definitive news on* "Clavatula mourei". *Rolán replied to tell me he has been aware about a problem on this name since two years but forgot to inform me. He checked his indices for "*La Conchiglia*" but could find no reference to this name.'*
In July 2006 I answered: '*I have some 5-10* Turris-*shells which I'm unable to identify and which may be a new species, among them of course the '*Clavatula mourei'.
Ryall and Rolán clearly understood they urgently had to start a description.
P. Ryall informed me as follows: '*We* (*Rolán, Boyer and myself) are still searching for the description of* "Clavatula mourei" *and to see if types are in the Paris Museum. If we do not turn up anything soon we are describing it probably as* "C. bernardi" *as Pierre first published photos*

of this species. I have sent my specimens to Rolán to add to his specimens for the photographs, protoconch & radula and if we do go ahead and describe this species it will be in Iberus.'

On 13 November 2006 P. Ryall finished this discussion: '*Finally, the name* "mourei" *turned up in an unpublished document. Please keep this information to yourself. A friend of Pierre Bernard maintained a list of species discovered in Gabon after 1984 and there it was …* Clavatula sp. (mourei). *But* "mourei" *was never published* …'.

On 7 August 2006 I learned from P. Ryall: *'The description/photos/SEM radula/SEM protoconch of* Clavatula bernardi (*ex* C. mourei) *are now completed, I will inform you later on of publication*'.

Then started a new request for information on another probably new species which would have an important influence on the further cooperation.

On 30 August 2006 P. Ryall wrote: '*I have just acquired a few dead taken shells reliable trawled at -200 metres off Namibia. I will see the specimens when I am back in Austria at the end of September. The images I have seen bear a remarkable resemblance to* C. suturale *which is more commonly dredged in deep water from Mauritania to Guinea Bissau and including the Cape Verde Islands. My question is: do you have specimens of* C. suturale *in your collection reliable dredged/trawled off Angola/Namibia? There is not much deep-water trawling off the area between Guinea Bissau and Angola.'*

In October 2006 I answered: '*I have several dead trawled specimens from Angola in my collection, some obtained from Portugese shell collectors and a few others dredged by a Belgian fishermen fishing for* PEMARCO *off the Angolese coasts. In July J. Verstraeten and I worked at the* RBINS *in Brussels and we took photographs of* Callumbonella suturale *and* C. gorgonarum. *It is very difficult to detect any difference between* C. suturale *form Melilla (North Africa) and the samples from Angola/Namibia which are larger and badly eroded. We have recently obtained some more dead taken ones from the Canary Islands and NW Africa and we are comparing these specimens. As you said the problem is that very little deep-water material is obtainable from the region between Ghana and Gabon.*'

On 21-22 October 2006 P. Ryall and I again studied and discussed identification problems at the Shell Show in Eindhoven (the Netherlands), and two days later P. Ryall wrote '*I was most interested to sight your intended descriptions of various W. African* Turridae *which are due to be published in your magazine soon. I did not inform you in Eindhoven, but after consultation with Dr. Emilio Rolán now find it pertinent to advise you that we completed a description of the species figured as N°184 by P. Bernard, 1984 some months ago. Our works dedicates the species to Pierre Bernard (being the first to illustrate the species) and apart from describing the species, illustrates the protoconch, operculum and radular teeth. It has been submitted to Iberus. I wish to inform you because the same species was in the draft of your intended publications.'*

On 25 October 2006 E. Rolán intervened in the debate: '*Recently, we had made a paper on* Clavatula bernardi *a new species, which was submitted since several months to the journal Iberus. Peter said me that you have several species to be described in* Neptunea *and one of them was the same we had in press. I always had preferred to have a cooperation with other authors better than a competition. So, I am sending you the plates at low resolution of our paper in order to inform you about the species, probably coincident with your project. Of course, if it is coincident, we would like to get an agreement, for example, to include your name as co-author, probably add some corrections from you and also we can separate several paratypes for your collection. This is the offer I thought as first solution, but we can wait about your opinion or comments.*

Also, I must inform you that I have ready a paper on Callumbonella *from Namibia, making comparison with the material from Mediterranean, Morocco, Mauritania, Guinea Conakry, in soft parts, radulae and opercula. This paper is in the way of English revision and it would be sent to Journal of Conchology. I know from Peter that you are studying a population from Angola. Unfortunately, in this paper, I cannot offer you to be co-author because the material from Namibia was obtained by two Spanish Oceanographic institutions and they have imposed two names as co-authors with me; so, it is too much people. I expect that in the future we will have not more coincidences or they may be projected in a common work*.'

On 29 October 2006 I replied to E. Rolán: '*Thank you for the e-mail and the digital images of* Clavatula bernardi *(by the way, do you know that Abbott and Dance were the first authors to illustrate that shell in their Compendium?). Indeed, this is one of the shells we have described in our magazine. I fear that I have to disappoint you as* Neptunea, *5(3) has already been printed this week.' … 'Last week Peter and I met at the Shell Show in Eindhoven (the Netherlands) and I showed him all the drafts of the articles ready for publication by J. Verstraeten and me. Peter told me nothing about your paper on* Clavatula bernardi. *Moreover he only mentioned the name* "Clavatula mourei"

when I showed him all the shells (mainly paratypes) of all the new species and other doubtful species. You can imagine my surprise when I received an e-mail from him on Tuesday to let me know that "we completed a description of the species figured as N°184 by P. Bernard some months ago" !!!
Don't forget we spent an entire weekend together, but Peter never told me about Clavatula bernardi.' …. '*More than a year ago my colleague Johan Verstraeten asked Peter if he could procure any* Callumbonella *specimens from Ghana. Now, I learn that a paper on* Callumbonella *is in prepararti*on. *Indeed, I have a lot of specimens of what could be a new species from Cape Fria (Namibia). The shells are different from* C. suturale. Callumbonella gorgonarum *is not a synonym of* C. *suturale (as stated by Malaquias and Borges in* Journal of Conchology, 3(1): 1-5.' (**remark:** later on, it will be proved that *C. gorgonarum* is merely a colour variety of *C. suturale*, typical of juvenile specimens in some areas e.g. the Cape Verde Islands but even in Angola and Namibia. '*However, the shells from* Namibia *are very similar to* C. gorgonarum. *I learned from your book on the Cape Verde Islands that you have not yet studied samples of the latter. I can assure you this is really a must before any paper on* Callumbonella *could follow*.' … *'Since 1968 I have been collecting many samples of* TURRIDAE *from Gabon, Angola and Namibia. I have waited nearly forty years to obtain more shells from that area and to obtain all needed literature data. The previous two years my colleague Johan Verstraeten and I have intensively worked on these West African shells. With the help of some European museums we have been able to write some papers on this matter resulting in the publication of several new species. We do not intend to organise a competition about the description of any new species. Besides collecting and studying shells, Johan and I have a full time job (I'm teaching biology and chemistry). Now, it is too late to change the paper as it has already been printed. Copies of the paper have been sent to the 'Royal Library' in Brussels, holotypes were deposited at the ZMC (Copenhagen), and two copies will be sent to Peter next week. Another reason why the paper could not be changed is the fact that two species are involved in our article:* C.quinteni *and* C. xanteni. *Each species has two authors. The two are similar but different.*'
… '*I am prepared to supply you with an overview of the subjects we are studying and I hope Peter and you will do the same. So, maybe it will be possible to cooperate in the future, for instance on the genus* Genota'.

On 29 October 2006 E. Rolán answered: *'If you are printing the paper on the new* Clavatula, *no agreement is possible. So, I will send a message to Serge Gofas, editor of Iberus, in order to stop the revision of our paper, and I will write to some Museums to which I sent already paratypes, saying that they are not.*' *… 'I don't understand why Peter Ryall did not inform you about our paper*. *About* Callumbonella: '*I am sending you the paper already written' … 'and I am also sending the plates (at lowest resolution). In it, I make a comparison of the species we found in Namibia with the Mediterranean* C. suturale*. I have not examined* C. gorgonarum, *which seems to be close to that of Mediterranean, for its profile. I am not able to have a sure decision on the material I have seen it from Mauritania and Guinea Conakry, but it seems closer to that from Namibia than that from the Mediterranean. I will wait until you will have seen the manuscript and have given an opinion about we must do. Unfortunately, I had not notice of the paper on* C. suturale *which you mentioned of Malaquias & Borges (2003), and this will need some comments on my actual manuscript*. *Anyway, usually I am working on small molluscs, and so it is not probable to go we both at same time in future works to the same subjects*'.
On 6 November 2006 I answered E. Rolán: '*Concerning the* Callumbonella*, we must advise you to reconsider your paper or to adapt your paper thoroughly. We think it needs two separate papers, one being the description of the new species which we could leave to you and your co-authors* (remark: at that moment I no longer believed *C. namibiensis* was a real species but Rolán was obstinately intended to describe it), *and the second one on the true identity and distribution of the different* Callumbonella *species, preferably with your co-authorship in* "Neptunea"*. Please advise us if this proposition is acceptable to you. Anyway we confirm that we will abstain from a description of the new species, but we suggest to choose another name, as this species is not only restricted to Namibia.*'
On 6 November 2006 I mailed the following to P. Ryall: *'I have discussed the problem of the nearly simultaneous publication of the same* Clavatula *with Emilio Rolán. It has resulted in a kind of arrangement: Johan Verstraeten and I publish* Clavatula quinteni *and* C. xanteni *(instead of* C. bernardi*) while Emilio and two other Spanish authors claim the authorship of the new* Callumbonella *from Namibia. Nevertheless, we have advised him to change the name of that species as it also lives in Angolese waters for instance and maybe elsewhere*.'
On 9 April 2008 I finally received an answer to my question for more information on turrids and

the *Callumbonella* from P. Ryall: '*I decided not to reply to some other outstanding questions you had put to me concerning W. African turrids as I have again started working on some groups with E. Rolán and J. Horro*.' … '*but I don't think I would want to contribute to any future articles of your publication*.'

On 9 April 2008 I answered: '*I'm rather surprised – even astonished – to read your mail. Don't forget I'm the responsible editor of* "*Neptunea*" *and I have the right to ask questions about the content of the papers published in my magazine. For instance was it so difficult to give me more information on the differences between* Crassisipira fuscobrevis *and* C. clionellaeformis*? I think it was a logic request after finding samples of your shell in the Dautzenberg-collection labelled as* C. clionellaeformis.' … '*As the nature of "some groups" studied by Emilio Rolán, Juan Horro and you must remain a mystery to me, I think it is better I draw my conclusions about this matter. I regret we are getting involved in a kind of competition.*'

Finally on 10 April 2008 P. Ryall answered as follows: '*You have asked me for information concerning* clionellaeformis, saulcydiana, ballista, tripter *and* laevisulcata *during November and December and I am saying to you that I have information on them but as we may publish some of our findings I cannot share them with you*.'

On 1 December 2013 F. Nolf & J. Verstraeten (2013) published the final results of a study on the identity and geographic distribution of *Callumbonella suturale* based upon material in the MNHN and the RBINS, which had so far been neglected by previous authors. The arguments and conclusions in this paper are diametrically opposed to the statements by Rolán, E., Gonzalez-Porto, M. & de Matos-Pita, S.S. (2009). We concluded that *C. gorgonarum* (P. Fischer, 1883) is merely a form and that *C. namibiensis* (Rolán in Rolán et al, 2009) is a junior synonym of *C. suturale* (Philippi, 1836). (Pl. XI, Figs 49-60; Pl. XII, Figs 61-72).

In July 2014 E. Rolán & P. Ryall (2014) showed their annoyence and frustration in the sister magazine '*Xenophora*' by illustrating several specimens of *Clavatula quinteni* and *C. xanteni* (Pl. X) in part 1 of a paper related to the variability in *Littorina saxatilis* without elucidating the *Clavatula*-dilemma by a well-argued analysis. The value of such a publication is zilch as none of the readers can understand the connection between both problems. The only aim of E. Rolán and P. Ryall was to attack colleagues in an underhand way only comprehensible to well-informed readers.

In November 2014, I sent a mail to E. Rolán with the aim of getting the possibility to study the contested specimens: '*You have recently written a paper with Peter Ryall as a co-author with an illustration of a series of 'questionable'* Clavatula quinteni/xanteni *specimens in '*Xenophora*'. In view of further research on the genus* Clavatula *I would be delighted to study these specimens and also to help you in identification. Unfortunately, the minor quality of the photographs doesn't allow me to distinguish the different characteristics of the species. It is regrettable that Johan Verstraeten and I missed the chance to observe the shells before the publication of the paper. Can you please send me the shells?*'

As could be expected E. Rolán answered me as follows: '… *It is not possible because they are illustrated in another paper at moment not yet published. In any case they were only employed as example from many others, so these specimens alone cannot resolve the foundations of our article*.'

Considerations: The previous history teaches us that writing papers often requires more than a facile pen, a specific knowledge of the subjects and enough material (literature, specimens, …), a continuous control of the accuracy of data and so on. Authors first need to become part of a network of colleagues, editors and museum curators. '*Neptunea*' is a relatively new magazine that has been wrestling with problems such as finding enough financial resources, a team of contributors, sufficient papers of high quality and a rank of competent referees from the beginning onwards. We think most of these problems have been overcome in the last ten years but we think we have been too naïve in our contacts with other colleagues. During the first years, most people were enthusiastic to contribute not only by buying issues but also by offering articles. Later on we assessed that some newly described species were questionable and were offered to the editor of '*Neptunea*' merely because of a possible lower number of referees. So far, we have not had any problems with critical colleagues. As long as we did not enter a preserved territory, namely the West African malacological fauna, there was a friendly cooperation. After our description of several new species, especially of West African turrids, the mutual exchange of data and shell material became more and more unilateral. We became unaware of preliminary research by colleagues and afterwards we were suddenly faced with the ultimate result. Of course we have quickly learned from this strategy and we have often used the same methods. This was the start of a war of words in mails and even in papers (see mails above). First of all E. Rolán and P. Ryall blamed the lack of enough referees used by the

editor of "*Neptunea*". This was an absurd accusation because there are very few competent revisors in the field of turrids, E. Rolán and P. Ryall are two of them, but this looks like consorting with the enemy. On the other hand, I have never received a request for being a referee of a paper on turrids by any editor of any magazine until now, even after ten years of studying these families. We really wonder how many magazines are able to supply a list of referees. Which author or scientist is prepared to do it, which person is qualified and specialised enough, who can spend voluntary spare time to check texts and to control the mentioned literature and shell material? The number of mistakes which we regularly come across in books and papers is far beyond what we can normally expect. Even perfect English is often absent. Our corrector is a master in English and we are not afraid to declare that he receives a fee for this job.

In part 2 of the paper about the '*scientific value of some journals*' in '*Xenophora*' E. Rolán and P. Ryall (2014) publish a list of ten general characteristics to differentiate '*good scientific researchers from a businessman*'. We can wonder what the relationship with the '*intraspecific variability in molluscs*' (part 1) is. E. Rolán and P. Ryall without doubt belong to the first group of serious scientists and most others to the second group who are to be blamed. Both authors have obviously elevated themselves to the rank of supreme judges. I hope that other authors and magazines will publish a reaction to these vague accusations. As the responsible editor of '*Neptunea*' and author of more than a hundred articles in the past decade I prefer not to counter the ten complaints, but I will hereby list a few cases in which E. Rolán himself violated his own rules. This is not my style of writing papers but as Johan Verstraeten and I have indirectly and faint-heartedly been contested we think this deserves a public answer. Some authors should take better care of their own manuscripts and let shortcomings of colleagues be.

