



*THE
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On front cover

An exceptionally bold-patterned *Pionoconus magus* from the Philippines, Rémy Devorsine coll.

Note from the Editor

Dear friends,

As I write, a whole year has passed since the publication of the last number of *The Cone Collector*.

Much has been done – and much has changed – since the onset of this project, back in 2006! What started as a mere unpretentious newsletter to be circulated among collectors and researchers interested in Cone Shells has developed into a well-known bulletin, a very rich website, where a treasure trove of information can be found, and a series of highly attended international meetings. It is a pleasure to realize that the TCC project has, in all modesty, helped to boost the interest in and consequent study of that most fascinating group of gastropod mollusks.

I should perhaps underline that in twelve years, the development of social networks such as Facebook has tended to replace longer articles with more immediate communication amongst all those joining the different groups devoted to shells and shell collecting. Every piece of news appears to be circulated there first, and we do have access to an endless number of photos, information and often interesting discussion, especially when some specimen or other defies identification.

Nevertheless, a bulletin such as ours still has its place, I think, and its proper function, as a means of stimulating everybody's interest in the subject, at the same time bringing together longer articles and comments that would not fit easily elsewhere. This kind of material will be found in the following pages, for all to enjoy.

The bulletin is also an appropriate place to discuss issues that need clarification, and to present different views on some of them, obviously within the strictest limits of civility, even when irreconcilable positions must be debated. In Portugal we have the following saying, the equivalent of which probably exists elsewhere: discussion brings about enlightenment. And that, of course is the proper spirit when discussing Science.

In the present number you will also find a review of the new book by Monnier et al. And what a great book it undoubtedly is!

Back in 2016 we organized the 4th International Cone Meeting, in Brussels, Belgium. Although the four meetings have maintained a biennial periodicity, starting in 2010, we thought that it would be best to schedule the fifth one, not for this year, but to 2019, to avoid undue repetition and saturation.

It is now my great pleasure to announce that the 5th International Cone Meeting will take place in Lisbon, Portugal, on the weekend of 14-15 September, 2019.

Further information will be available soon, but do start making your plans to come!

António Monteiro

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Who's Who

Éric Le Court de Billot

By Christian Galy-Cassit

Already mentioned in our friend's David Toutou contribution to number 24 of TCC, I had met him at the Patis Bourse and have recently met Éric Le Court de Billot once again at Mauritius.

Vacationing on the island, I had searched the Internet for local points of convergence with my passion (Conidae) and I ended up at à Bel-Ombre. Always on the look for discoveries and exchanges, I must confess that the present one is really extraordinary. What a character!

He was born at Mauritius, more precisely at Curepipe (Mauritian names for towns and villages are of French origin), in 1956.

He got married in 1978, and has four children. His house, located in La Preneuse, in the island's south-east coast, is a few metres from the lagoon!

Already as a child of 4 (he was in the water daily since he was 2) he used to collect shells.

Is father had a shell collection of about 2,000 specimens, which he inherited after his father passed away in 1981, and then proceeded to develop.

He has worked his entire life in the sugar industry at Mauritius, so diving occupied mostly weekends. After retiring, in 2008, he has been able to dive more often. He did it in apnea his entire life and started scuba diving in 2009.

His main concern is a full inventory of the molluscan species occurring in the island, and a systematic search for the variability within each species, always fully respecting submarine life and the conservation of the marine ecosystem.

This means that his dives anywhere consisted mainly in



a search for shells that he was lacking in his collection and also in obtaining underwater photos.

Having seen many things in my life, I should stress that Éric Le Court has a magnificent collection of underwater photography. The rest of us "land bound" collectors, often experience some difficulty imagining the beauty and richness of marine bottoms, and in particular the life of our Conidae. Éric enables us to share such mysteries.

His researches have made him extend his diving activities to places other than Mauritius, namely:

- St Brandon, every year for the last 13 years
- The Seychelles
- Agalaga (1200 km to the north)
- Rodrigues (600 km to the east)
- Madagascar
- Egypt and Aqaba

Having purchased a number of local collections, Éric's set currently comprises about 25,000 shells. His weak spot, or should I say his main asset, remains Conidae, 5,000 specimens of which about are to be found in his collection.

Because he wanted to share his knowledge, his values and his treasures, Éric has founded a museum, which is a place for knowledge and information.

Initially located on the top floor of the Bel-Ombre Manor (a large, magnificent Creole house), the museum houses 8,000 diverse shells. In 2017 it was transferred to the Place du Moulin de Bel-Ombre, by the Manor, but since the available space was smaller, Éric decided to show only Mauritian species.