° Rolán Mosquera, E., Otero Schmitt, J. & Rolán Alvarez, E. (1989). The shell figured on p.149 is not *Laevicardium oblongum* but a specimen of *L. crassum* (as figured on p.150).

° Rolán, E. (2003). Figures 5 and 6 correspond to *Astarte sulcata* (Da Costa, 1778) and not to *Astarte fusca* (Poli, 1795).

° Rolán, E. & Pardo, I. (2007). A pamphlet of eight pages refers to the nomen nudum *Hadziella leonorae* Rolán & Pardo, 2007 in a paper to be published in '*The Nautilus*'. Cristian Altaba, operating as a referee for '*The Nautilus*', publishes a crushing reply to the reprehensible behaviour demonstrated by E. Rolán and I. Pardo (2007) on the worldwide web.

° Rolán, E. & Pardo, I. (2011). E. Rolán is extremely obstinate and publishes the same nomen nudum for the second time. E. Rolán is blaming colleagues who '*publish in private journals not regulated by any referees*' (charge 1). Why did he never consider the opinion and the extra material C. Altaba provided him with before the publication? Why did he never deign to answer C. Altaba? Are referees only necessary for his colleagues and not for himself? He probably expected fewer referees in another magazine.

° Rolán, E. & Fernández-Garcés, R. (2013). The new name *C. singularis* nom. nov. is proposed instead of the preoccupied name *C. infrequens* described as a new species in *Neptunea*, **6**(2). Why was this rectification not made in '*Neptunea*' where the error was committed instead of in '*Gloria Maris*'? (a form of personal rejection?).

° Peñas, A. & Rolán, E. (2010). In this monumental work E. Rolán contributed to the description of 20 new species of *Turbonilla* based on only one shell (holotype) and 38 new species using the holotype and one single paratype. Personally, I do not have any problems with this option but E. Rolán and P. Ryall should be ashamed when they reproach colleagues because *'their material is frequently scant, often comprising apparently one or two specimens only*' (charge 4).

° Hernández, J.M., Rolán, E. & Swinnen, F. (2011). Text and plates in this book are marred by easily avoidable mistakes in the identification of larger shells making the reliability of the smaller shells doubtful. For instance: '*Distorsio perdistorta* Fulton, 1938' is used as a caption for the figure of a *D. smithi* (von Maltzan, 1884) on plate 56, fig. A. The text on p.178 mentions '*Distorsio* cf. *perdistorta*' making this record completely confusing. Further on, plate 104, fig. A reads '*Glycymeris stellata* (Bruguière, 1789)' instead of the correct identification '*G. scripta* (von Born, 1778)', while the caption *Glycymeris violascescens* (Lamarck, 1819) should be changed into *G. nummaria* (Linnaeus, 1758). The whole book conveys the impression to have been written to respect a publication deadline (charge 2 by E. Rolán and P. Ryall in the '*Xenophora*'-paper). Moreover, it is clear there was a careless coordination of different authors involved in this work and it would be better to look for a meticulous supervision by a team of referees next time (charge 1).

° Rolán, E. & Swinnen, F. (2012). Once again a species was described base upon a single specimen, a fact contested by E. Rolán and P. Ryall as charge 4 in July 2014.

° *Callumbonella namibiensis* was described as a new species of *Callumbonella* from Namibia by Rolán, E., Gonzalez-Porto, M. & de Matos-Pita, S.S. (2009) in spite of my recommendation to be suspicious and to gather as many samples as possible for a better comparison. The new species is now regarded as merely one of the many forms of a very variable shell. Several charges were involved in this paper: '*shortcoming of referees*', '*a publication deadline*', '*frequently the material is scant*'.

° Rolán, E., Ryall, P. & Horro, J. (2007). Two new turrids *Crassispira fuscobrevis* and *Agladrillia anadelgado* were published in *Neptunea*, **6**(3). Two months after the publication date I retrieved samples of '*C. fuscobrevis*' from the RBINS, but labelled '*C. clionellaeformis*' by Dautzenberg. In the discussion of that species the latter was not incorporated by the authors. Even worse, the new species *Crassispira fuscobrevis* was compared with other species such as '*Drillia' tripter* (von Maltzan, 1883), *Crassispira consociata* (E.A. Smith, 1877) and *C. laevisulcata* (von Maltzan, 1883) which are very different (charge 8, which regrets '*any comparisons in papers by other authors (if made at all) with specifically selected specimens*'). I wonder why no similarity to *Drillia angolensis* Odhner, 1923 and especially to *'Pleurotoma' clionellaeformis* Weinkauff & Kobelt, 1875, the name used for this shell in literature and in the Dautzenberg collection (RBINS) - which is most probably this species - was remarked.
Moreover, the holotype of *Agladrillia anadelgado* looks completely similar to *Crassisipra consociata* and is different from the paratypes in the MNHN, which are most probably the new species. The authors blamed the editorial board of '*Neptunea*' for the lack of enough referees instead of admitting their possible mistake. Indeed, only three persons were involved in the correction of that article. As one of the referees, I sent my remarks to E. Rolán before the publication of that article but he answered in rather vague terms. E. Rolán often uses the wrong procedure to compare his new species with other species, which are very different or come from another geographic area (charge 8). Another typical example of this practice is the following:

° The new species *Gibbula massieri* Rolán, E. & Zettler, M.L, 2010 was compared with *Cantharidus suarezensis* (P. Fischer, 1878) and *Jujubinus fulgor* Gofas, 1991, which belong to different genera. In fact, the other South African *Gibbula* species mentioned in the text are not very suitable to be compared with *Gibbula massieri* which in turn is very similar to *Gibbula denizi* Rolán, E. & Swinnen, F. (2013). The latter was only compared with *Gibbula joubini* Dautzenberg, 1910, and not with *G. massieri*. Additional information could be obtained from co-author F. Swinnen who received a mail from E. Rolán with the following 'clarification': '*It is true, I forgot to make a comparison with the* Gibbula *from Namibia described in 2010. I am sorry. The differences are: the profile of the Namibian shell is a little more convex, the Angolan one more straight* (remark: in fact exactly the opposite!)*; the pattern is finer in the Namibian species and formed by large blotches in the Angolan species. Finally: the radula of* TROCHIDAE *usually are very similar, but in this case, there are differences: for example, the fifth lateral tooth is pointed in G. massieri while in* G. denizi *it is wider, rectangular on its extreme. Also, the marginal teeth have more cusps, being totally covered from the sixth to the most external in* G. massieri*, while in G. denizi there are more external teeth with many cusps*.' It is most regrettable that such obscure extra information had to be recovered from the co-author in a mail instead of from the description and the discussion in the paper. Moreover, the blurred pictures in both publications make it impossible to verify the later statements of E. Rolán (charge 10: '*their images are frequently very poor* …'). Further research might reveal that *G. massieri* and *G. denizi* are eventually only one species.

° Ryall, P. & Vos, C. (2010) introduced a new species *Turritella nzimaorum* from Western Africa but an impressive series of scientists and referees, mentioned in the acknowledgements overlooked *Turritella caelata* Mörch in Dunker, 1858, the original name for one of the largest TURRITELLIDAE ever found in West Africa. J. Verstraeten and I (2010) rejected the new name as a junior synonym. Remarkably, no trace of the specimen from Angola (103 mm) - offered by the late Henrikas Danila (Lithuania) - was detected in the paper by P. Ryall & C. Vos (2010). Yet, H. Danila gently instigated the junior author to describe it as a new species and even proposed a name for it. Interdependent authorship was avoided by bringing up another specimen from Angola by which H. Danila was completely sidelined. We wonder how many scientists or shell collectors are really specialising in the matter of TURRITELLIDAE and could really act as a referee.

° A few years ago P. Ryall offered '*Clavatula mourei*' for sale at a Shell Show using a manuscript name! (this is far beyond charge 5 in the list by Rolán and Ryall, contesting the fact that '*shortly after publication new species appear in dealer's listings* …') and their rule to differentiate '*good scientific researchers from a businessman*'.

'To err is human' and that is what also happened to myself when I thought I was in possession of the mysterious *Drillia saulcydianum* (Recluz, 1851) (Nolf, F., 2008). A specimen of *Mazatlania cosentini* (Philippi, 1836) had been confused with '*Pleurotoma' saulcydianum*, an enigmatic species only known from the type specimen (coll. Petit, MNHN). This was a unique opportunity for P. Ryall to send me serious reproaches such as '*I think you are doing a lot of damage to the understanding of West African turrid species and genera as well as your reputation and that of your magazine and (?) referees*.' Later on a rectification was published (Nolf, F., 2009; Nolf, F. & Monsecour, K., 2009) and I was not afraid to admit my mistake. Finally, natural science was the winner in this affair as the MNHN was able to retrieve the holotype of '*Pleurotoma' saulcydanium* in the collection of Petit de la Saussaye, thereby making an end to wild suppositions such as the possible loss of the type specimen in a museum in Rouen (France). My colleague P. Ryall took advantage of this opportunity to denigrate me with the aggressive words: '*I am missing your response to my last mail. … Maybe a cat got your tongue this time?*' In this way our so-called cooperation ended in 2008.

Conclusion

It is most regrettable that some people cannot admit their mistakes, in this case E. Rolán and P. Ryall. Moreover, both authors try to use allegations as the best form of defense. I deplore that such a quarrel has to be trashed out on a public forum instead of in a private correspondence between the two parties involved. The immediate cause of that belittling paper in '*Xenophora*' first of all was the revision of the genus *Callumbonella* in *Neptunea*, 12(4) in December 2013, through which *Callumbonella namibienis* Rolán et al., 2009 was downgraded to the rank of form of *Callumbonella suturale* (Philippi, 1836). The annoyance and frustration of both authors is clearly revealed by the plate showing the variability of *Clavatula quinteni/xanteni* (Pl. X) – reproduced from *Xenophora*) – a bad copy of our Pls XI & XII demonstrating the variability of *Callumbonella suturale*. At a later stage the purpose of these authors was to eliminate some colleagues from the conchological forum without considering their own damage to the study of molluscs. We hope magazines can impose limitations on that kind of papers and restrict their scope to the publication of studies of shells only supported by scientific arguments.

The real identity of *Clavatula quinteni* – *C. xanteni*: diagnosis, comparison and discussion

***Clavatula quinteni* Nolf & Verstraeten, 2006**

(Pl. I, Figs 1-8; Pl. II, Figs 9-16; Pl. III, Figs 17-22; Pl. IV, Figs 23-28; Pl. VII, Fig. 48; Pl. VIII, Fig. A; Pl. IX, Fig. A; Pl. X, figs A-J)

Diagnosis: Fusiform shell with pointed spire, a shiny and often glossy surface (especially in large Gabonese specimens). Protoconch paucispiral with 1-1.5 whorl. Teleoconch with 10-11 convex whorls. At the top of each whorl a sharp, granulose and strongly developed ridge is present, alternatingly coloured with brown and white dots giving the whorls a concave appearance. At the base of the whorls another cord surrounds the suture, thereby making it sinuous in appearance. It consists of white oblique granules alternating with brown interstices, always distinct in Gabonese specimens. Sometimes it is present at a short distance from the suture, but it does never overlap. It is obsolete in smaller and juvenile specimens particularly in Angolese specimens, which causes confusion with *C. xanteni*. This spiral cord changes in a row of parallel axial ridges flecked with brown and creamy white in the middle of the body whorl, most prominent at the shoulder and in the uppermost part of the last whorl, but gradually diminishing in strength. Their number is very variable (between 10-30 ribs). In certain specimens these granulated axial ribs are well developed, particularly in specimens from Gabon. They are mostly absent in specimens found from Luanda to S Angola. Very fine spiral threads (8-9) run along the whole surface of the whorls. On the last whorl they change into more distinct cords, especially at the shoulder (7-10) and gradually convert into weaker threads (7-8) on the siphonal canal, which is relatively long. The aperture is elongated oval, light purplish brown coloured with the spiral ridges of the body whorl showing through. The colour of the shell is brownish orange and the spiral cords are spotted with white dots alternating with dark brown markings. Complete white shells are not uncommon (Pl. II, Fig. 14; Pl. IV, Fig. 28), but intergrades with the normal blotched brown colour are rare (Pl. II, Fig. 16). Operculum horny and translucent, completely closing the aperture of the shell.

Radula: rounded barb (Pl. IX, Fig. A).

Measurements: 33 to 42 mm.

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

Geographic range: from Gabon to Benguela, Prov. Namibe, S Angola.

The holotype is deposited in ZMC (Universitets Zoologisk Museum, Copenhagen, Denmark), 7 paratypes in CFN and 5 others in CJV.

***Clavatula xanteni* Nolf & Verstraeten, 2006**
(Pl. IV, Fig. 29; Pl. V, Figs 30-37; Pl. VI, Figs 38-42; Pl. VII, Figs 43-47; Pl. VIII, Fig. B; Pl. IX, Fig. B; Pl. X, Fig. fig. K)

Diagnosis: Turriform shell, slender but broader than *C. quinteni*. Protoconch paucispiral with 1-1.5 whorl. Teleoconch with 8-9 flat whorls. Dull surface, never shiny. There is a very large number of weak parallel remnants of the outer lip in the juvenile stages. This constant characteristic is particularly conspicuous in the first postnuclear whorls and is a fine tool to distinguish most specimens of *C. xanteni* from *C. quinteni*. It was already mentioned in the original description but is often neglected: '*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*'. There is a flattened weak subsutural ridge, less prominent compared to *C. quinteni*. This cord is provided with white granules and brown interstices. Below each whorl there is a slight inclination to the suture over a very short distance, giving the whorls a suprasutural hooked appearance. This creates a white zone above the sutures which finally passes along the last whorl at the shoulder. It is never set up with oblique granules as in most specimens of *C. quinteni* and so the suture itself is never sinuous (compared with C. *quinteni*). The latter has a ridge below the suture often projecting farther than the inclination in *C. xanteni*. This is another interesting identifying characteristic. The white band on the body whorl is never provided with brown dots but the area below shows the same ornamentation with alternating brown and white dots as in *C. quinteni.* Many weak spiral threads in the upper part of the last whorl become very distinct from the shoulder towards the siphonal canal. No axial folds are visible as in most large specimens of *C. quinteni* from Gabon. The siphonal canal is short compared with *C. quinteni*. The mouth of *C. xanteni* is wider and subangularly oval in adult specimens, a characteristic only seen in *C. subspirata* (von Martens, 1902) from SW Africa.
Generally cream coloured mottled with brown and white markings and as far as we know no white shells have ever been collected. Operculum brown and horny.
Radula: sharp barb (Pl. IX, Fig. B).
Measurements: 20 to 34 mm.
Habitat: in sand and mud at a depth of 20-30 m (mouth of the Congo River) and 90-100 m (Prov. Luanda, Angola).
Geographic range: from Moita Seca, N Angola to Mussulo, Prov. Luanda, Angola.
The holotype is deposited in ZMC (Universitets Zoologisk Museum, Copenhagen, Denmark), 9 paratypes in CFN and one paratype in CJV.

The comparison between *Clavatula quinteni* and *C. xanteni* was already made in the original description but the following is a summary of the main differences between the two species.

***Clavatula quinteni*:**
- **slenderer**;
- teleoconch with **10-11 convex** whorls;
- **shiny to glossy** outlook;
- **sharp, slightly granulose, but strongly developed, projecting subsutural ridge** at top of each whorl;
- **suprasutural ridge with oblique white granules**, the latter being less present or completely absent in Angolese specimens;
- sinuous suture (only if granules are present);
- **parallel axial ridges** in the middle of last whorl;
- siphonal canal relatively **long**;
- aperture elongated **oval**;
- colour: brownish orange, but white shells are not uncommon;
- radula: **rounded** barb (Pl. IX, Fig. A);
- size: **33-42** mm.

***Clavatula xanteni*:**
- **less** slender;
- teleoconch with **8-9 flat** whorls;
- **dull** surface: large number of **weak parallel remnants of the outer lip** in earlier growth stages, particularly in the first apical whorls;
- **weak subsutural ridge** less prominent than in *C. quinteni*;
- **inclination at the bottom of each whorl** creating a **white uninterrupted band** - **never provided with flammules** - passing along the shoulder of the last whorl;
- suture **not sinuous** and **possibly with weak oblique granules <u>above</u> it in the white suprasutural zone**;
- **no axial folds** on the body whorl;
- **short** siphonal canal;
- mouth **wider** and **subangularly oval** in adult specimens;
- **cream** coloured, mottled with brown and white markings, no white specimens known;
- radula: **sharp** barb (Pl. IX, Fig. B);
- size: **20 to 34** mm.

Discussion: This makes a total of more than ten distinct differences, a few of them readily useful

to identify both specimens at a glance, even if illustrations are very obscure (bad tuning of the white balance, poor illumination and lack of sharpness, for instance). We refer to Pl. VIII, Figs A & B for a better understanding and a quick overview.
For instance, the correct identification in the paper by E. Rolán & P. Ryall (2014) published in *Xenophora*, 147 should be *C. quinteni* for figs A until J and *C. xanteni* for fig. K. A definitive conclusion could only be made after an accurate study of the microsculpture of these specimens. If this should ever be further contested the authors should be careful to offer better illustrations to the readers instead of causing confusion. Why did E. Rolán and P. Ryall neglect to show the variability of *C. quinteni* and *C. xanteni* by using perfect figures of many specimens, provided with information on the exact localities to argue the supposed synonymy with concrete facts? It is regrettable that E. Rolán and P. Ryall tried to mislead readers by publishing a plate with indistinct illustrations (remember charge 10: '*their images are frequently very poor, completely lacking details of protoconch, microsculpture,* ..') sustained without locality data and indicative parameters.
We agree that true identification of shells in general is often a serious problem, even when comparing with perfect illustrations in books or papers. After fifty years of experience in this field we perfectly realise shell collectors want to receive accurate information and a handy tool to quickly identify their shells. From the beginning onwards, '*Neptunea*' has chosen for the use of concrete concepts and a clear indication of differences between look-alike species with the purpose of immediate identification. We think it is preferable to compare large figures of different species on the same plate supported with arrows and text balloons instead of long useless texts or the use of a kind of picture book without further clarification.
This is certainly needed if some characteristics are not distinctly present in some specimens of the *Clavatula* species treated herein. Especially some specimens of *C. quinteni* from South Angola often display only reduced characteristics of the type. The absence of oblique white suprasutural granules for instance, makes it difficult to immediately judge the exact identification. In such doubtful circumstances, we have to check the whole of all parameters, preferable those marked in bold characters in our summary of differences. Even if considering the variability of each species and the evident presence of forms caused by age, habitat and local diet it is clear both *Clavatula* species from the same area are sufficiently different to separate them.
C. xanteni is really a rare shell from a restricted area in northern Angola and very difficult to obtain. As a matter of fact, only very few specimens among thousands of West African turrids have been found in the collections of the MNHN, while none were present in the Dautzenberg collection of the RBINS. The chance that hybrids for instance could be found is also negligible.

For more than two centuries authors have frequently discussed fact and fiction of the species concept in scientific literature. Different definitions have been used to sort out the chaos of all living organisms. Of course, rules (e.g. established by the ICZN) are needed to check all new information in relation with the existing literature, but the question can be asked if this way of proceeding is still practical since the development of scientific techniques in sequencing mitochondrial DNA and nucleus DNA. At present there is often a lack of correlation between the older literature, the traditional way of identifying and classifying living organisms by studying external characteristics of the shell or anatomic differences such as the radula and the genitals on the one hand and the use of barcoding on the other hand. It is clear that scientists first of all have to know what kind of genes are responsible for the individual external characteristics that can be used to differentiate species, otherwise the complete genome must be studied and compared between those species. Non-professional workers in the field of mollusc studies have to realise that their part in the study of living organisms is foundering and that it will be more and more difficult to contribute to the knowledge of 'species' identification. So long, authors have to use enough arguments when they voice their opinions instead of attacking colleagues by the use of vague statements or figures. In the future the function of amateur conchologists will probably be restricted to the mere description of 'forms' with their morphological and anatomical differences instead of making decisions about the validity of a certain species. We must understand this is the task of professional biologists who have to draw conclusions in that controversial and difficult matter.
I must admit both twin species *Clavatula quinteni* – *C. xanteni* are very similar and any lumper would certainly want to regard them as only one species. If any scientist can prove this by means of molecular study, for instance by mitochondrial DNA research, I will reconcile me the fact, but I want to stress that hundreds of such twin species, are difficult to separate. Following are a few examples.

Other controversial species:

- Occasionally a shell is described as a form but eventually it turns out to be a valid species. For instance, ***Drillia consociata* Smith, var. *recordata* Sykes, 1905** (Pl. XIII, Figs 73-77) has been upgraded to the species level (Nolf, F. & Verstraeten, J., 2006). Sykes himself as well as later authors such as Knudsen (1952) and Fernandes et al. (1995) were already convinced 'var. *recordata*' could be more than a mere form. Moreover, it even belonged to another genus and a different family. ***Drillia recordata* Sykes, 1905** (Pl. XIV, Figs 78-81) is now regarded as a true species clearly different from the species ***Crassispira consociata* (E.A. Smith, 1877)** (Pl. XIV, Figs 82-83). It is remarkable, but probably accidental, that most of our specimens were obtained from Moita Seca, N Angola by the PEMARCO fisheries and some from off Luanda, the same area from which the mysterious *Clavatula xanteni* was collected.

- Another example of a still unsolved problem is the occurrence of intermediate forms between the twin species ***Laevicardium crassum* (Gmelin, 1791)** and ***L. oblongum* (Gmelin, 1791)** in the E Atlantic, the Celtic Sea (South Ireland and SW England, UK) and Mediterranean waters (Pl. XV, Figs 84-88). Vidal (2005) assumed the presence of five subspecies as forms of one polytypic species. Especially specimens from Cardigan Bay and the English Channel (UK) are difficult to attribute to either *L. crassum* (Pl. XV, Figs 86) or *L. oblongum* (Pl. XV, Figs 84-85) as they possess characteristics of both extreme 'forms'. They are provisionally regarded to belong to ***L. crassum* var. *gibba* (Jeffreys, 1863)** (Pl. XV, Figs 87-88). The form '*gibba*' refers to shells which are medium sized, rather elongate and globose, oblique and oval in outline with deeper grooves between the ribs compared with *L. crassum* (Gmelin, 1791). Therefore this form is most similar to *L. oblongum* (Gmelin, 1791), but samples show a lot of variability and intermediate forms with *L. crassum* are not uncommon. Moreover, juvenile shells show the typical characteristics of *L. crassum*. As *L. oblongum* (Gmelin, 1791) is very uncommon and nearly absent in the abovementioned range (SW England, East Atlantic), it is impossible the form '*gibba*' is a form of *L. oblongum* or the product of interbreeding between *L. crassum* and *L. oblongum*. Vidal (2002) used no concrete arguments for the separation of the different subspecies. He wriggled himself in all kinds of suppositions and even contradictions through using terms such as types, species, subspecies, forms, varieties, phenotypic subspecies and ecophenotypes without presenting a definitive solution. Molecular research and DNA-studies will eventually provide a definitive answer later on. Provisionally the conservative splitting in two different species - comparable to *Cerastoderma edule* (Linnaeus, 1758) and *C. glaucum* (Bruguière, 1789) - is the best solution as yet, but it is unsatisfying to settle the real status of intermediate forms such as for instance the from '*gibba*'. The easiest solution is to lump all forms or subspecies into a single entity.

- **'*Fusus mollis* G.B. Sowerby III, 1913'** (Pl. XVI, Figs 89-94) and **'*Fusus albinus* A. Adams, 1856'** (Pl. XVII, Figs 95-97) are two other enigmatic twin species from Angola and Namibia. Both are very difficult to obtain due to which their variability is poorly known.

Both species are now regarded to belong to the genus *Fusinus* (Hadorn, 1997). For more than fifty years *F. mollis* was only known from the holotype, but the type locality is unkown. It turned up in the late sixties of the previous century from Angolese waters (PEMARCO). On Pl. XVI, Fig. 89 a specimen from Ascension Island (CFN) is illustrated.

The following differences are given by Hadorn (1997):

° smaller (43-75 mm) and slenderer than *F. albinus* (45-118 mm);
° red-brown to full brown colour compared to the whitish or light yellowish brown colour of *F. albinus*;
° rather convex whorls;
° a smaller number of axial ribs, broad and irregularly spaced on the body whorl;
° elongated oval mouth;
° sharp outer lip.

I refer to Pl. XVI, Figs 89-94 and Pl. XVII, Figs 95-97 which show the variability of both species. It is clear that *F. mollis* grows larger than generally supposed. The colour is an unreliable characteristic. Both species can be white, creamy white or brownish, especially darker on the lower the siphonal canal. The difference in number of axial ribs on the last whorl is not spectacular: 12-19 in *F. mollis* and 18-19 in *F. albinus*, neither is the difference in structure of these ribs. The sharp outer lip is typical of smaller, juvenile specimens and is not useful. The best parameter is the convexity of the whorls and the general outline. The spire angle of *F. albinus* is wider than in *F. mollis*, which looks more elongated. The mouth of *F. albinus* is rounded while *F. mollis* has an elongately oval mouth. The whorls of *F. albinus* are more rounded and the area between the suture and the shoulder is rather excavated. However, that last characteristic is not completely convincing and compared to the twin species *Clavatula quinteni – C. xanteni* this problem is far more troublesome. For this reason some authors prefer to regard *F. mollis* as a junior synonym of

F. albinus. It can be questioned whether Abbott & Dance (1982) shared the same opinion or was it a mistake to illustrate *F. albinus* by means of a tyical *F. mollis* in their Compendium? *F. mollis* probably remained unknown or poorly studied for nearly a whole century because the holotype is a small specimen (42 mm) and larger specimens had already been identified as *F. albinus*.

- The best known example of two other twin species, which are often difficult to differentiate, are the European ***Gibbula pennanti* (Philippi, 1851)** (Pl. XVIII, Figs 98-112; Pl. XIX, Figs 121-124) and ***G. umbilicalis* (Da Costa, 1778)** (Pl. XIX, Figs. 113-120). Both species are very variable in colour and pattern and are often confused with each other.

I refer to the excellent study of L. Beck (1986) for a summary of the several characteristics to differentiate both species:

° radula (according to scanning electron microscopy): the shape of the 5th lateral tooth, the width of the neck of the central tooth, the crown of this tooth and the shape of its basal groove;

° shell: dimension of the umbilicus, colour pattern of the base and the ratio of height to diameter (H/D-index);

° animal: ventral groove of the pseudoproboscis, radula cartilage, glandular processes of the female urogenital opening.

When restricted to conchological characters:

° the checkerboard pattern of the base and the closed umbilicus in *G. pennanti* are two reliable characteristics;

° the base of *G. umbilicalis* is less convex than in *G. pennanti* and rather collapsed evidently due to the presence of an open umbilicus The pattern of the whorls in *G. umbilicalis* shows splashes of red rather than dark blue and purple in *G. pennanti* while the base is provided with narrow stripes. On the other hand, the reticulated pattern in *G. pennanti* is sometimes so dense that a nearly homogeneous dark green or blue and even black colour is created;

° in *G. pennanti* the sutures are more marked and the first whorls are a little more conical;

° the last whorl of juvenile shells of *G. pennanti* is regularly curved, while it is flattened in *G. umbilicalis* with an excavated subsutural area between the strongly ribbed whorls;

° specimens of both species from the southern Iberian Peninsula (Pl. XVIII, Figs 106-107; Pl. XIX, Figs 121-124) may have a more pronounced spiral sculpture than those from northern Europe.

It is clear that separation of these two twin species can perfectly be achieved. However, specimens of *G. umbilicalis* with a nearly closed umbilicus (Pl. XIX, Figs 115-116) occur while shells of *G. pennanti* with a small narrow umbilicus are not rare, either (Pl. XVIII, Figs 105, 107, 109, 112). Sometimes, the checkerboard pattern in the latter is even missing (Pl. XIX, Figs 123-124).

Gibbula pennanti and *G. umbilicalis* are both inhabitants of the littoral (eulittoral or intertidal) zone, where thousands of specimens can be gathered from rocky shores among several kinds of algae (*Fucus* sp., *Zostera* sp., ...) easily accessible at low tide. Other twin species mentioned in this paper, for instance the *Clavatula* sp. and *Fusinus* sp., have to be trawled at depths from 10-100 m resulting in a restricted number of available specimens, certainly because they live in West African waters along the Angolese and Namibian coastal lines.