His present dream would be to be able to show the species from all families, that he owns, in a large museum.

Éric is a fascinating person, clearly vibrant with a collector's passion. Meeting him, one immediately feels an unusual kindness and greatness of soul. His charisma is quite impressive, as is his generosity. I, the author of these few lines, am simply a collector of Conidae, always looking for a good finding, but there I found a master.

Let me insert here an important parenthesis. In my opinion, there is no such thing as big and small collectors; there are only passionate people, with more or less great curiosity. Curiosity to improve one's knowledge, to search and to actually understand a family or group; or else simply collect for the beauty, the greatness, the number...

That being said, collections should always remain within reasonable dimensions, and especially without representing any degradation for the species.

Éric collects all families and through his work and enthusiasm he opens for us a panorama of what does exist that many museums would envy him.

Everything that can be found in Mauritius is present in his collection. All Cones are there, in an amazing



variety of dimensions and colours.

His organization is methodical; all specimens are sorted by genus, then within each family by forms, colours and, of course geographic location. His most beautiful species include Mauritian lithoglyphus, gubernator, capitaneus, namocanus, textile and pennaceus, not to mention a few records for betulinus.

A few years ago, he befriended Dr Felix Lorenz, who has greatly helped him with his collection, for which he is quite appreciative. Common research represent as many occasions for the two of them to meet, always with mutual pleasure.



Éric Le Court largely represents every collector. I am very proud to currently be among his friends.

Genuanoconus genuanus (Linnaeus, 1758) A Species Very Variable in Pattern and Profile

Marco Bettocchi

Marco Bettocchi is the Collaborator of the Museo Malacologico MALAKOS from Città di Castello (Perugia), Italy

Introduction

Genuanoconus genuanus (Linnaeus, 1758) is a well-known species, both in the world of Malacology and among seashell collectors. Since it is found in particular in the Cape Verde Islands, I have decided to study it in the present paper, to find out whether any differences can be found between the specimens from the continent and those from the different islands in the eastern Atlantic (Canaries, Cape Verde, São Tomé and Príncipe, Ascension).

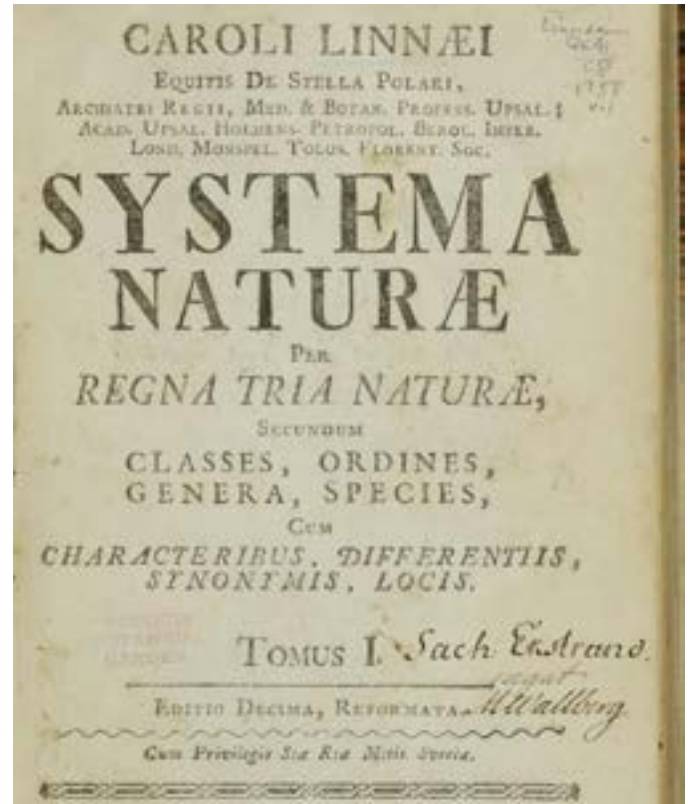
Taxonomic Methodology

For this paper I will follow the biological taxonomic classification proposed by John K. Tucker and Manuel J. Tenorio in 2009 (Taxonomy of the Conoidea).

History

The present species was first described by Carl Nilsson Linnaeus (later known as Carl von Linné) in his work *SYSTEMA NATURÆ per REGNA TRIA NATURÆ*. Tomus I, Editio Decima, Reformata, Laurentius Salvius, Holmiæ (1758), page 714: “*genuanus* 260. *C. testa cingulis linearibus albo fuscoque articulatis*. – Rumph. mus. t. 34. f. G. – Bonan. recr. 3. t. 337. – Habitat.”.