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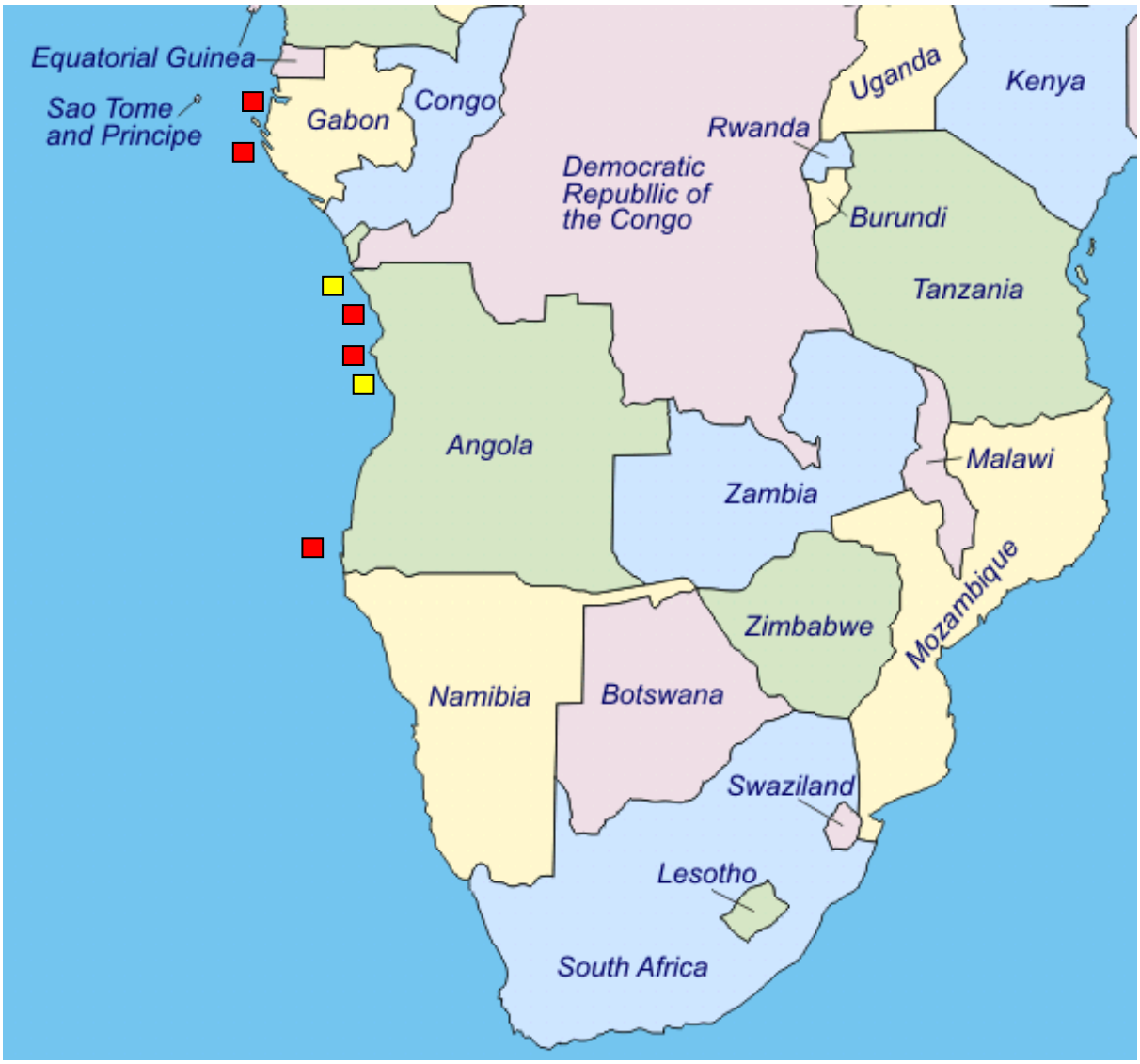

Geographic distribution of *Clavatula quinteni* (■) and *C. xanteni* (■)

Plate I. Figs 1-8: *Clavatula quinteni* Nolf & Verstraeten, 2006; 1-2: Gabon, W Africa. Trawled by fishermen. 1981. 37.6 mm. Holotype. ZMC; 3-6: Dredged at a depth of 30 m off Libreville, Gabon, W Africa. CFN; 3-4: 39.5 mm. Paratype 1; 5-6: 40.5 mm. Paratype 2; 7-8: Trawled by local fishermen at about 40 m deep off Port Gentil, Gabon, W Africa. 37.8 mm. CJV.

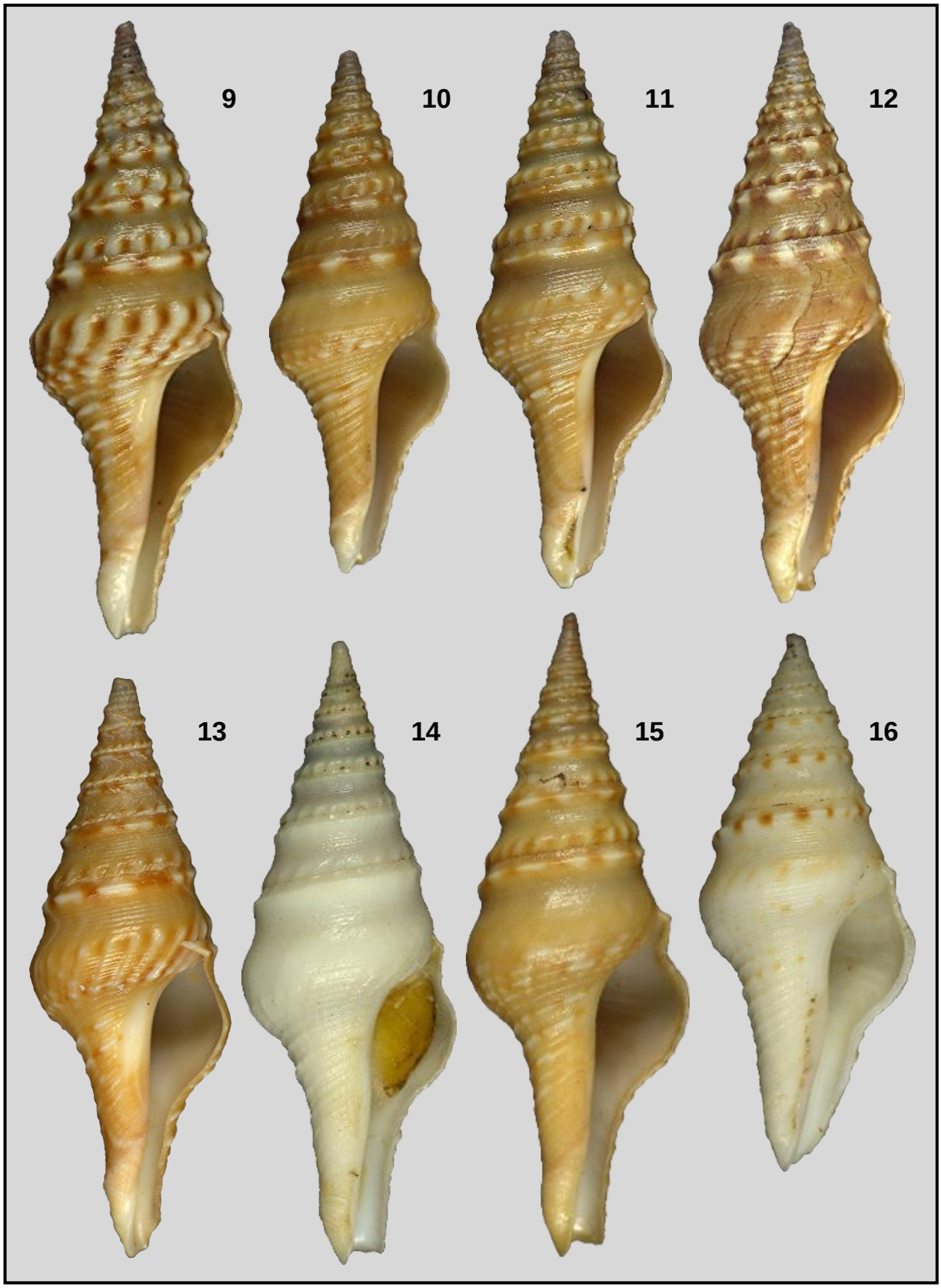

Plate II. Figs 9-16: *Clavatula quinteni* Nolf & Verstraeten, 2006; 9-11: Trawled by local fishermen at about 40 m deep, off Port Gentil, Gabon, W Africa. CJV; 9: 39.1 mm. Paratype 4; 10: 30.6 mm. Paratype 5; 11: 33.6 mm. Paratype 6; 12-13: Gabon, W Africa. Trawled by fishermen. 1981. CJV; 12: 36.3 mm. Paratype 7; 13: 36.5 mm. Paratype 8; 14: Libreville, Gabon, W Africa. Trawled at -38 m, at 60 km offshore. 39.1 mm. CFN. Paratype 9; 15: Dredged at a depth of 30 m off Libreville, Gabon. 41.8 m. CFN. Paratype 10; 16: Cape Morro, Angola. Trawled by PEMARCO at -73 m. 1973. 33.0 mm. CFN. Paratype 11.

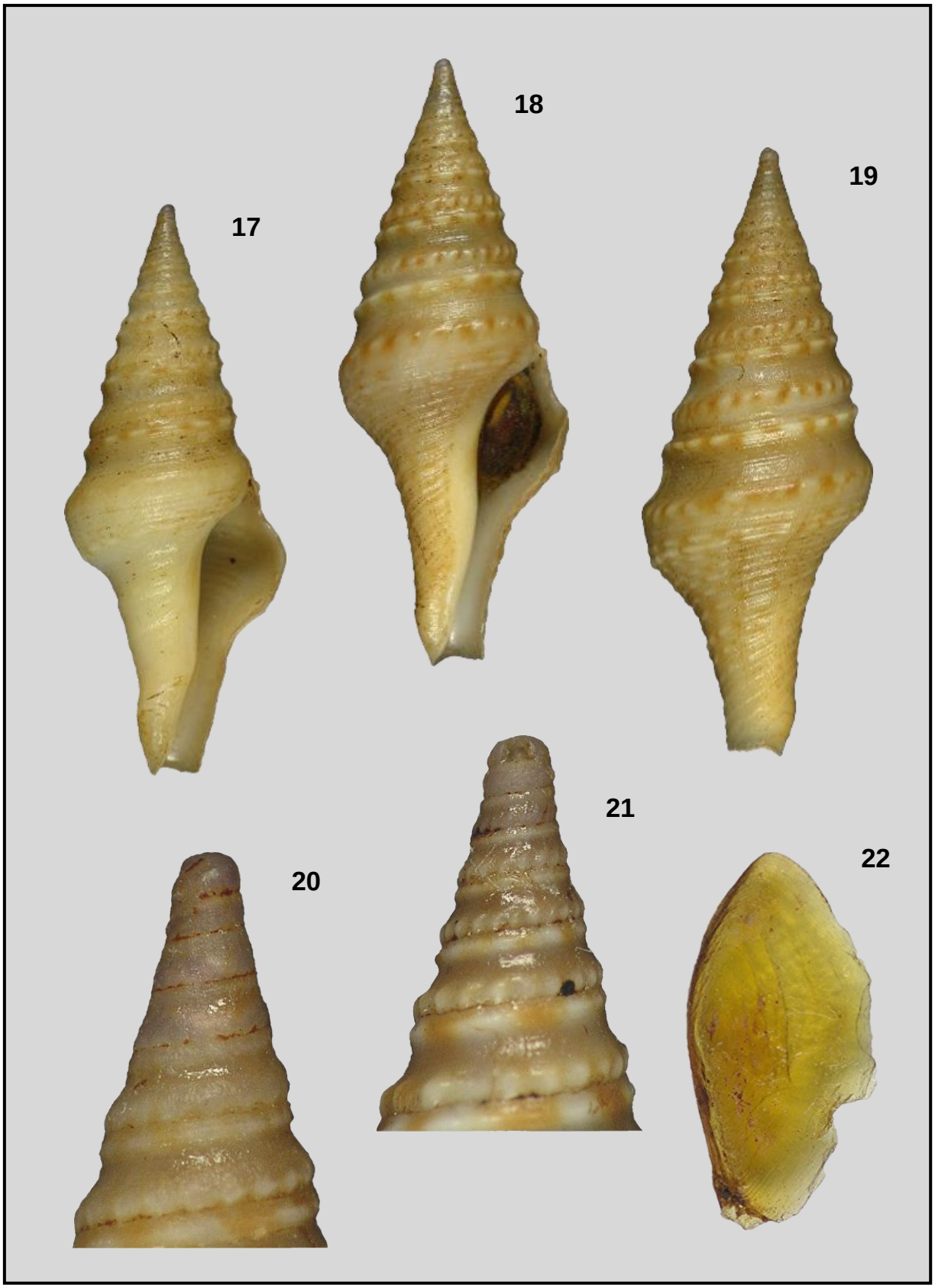

Plate III. Figs 17-22: *Clavatula quinteni* Nolf & Verstraeten, 2006; 17-19: Trawled at a depth of 73 m off Cape Morro, Angola. CFN; 17: 35.5 mm. Paratype 12; 18-19: 36.2 mm. Paratype 13; 20-21: Protoconch and first postnuclear whorls; 22: Operculum.

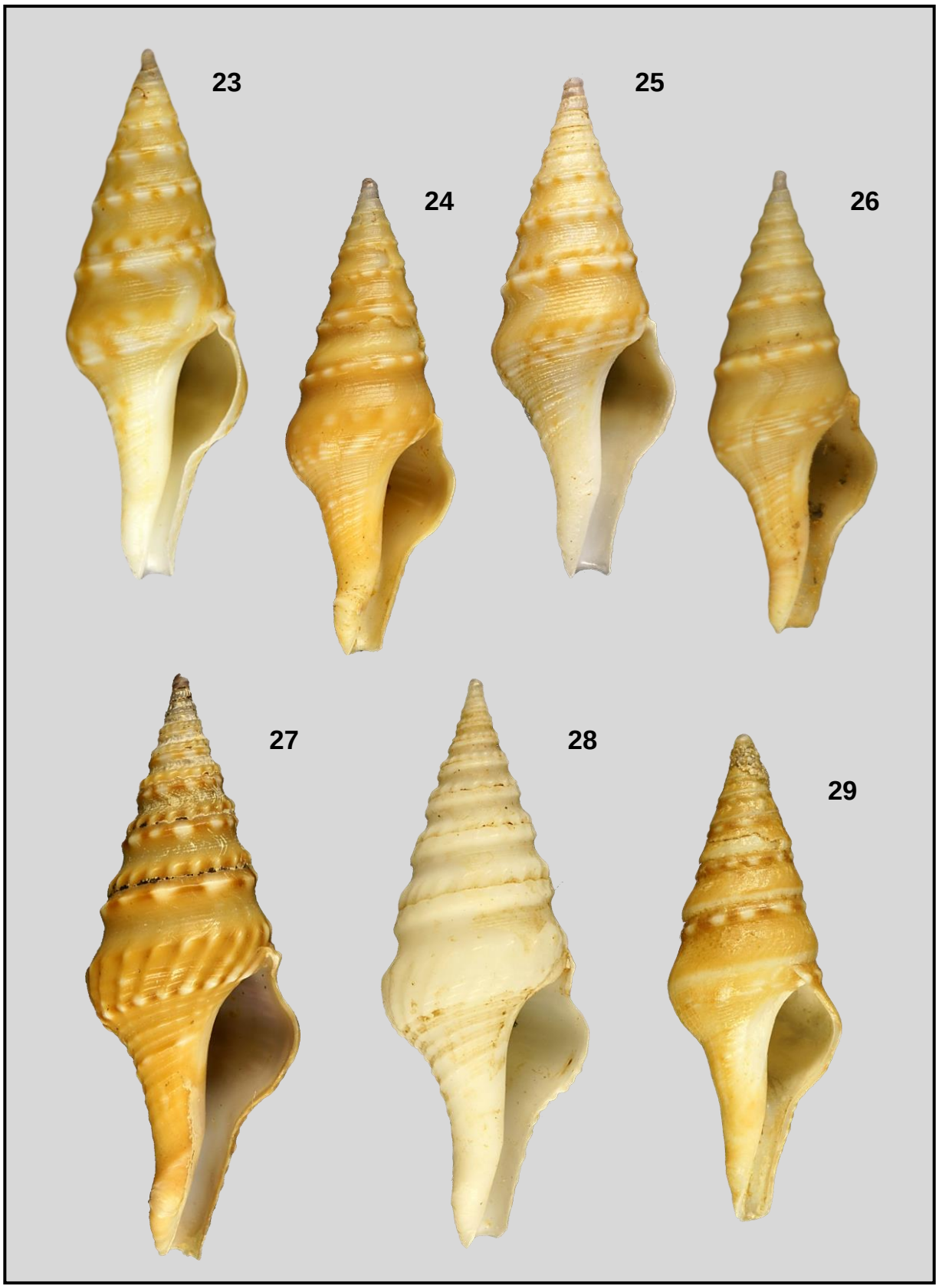

Plate IV. Figs 23-28: *Clavatula quinteni* Nolf & Verstraeten, 2006. CJV; 23-24: Off Luanda, Angola. Dredged at a depth of 40 m. 1992; 23: 23.70 mm; 24: 24.60 mm; 25-26: Benguela, Prov. Namibe, Angola. Dredged at 10-20 m. In sand; 25: 27.31 mm; 26: 24.61 mm; 27-28: Port Gentil, Gabon; 27: 35.66 mm; 28: 34.21 mm.
Fig. 29: *Clavatula xanteni* Nolf & Verstraeten, 2006. Off Moita Seca Point, Angola. Trawled by Belgian fishermen (PEMARCO) at a depth of 25 m off the mouth of the Congo-river. 1968. 30.50 mm. CJV.

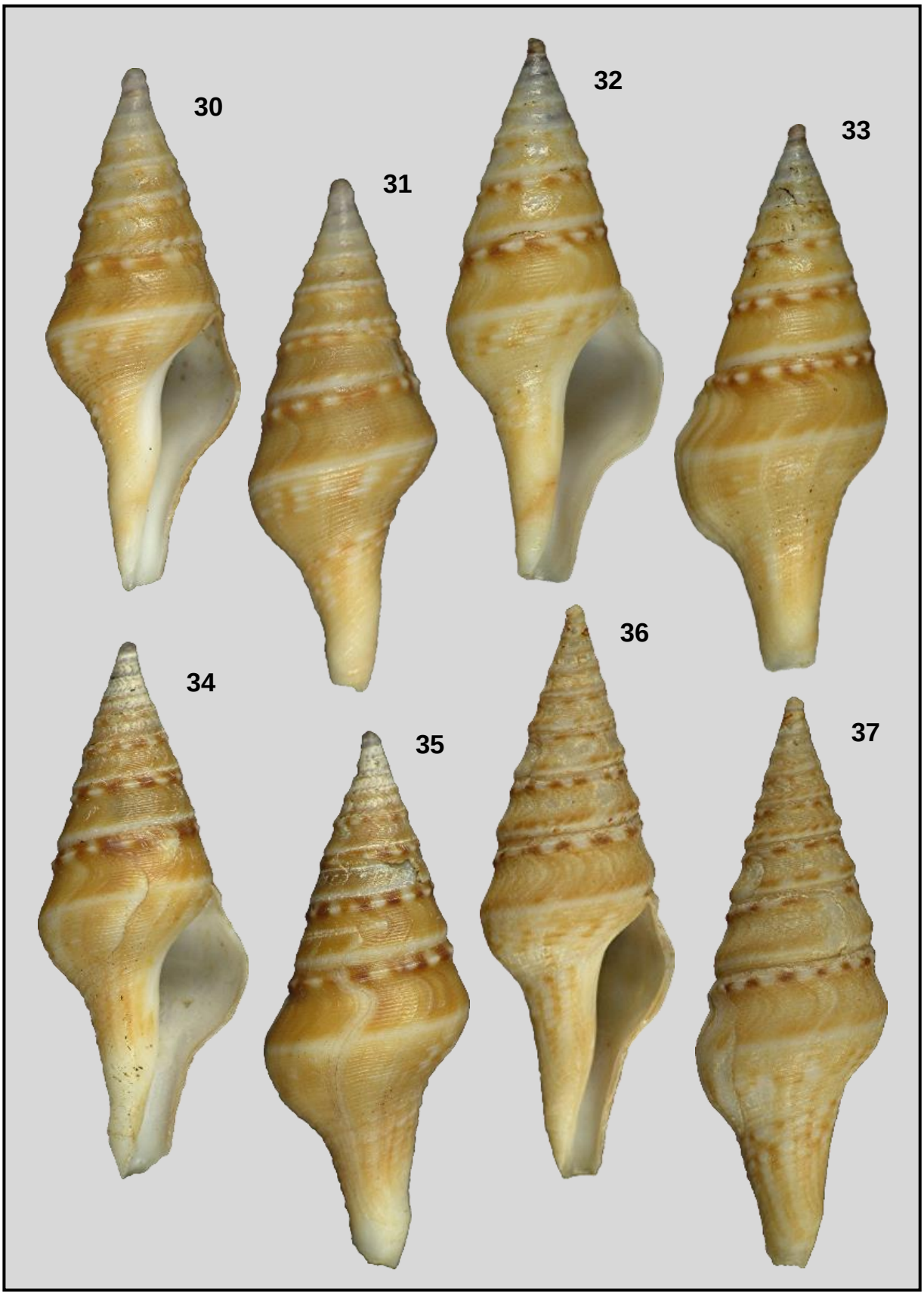

Plate V. Figs 30-37: *Clavatula xanteni* Nolf & Verstraeten, 2006. Off Moita Seca Point, Angola, W Africa. Trawled by Belgian fishermen (PEMARCO) at a depth of 25 m, off the mouth of the Congo-river. 1968. CFN; 30-31: 25.7 mm. Paratype 4; 32-33: 31.3 mm. Paratype 8; 34-35: 30.1 mm. Paratype 7; 36-37: 32.7 mm. Paratype 9.

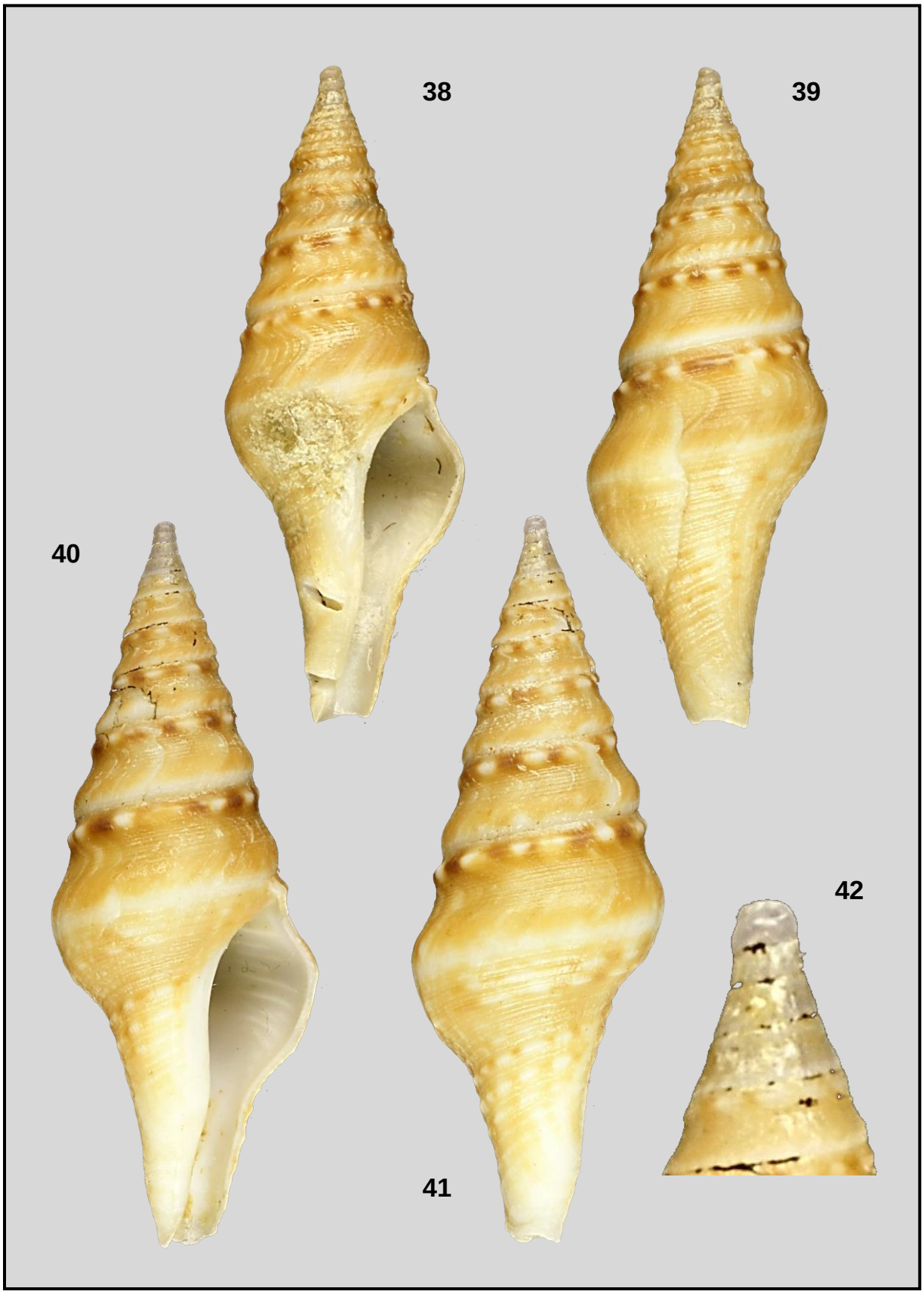

Plate VI. Figs 38-42: *Clavatula xanteni* Nolf & Verstraeten, 2006. Moita Seca Point, Angola, W Africa. Trawled by Belgian fishermen (PEMARCO) at a depth of 20-30 m, off the mouth of the Congo-river. 1968. CFN; 38-39: 29.8 mm. Paratype 6; 40-41: off Mussulo, Prov. Luanda, Angola. Dredged at a depth of 90-100 m. 1985. 34.06 mm. CSH; 42: protoconch and first nuclear whorls..

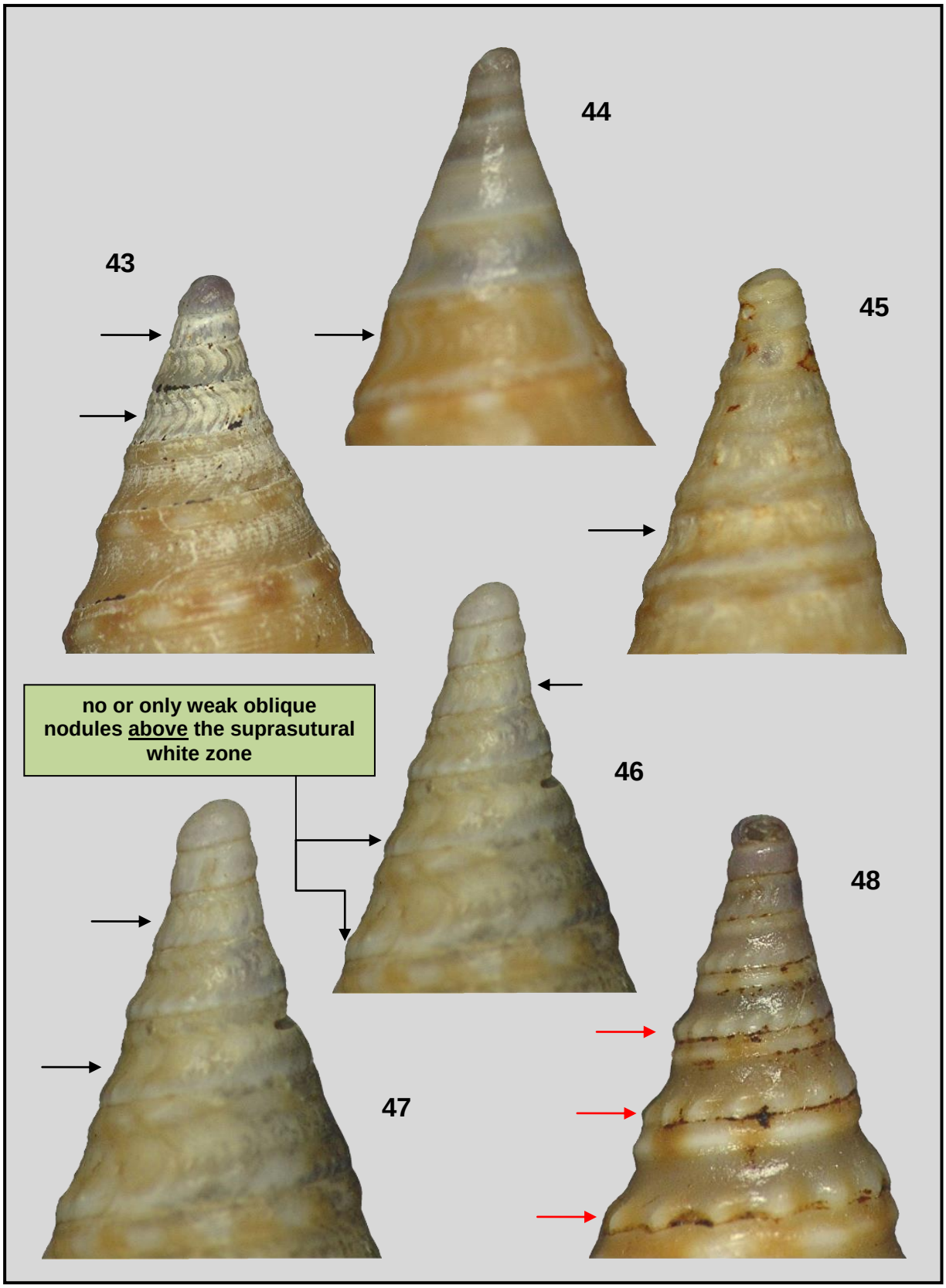

Plate VII. Figs 43-47: *Clavatula xanteni* Nolf & Verstraeten, 2006. Protoconch and first postnuclear whorls. Large number of **weak parallel remnants of the outer lip** in juvenile stages are indicated by a **black arrow**.
Fig. 48: *Clavatula quinteni* Nolf & Verstraeten, 2006. Protoconch and first postnuclear whorls. **Oblique granules in the suprasutural zone** indicated by a red arrow in contrast to **sporadic, flattened oblique granules above the white suprasutural zone in *C. xanteni***.