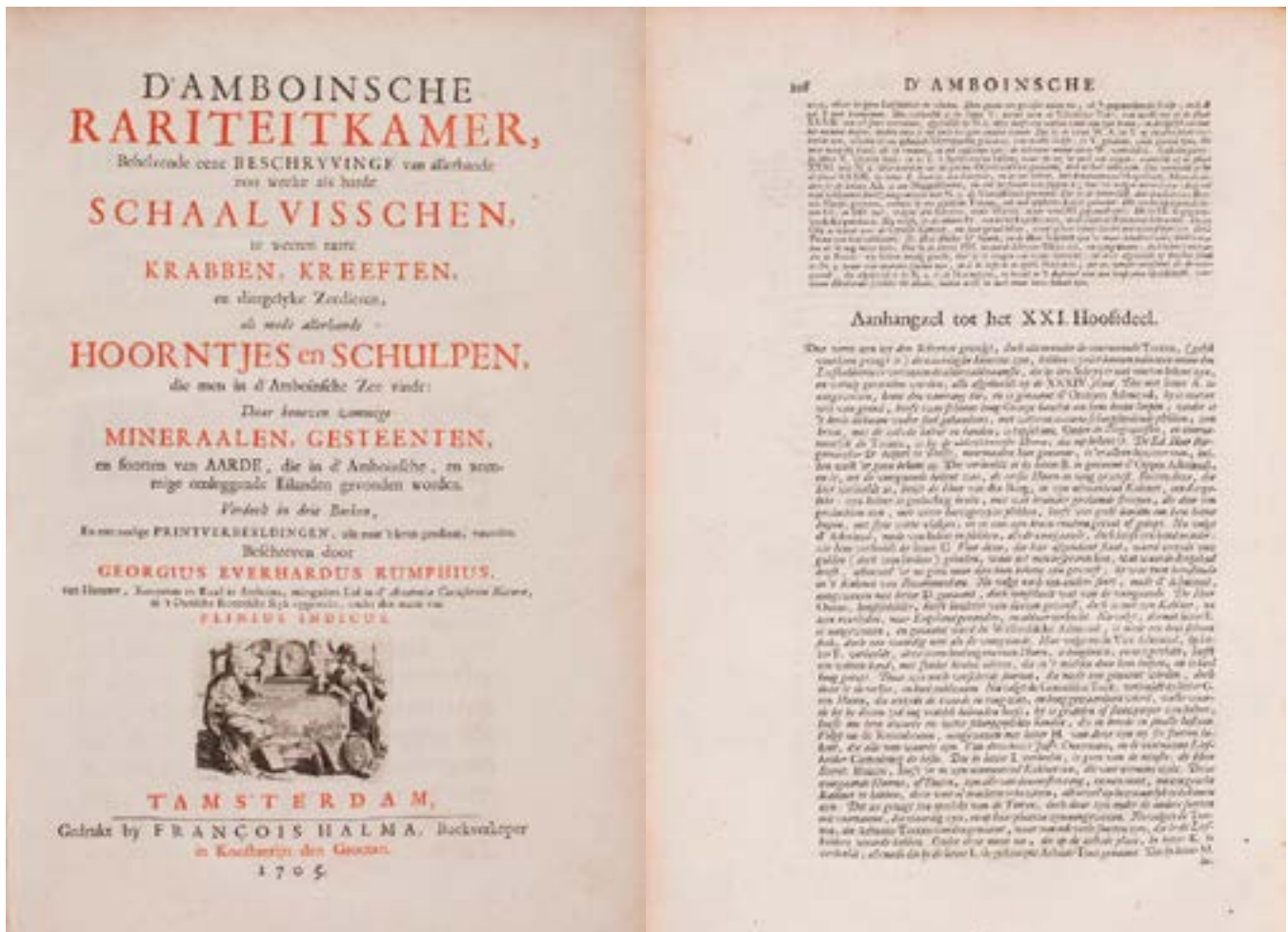
No holotype was designated and no typical locality is indicated because for his description Linnaeus used a drawing previously published by Georg Eberhard Rumphius (pseudonym of Georg Eberhard Rumph), a German biologist and botanist, who later acquired Dutch nationality, who had written the book (posthumously published in 1705) *D'AMBOINSCHERARITEITKAMER* Ed. François Halma, Amsterdam. The said drawing can be found on Plate 34, fig. G;