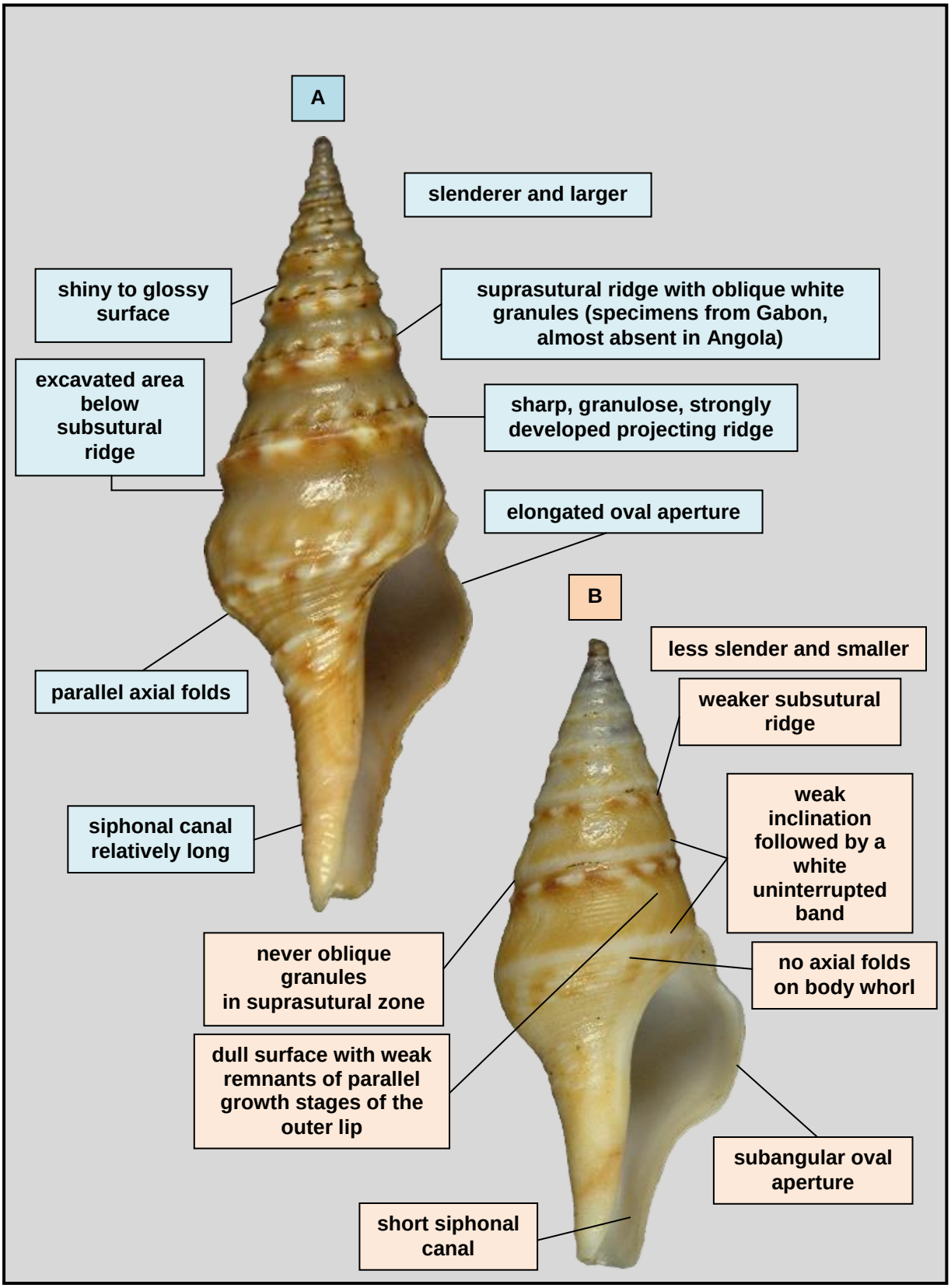

Plate VIII. Comparison of the morphological characteristics of *C. quinteni* and *C. xanteni*.

Fig. A: *Clavatula quinteni* Nolf & Verstraeten, 2006; **Fig. B**: Clavatula xanteni Nolf & Verstraeten, 2006.

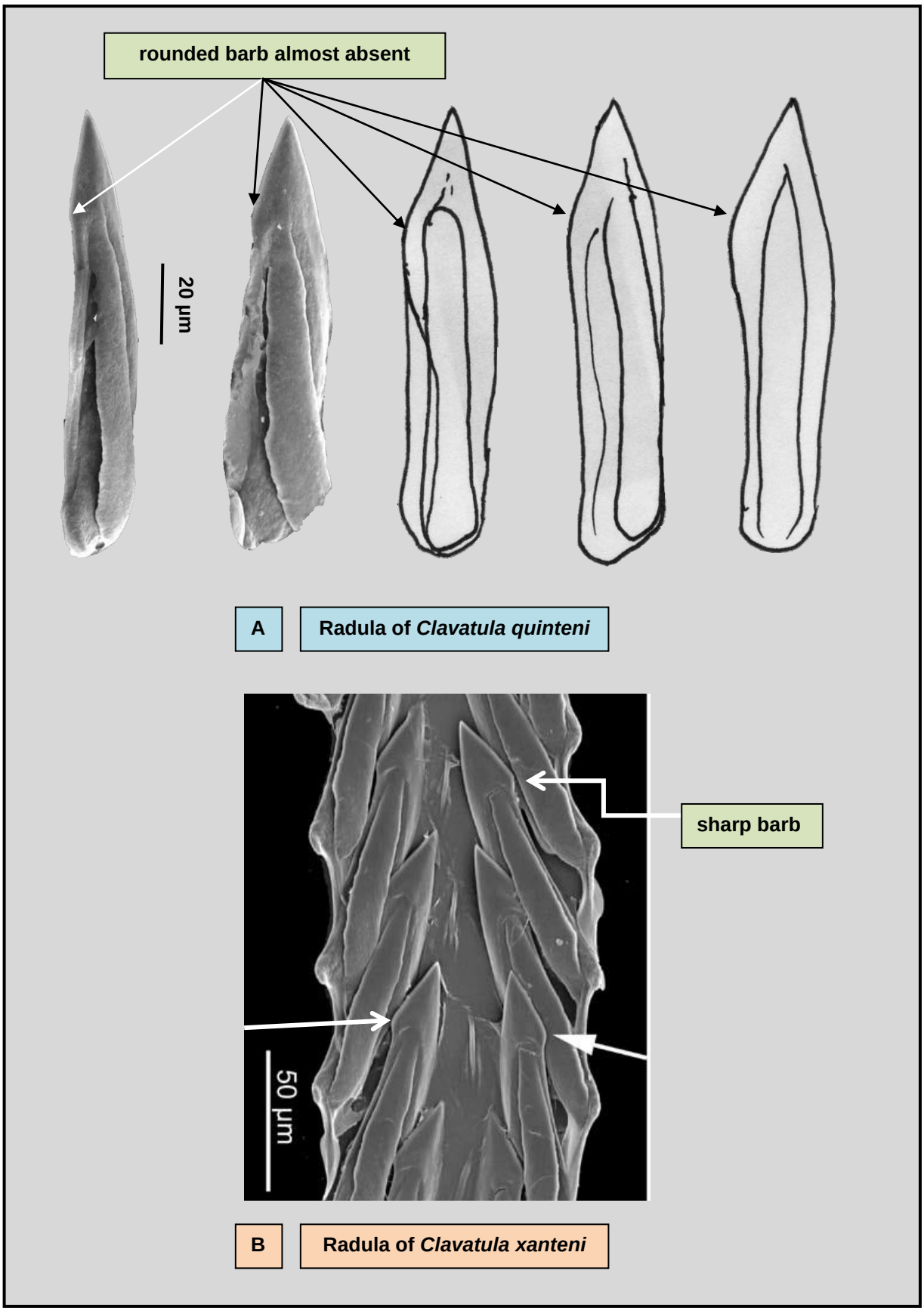

Plate IX. Comparison of the radulae of *C. quinteni* (Fig. A) and *C. xanteni* (Fig. B)
(figure A willingly put at my disposal by E. Rolán and figure B by N. Puillandre)

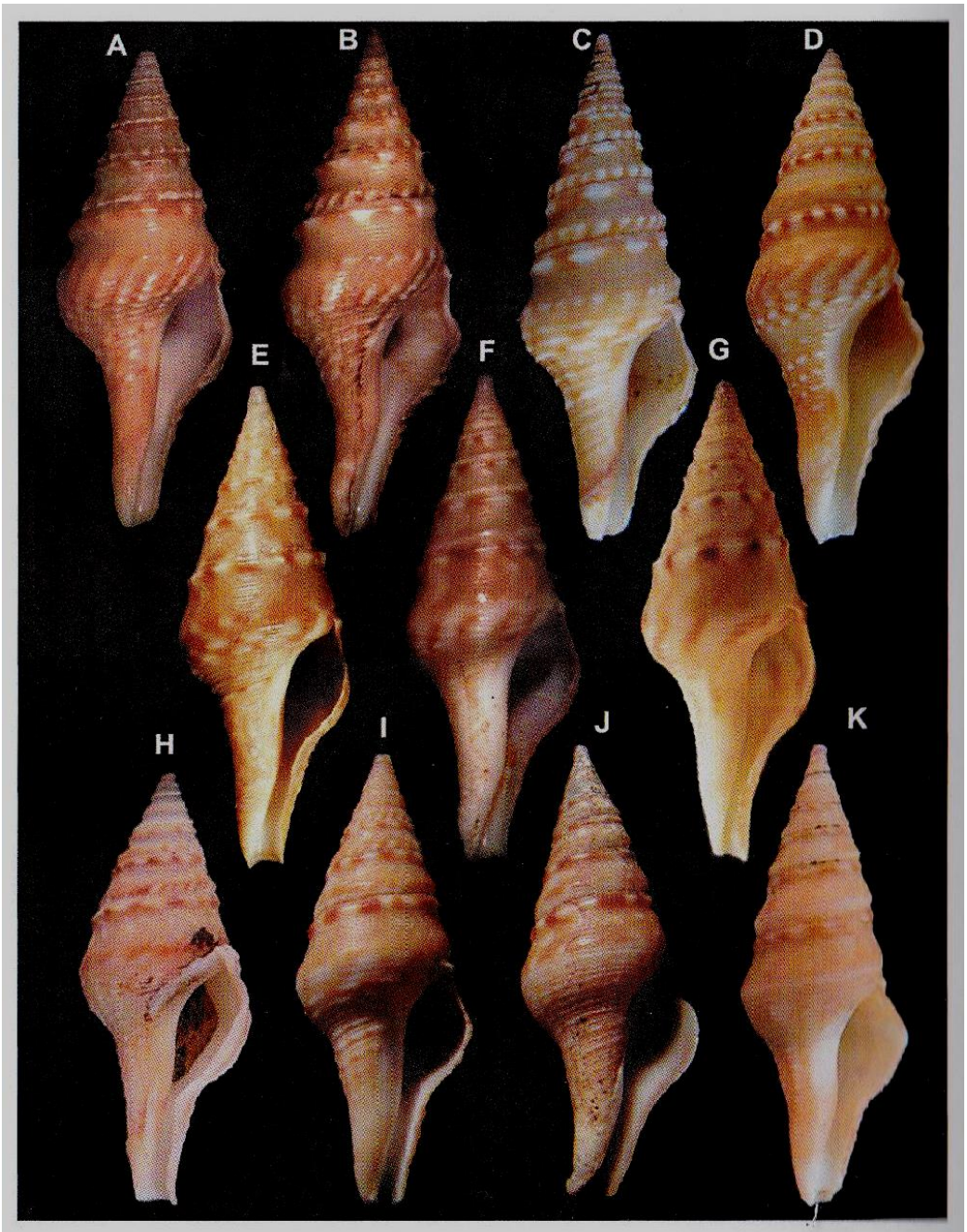

Figure 2: A: Shell very similar to the type of *Clavatula quinteni*; B: very similar to *C. quinteni*; C: very C. *quinteni*; D: rather *C. quinteni*; E: more close *C. quinteni*; F: *C. quinteni* or *C. xanteni*; G: somewhat *C. xanteni*; H: rather *C. xanteni*; I: rather *C. xanteni*; J: almost *C. xanteni*; K: very similar to the type of *Clavatula xanteni*.

Plate X from: *Xenophora*, 147: 13-15, Figure 2 with the opinion of E. Rolán and P. Ryall

Cfr. our opinion: figures A to J belong to *Clavatula quinteni*, K is the only figure belonging to *C. xanteni*

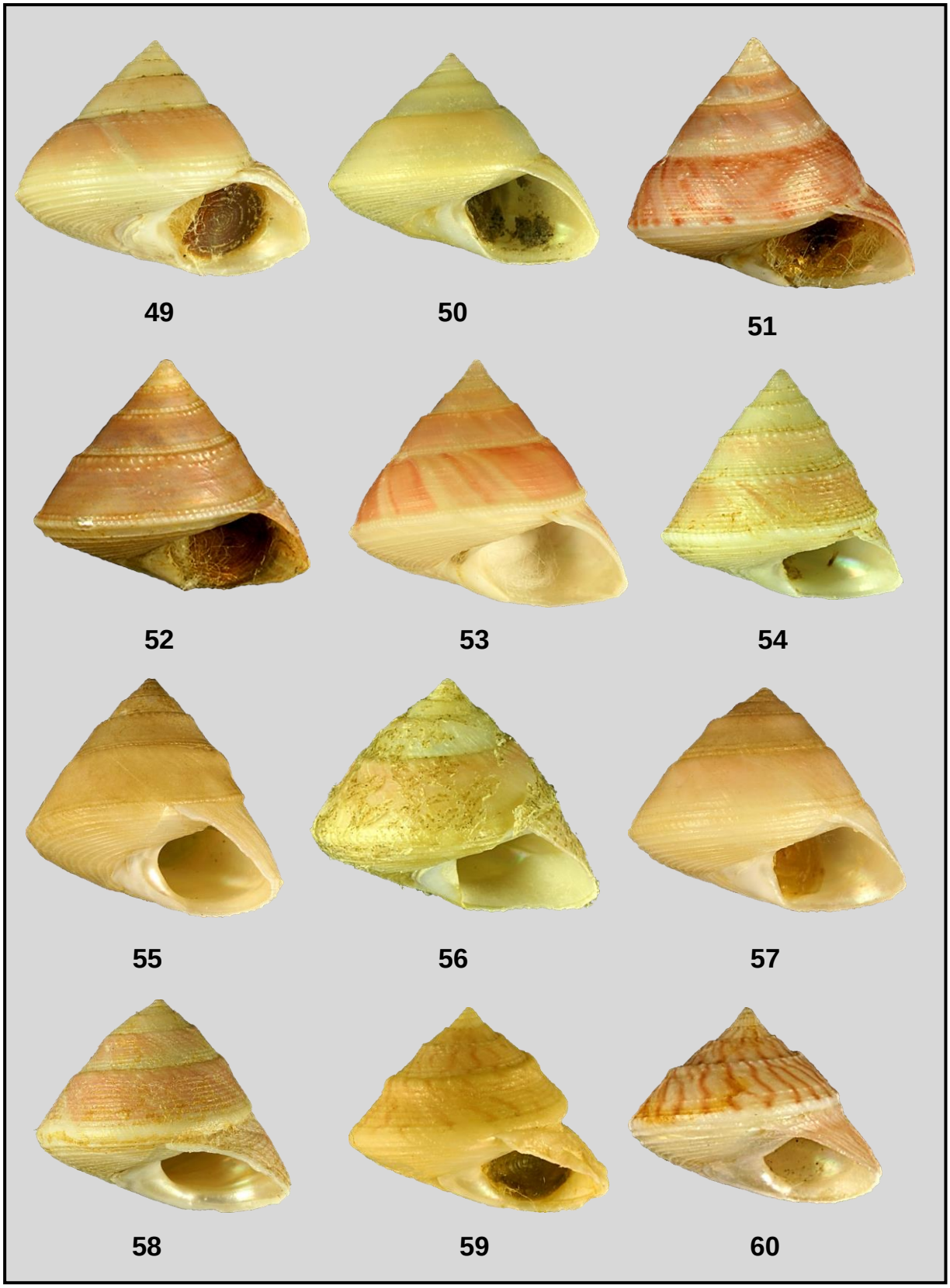

Plate XI from: *Neptunea*, 12(4): 1-36. Critical analysis and additional information about the identity and distribution of the genus *Callumbonella* (Mollusca: Gastropoda: Trochoidea) in the East Atlantic and the Mediterranean Sea.

Figs 49-60: *Callumbonella suturale* (Philippi, 1836); 49: Bay of Biscay; 50: N Portugal; 51-52: Sicily, Italy; 54: Alboran Sea, Spain; 55: Tanger, Morocco; 56: W Sahara; 57-58: Mauritania; 59-60: Cape Verde Islands.

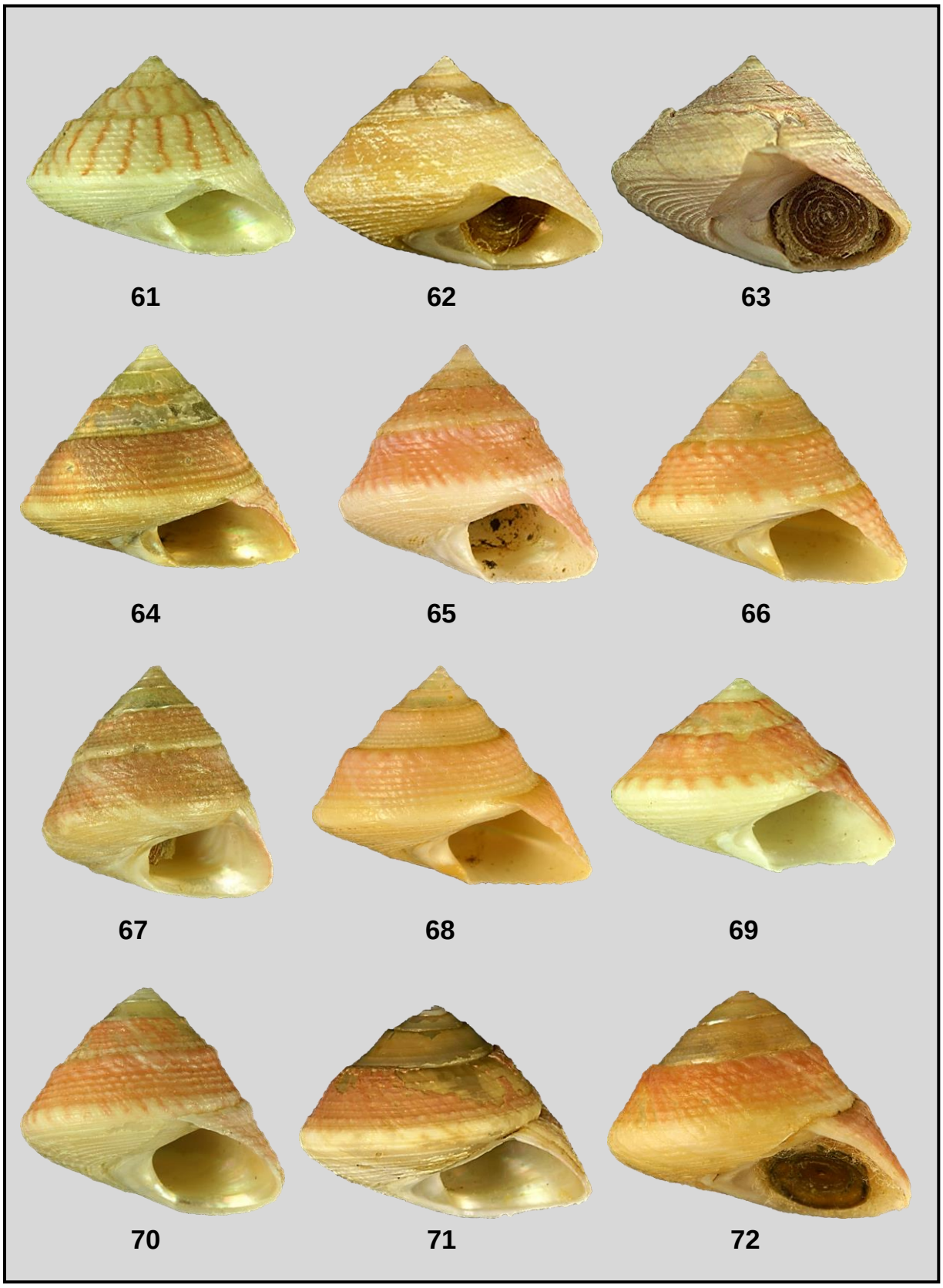

Plate XII from: *Neptunea*, 12(4): 1-36. Critical analysis and additional information about the identity and distribution of the genus *Callumbonella* (Mollusca: Gastropoda: Trochoidea) in the East Atlantic and the Mediterranean Sea.
Figs 61-72: *Callumbonella suturale* (Philippi, 1836); 61-63: Cape Verde Islands; 64: Senegal; 65: Ivory Coast; 66-68: Ghana; 69: Angola; 70-72: Namibia.

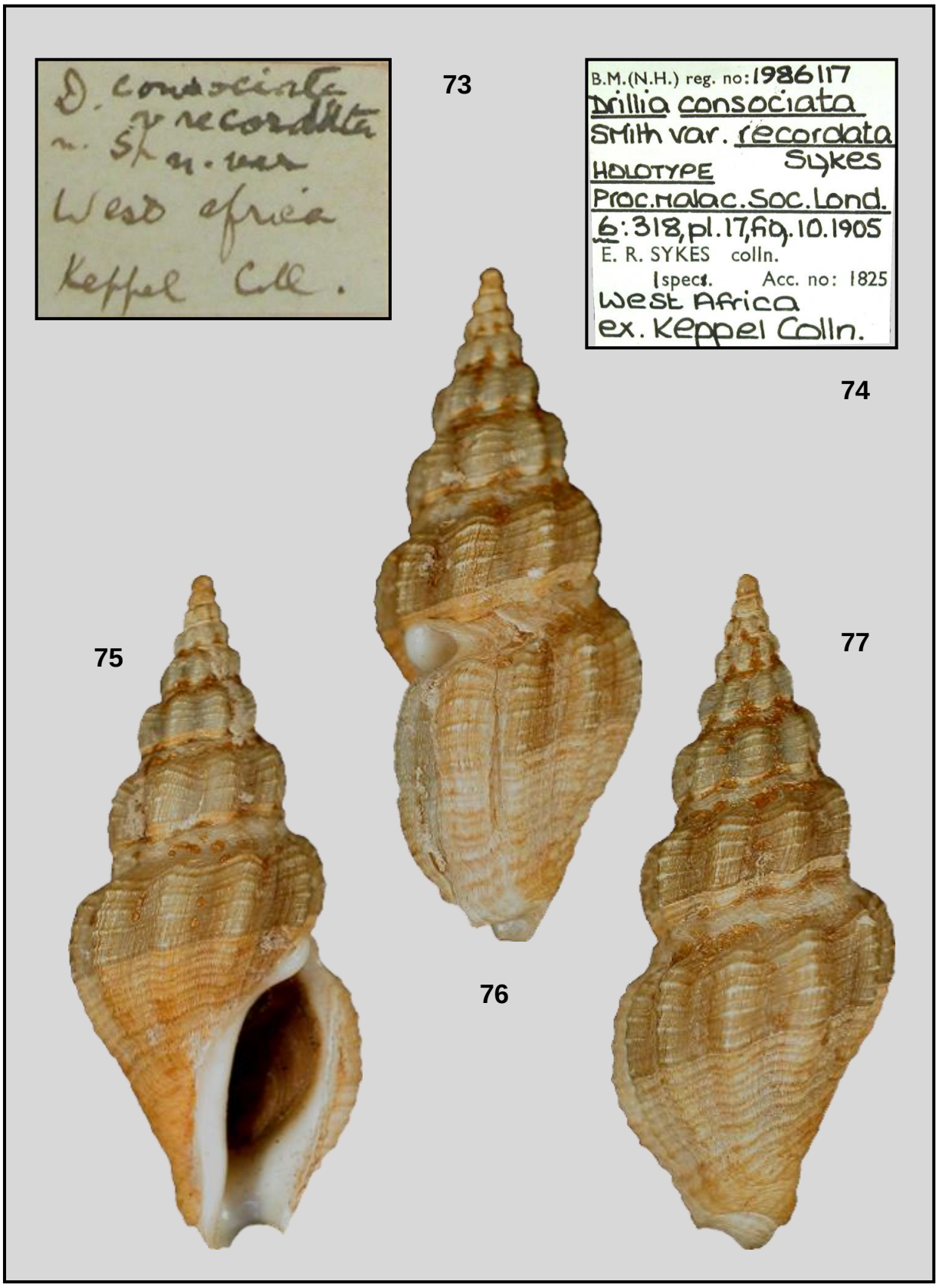

Plate XIII. Figs 73-77. *Drillia recordata* Sykes, 1905; 73: Original label from E.R. Sykes; 74: Label from curator in BMNH; 75-77: Lectotype in Sykes-collection (ex Keppel-collection). West Africa. 24 mm. BMNH: reg. n°:1986117; ac. n°: 1825.

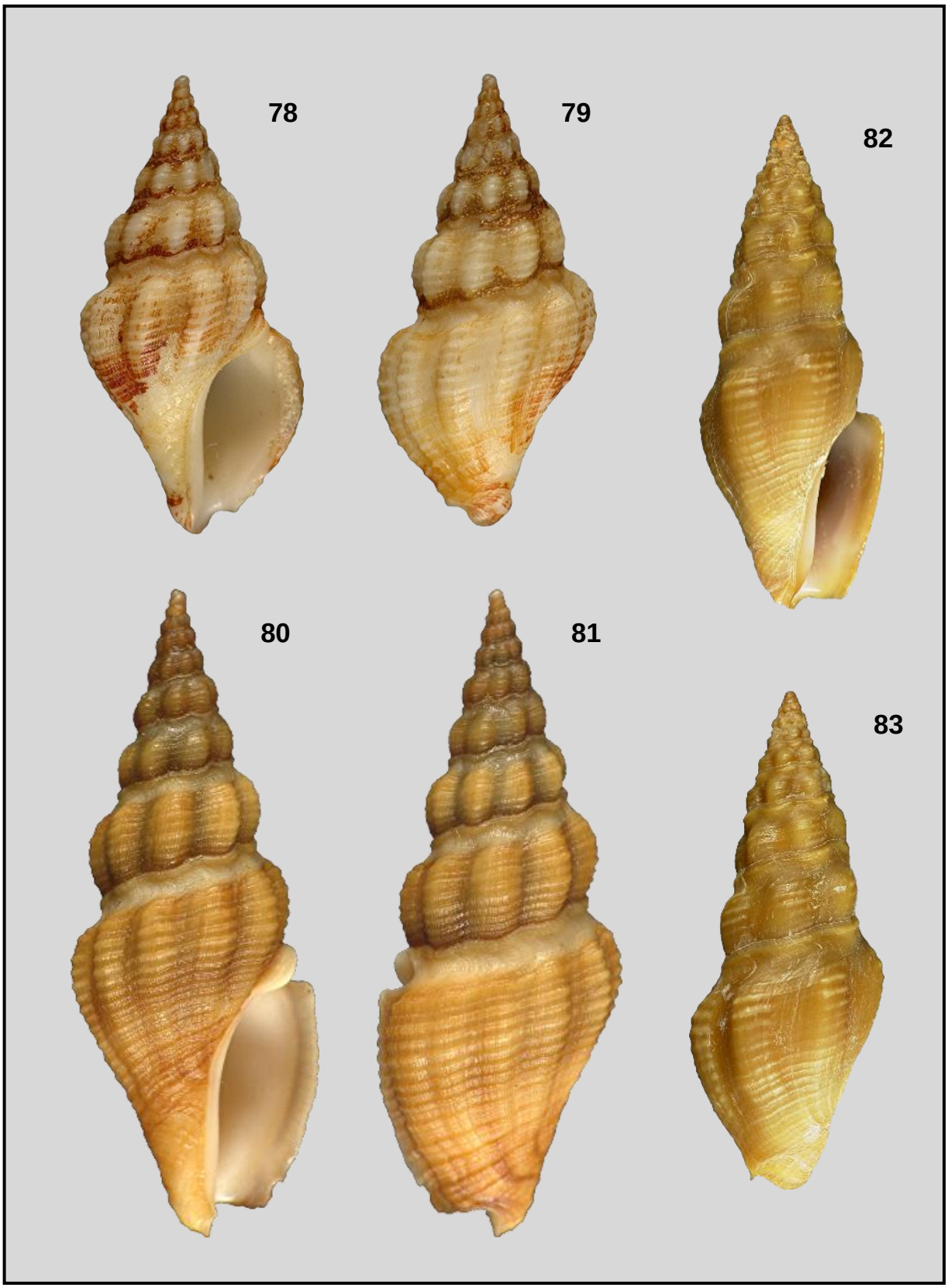

Plate XIV. Figs 78-81. *Drillia recordata* Sykes, 1905. CFN; 78-81: Moita Seca Point, Angola. Trawled by Belgian fishermen (PEMARCO) at a depth of 72 m. 1973; 78-79: 21.0 mm; 80-81: 34.8 mm; Figs 82-83: *Crassispira consociata (*E.A. Smith, 1877). Farol das Lagostas, north of Luanda, Angola. 26.4 mm. CJV.

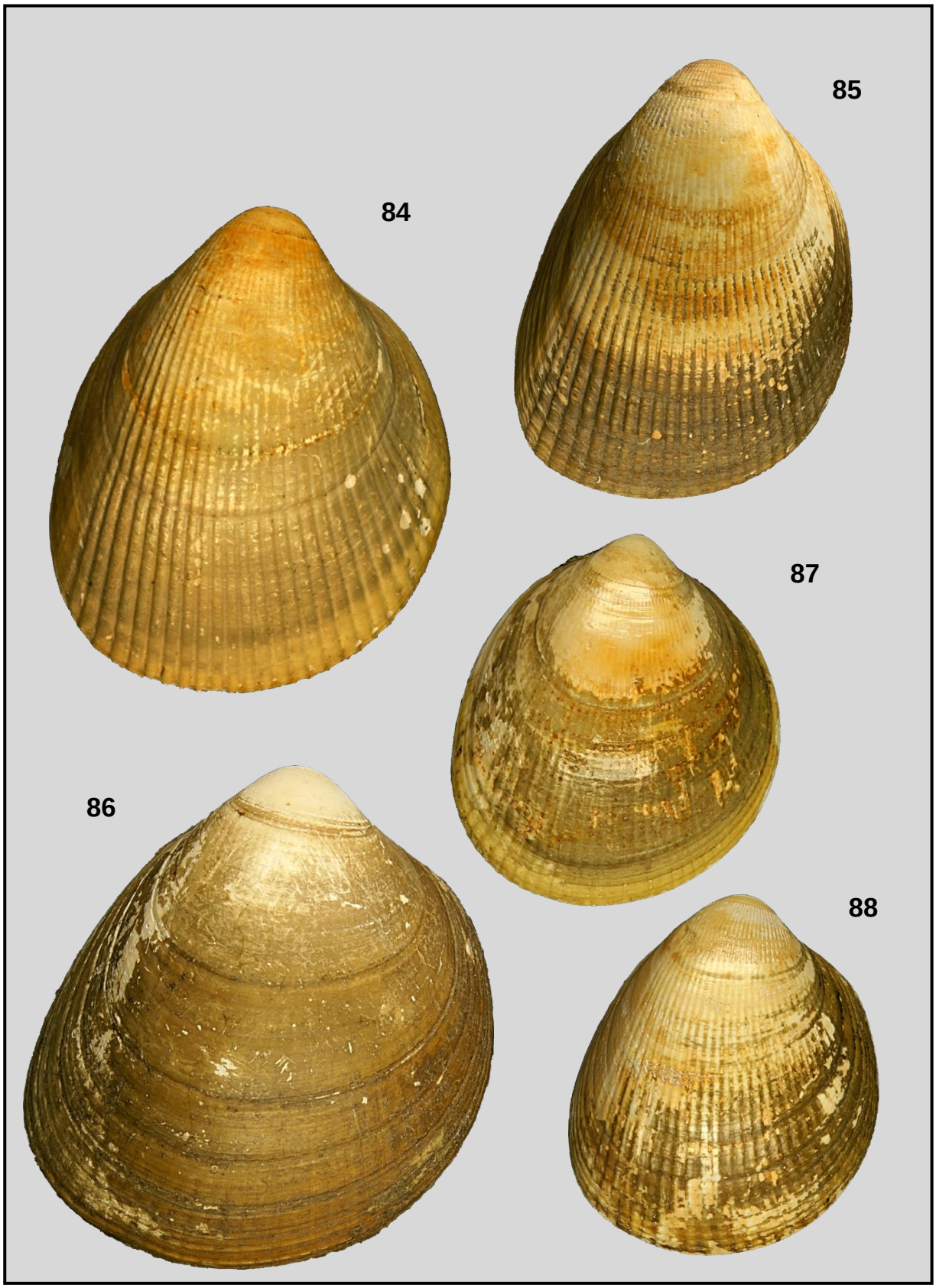

Plate XV. Figs 84-85. *Laevicardium oblongum* (Gmelin, 1791). CFN; 84: Port Vendres, S France. Dredged. 1960. H. 73.66 mm L. 61.21 mm; 85: South of La Rochelle, Bay of Biscay, W France. Trawled by Belgian fishermen at a depth of 130 m. August 2009. H. 63.37 mm L. 47.66 mm;
Fig. 86: *Laevicardium crassum* (Gmelin, 1791). Bay of Liverpool, Irish Sea, UK. Trawled by Belgian fishermen at a depth of 36 m. April 1970. H. 76.64 mm L. 72.66 mm. CFN; Figs 87-88*:* *Laevicardium crassum* var. *gibba* (Jeffreys, 1864). CFN; 87: H. 56.21 mm L. 46.16 mm; 88: H. 47.66 mm L. 42.28 mm.

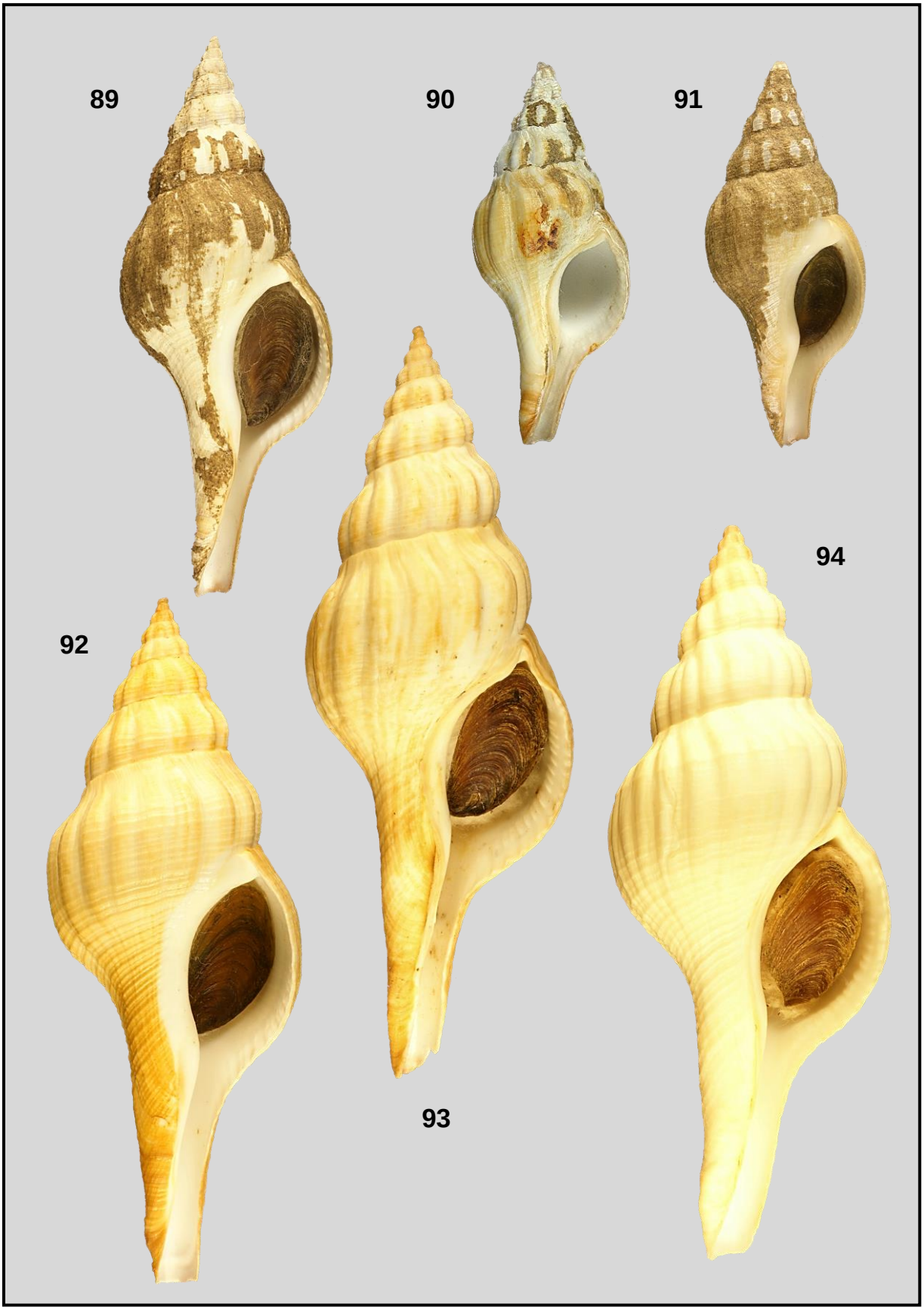

Plate XVI. Figs 89-94. *Fusinus mollis* (G.B. Sowerby II, 1913); 89: Ascension Island, W Africa. Dredged by fishermen. 89.34 mm. CFN; 90: Angola. 46.50 mm. CJV; 91: Bay of Namibe, Angola. Dredged at a depth of 18 m. In muddy sand. 45.34 mm. CFN; 92-94: Ambriz, Angola. Trawled by Belgian fishermen (PEMARCO) at a depth of 80 m. CFN; 92: 105.01 mm; 93: 124.78 mm; 94: 121.82 mm.

Plate XVII. Figs 95-97. *Fusinus albinus* (A. Adams, 1856). Ambriz, Angola. Trawled by Belgian fishermen (PEMARCO) at a depth of 80 m. 1963. CFN; 95: 97.46 mm; 96: 117.96 mm; 97: 108.39 mm.

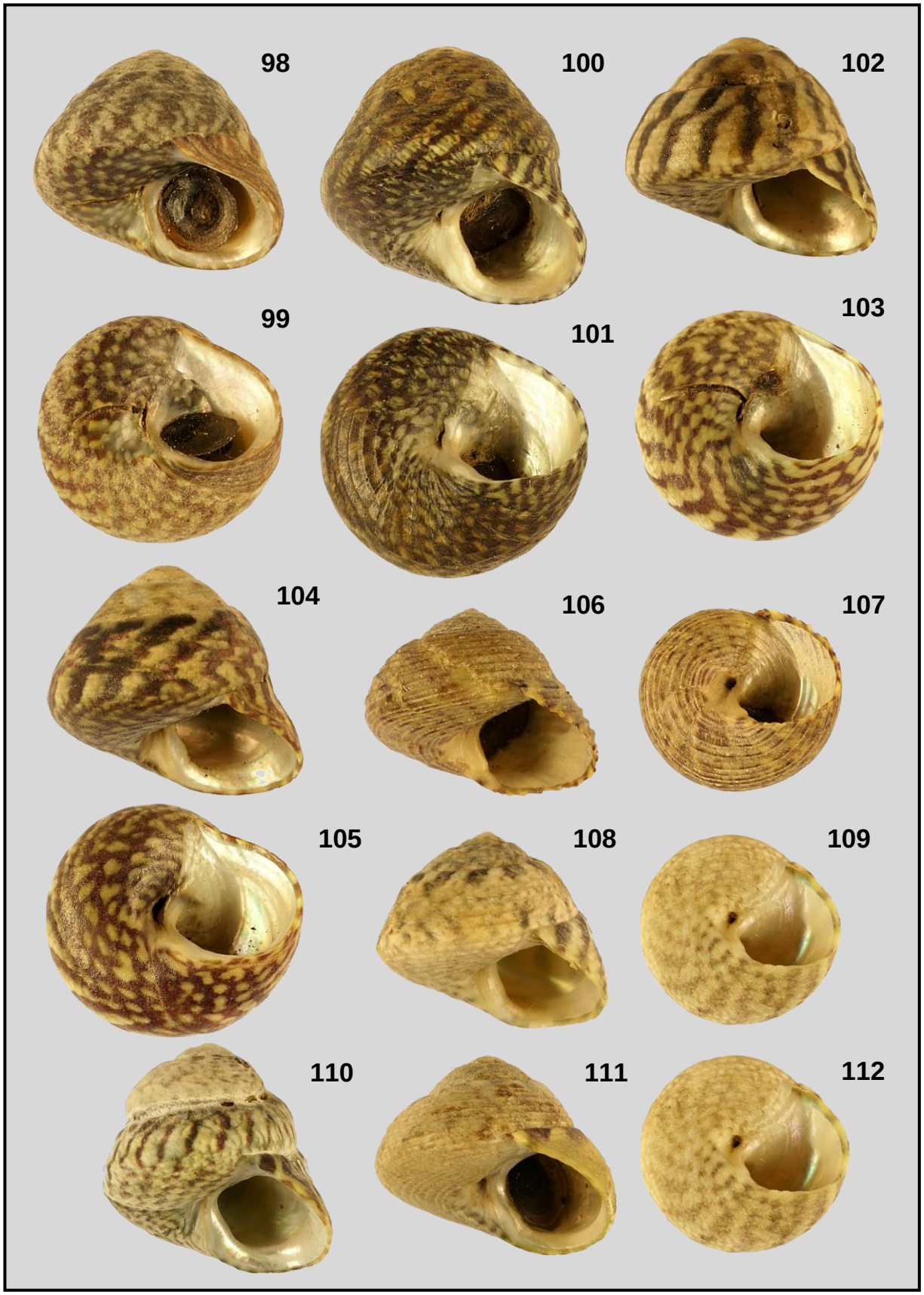

Plate XVIII. Figs 98-112: *Gibbula pennanti* (Philippi, 1851). CFN; 98-101: Saint- Lunaire, Brittany, France. On *Zostera* sp. at low tide. 20 June 1990; 98-99: H. 12.49 mm L. 14.87 mm; 100-101: H. 16.76 mm L. 17.72 mm; 102-105: Plage Goas Trez, Trébeurden, Brittany, France. September 1975; 102-103: H. 13.86 mm L. 16.61 mm; 104-105: H. 14.03 mm L. 16.68 mm; 106-107: Cascais, Portugal. H. 12.47 mm L. 15.42 mm; 108-112: Quibéron, Morbihan, Brittany, W France. Under rocks at low tide; 108-109: H. 10.32 mm L. 13.19 mm; 110: H. 14.72 mm L. 14.98 mm; 111-112: H. 10.87 mm L. 13.21 mm;

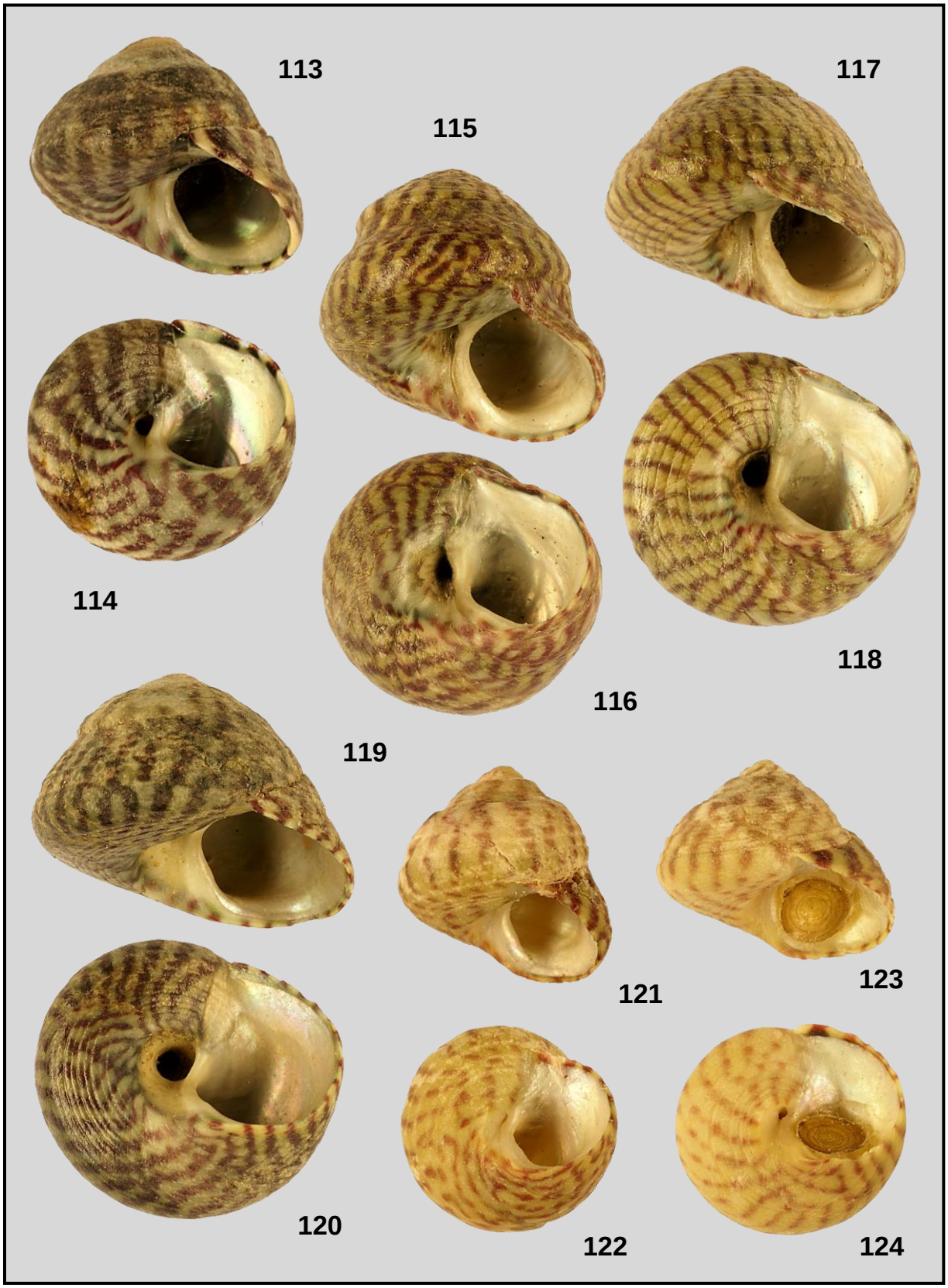

Plate XIX. Figs 113-120: *Gibbula umbilicalis* (Da Costa, 1778). Plage Goas Trez, Trébeurden, Brittany, France. Under rocks at low tide. 17 June 1970. CFN; 113-114: H. 10.44 mm L. 12.59 mm; 115-116: H. 12.35 mm L. 16.44 mm; 117-118: H. 14.05 mm L. 17.26 mm; 119-120: H. 14.22 mm L. 17.66 mm;
Figs 121-124: *Gibbula pennanti* (Philippi, 1851). Malaga, Spain. CFN; 121-122: H. 12.27 mm L. 12.85 mm; 123-124: H. 11.36 mm L. 13.33 mm.