Number	Species Name	Description	References	Habitat
258	<i>C. testa scabra maculis albis acuta; scilicet tribus ab- bis serratis, media cingulis articulatis.</i>	Rumph. mus. t. 34. f. C.		
259	<i>C. testa testacea albo maculata; scilicet quatuor fere reticulatis cingulis articulatis.</i>	Rumph. mus. t. 34. f. D. Habitat in O. Amboinæ meridionali.		
260	<i>C. testa conica laevi glabra, spira anfractibus obtuse scriptis.</i>	Habitat . . .		
261	<i>C. testa subcylindrica laevi glabra.</i>	Argem. conch. t. 15. f. M. Tugis latera. Habitat . . .		
262	<i>C. testa cingulis linearibus albo fuscoque articulatis.</i>	Rumph. mus. t. 34. f. G. Bonan. recr. 3. t. 337. Habitat . . .		
263	<i>C. testa basi emarginata striata, spira internis anfracti- bus costigata.</i>	Rumph. mus. t. 33. f. G. G. Habitat in Aïa.		
264	<i>C. testa gibba fultis crassifera nebulata acuta, ba- si striata.</i>	Bonn. rar. 3. t. 116. Rumph. mus. t. 33. f. C. C. Krauss. Regem. t. 12. f. 68. Habitat . . .		
265	<i>C. testa claviformis punctis oblongis clava.</i>	Argem. conch. t. 15. f. A. Habitat . . .		
266	<i>C. testa ovata, basi rugosa mucronataque scabra, spira conico convexa.</i>	Rumph. mus. t. 31. f. R. Gmel. 103. t. 17. f. R. Argem. conch. t. 15. f. D.		

on page 108, a brief reference to the specimen can be found. This specimen has been considered as lectotype by Kohn (1963).

mus. t. 34. f. G. Geneesche Toot. - Bonan. recr. 3. t. 337. - Papilio. β Seb. mus. 3. t. 44 . f. 1-5 3 t. 48. f. 1, 2, 3. -Argen. conch. t. 15. f. V. Ala papilionis? - Habitat - Varietas β fasciis connexis ocellis pupillatis.”



long getapt. Daar zijn noch verskeide soorten, die niet zoo genaamt worden, als deze is de ruyche, en heel zeldzaam. Na volge de Geneesche Toot, verleelet by letter G. een Hoorn, die restyke de ruyche in rang was, en hoog gewaardert werd, welke waerde by by dezen tyd nog redelyk behouden heeft; by is gradely en scharp per van kleur, heeft een bene wazerte en wazte sekergeplekte banden, die in breedte en jasste bestaan. Volet nu de Kroonhoorn, aangevaeren met letter H. van deze zijn my ses soorten be-

In 1767, in SYSTEMA NATURÆ per REGNA TRIA NATURÆ Editio decima tertia, published by Ed. Vindobonae, on page 1168, Linnaeus republished the description, enriched with further information:

“*genuanus* 302. C. testa cingulis linearibus albo fuscoque articulatis. M. L. U. 554. n. 159.* – Rumph.

It should also be noticed that in 2010, Alberto Assi described *Genuanoconus genuanus* (f) *foscaclaudiae* (MALACOLOGIA 67: 14-17), referring to a particular variety of pattern, without “*righe sottili, assiali, puntinate*” (= “thin, axial dotted lines). [but why axial? I can see spiral lines only]; but the late Mike Filmer, in his *Nomenclature and Taxonomy in Living Conidae* (2011) wrote:



Personally, I still find a certain interest in Alberto Assi's work, but without nomenclature consequence, since *genuanus* presents a number of pattern varieties [as also mentioned in his work], with one, two, three, four... spiral lines (in addition to one without lines at all), which, should we want to do so, could all get names (such as *monolineata*, *bilineata*, *trilineata*, ...).

Why then should one describe a single form, to the detriment of all the others, especially since they do not show any actual morphological variations? In all, I can see but a simple pattern variety.

Geographic Range and Habitat

Genuanoconus genuanus (Linnaeus, 1758) is found along the West African coast, from the Canary Islands to Angola. More specifically, according to official bibliography, known specimens come from the Canary Islands, Senegal, the Cape Verde Islands, Gambia, Guinea Bissau, Guinea, Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Benin, Nigeria, Cameroon, Equatorial Guinea, the São Tomé and Príncipe Archipelago, Gabon, Congo, the Democratic Republic of the Congo, and Angola.



To the previous list I can add two localities, namely Mauritania and Ascension Island; these informations do not come from personal finds, but rather from informations communicated via the Internet, hence not personally confirmed. However, both references have been supplied by a trustworthy person and Museum. From regions such as Sierra Leone, Liberia, Togo, Benin and Nigeria, it is practically impossible to obtain verifiable information, if any information at all; all my efforts to find data from any of them have been in vain. Recently (January 2017) my friend Antonio Ventura made a "malacological" trip to Western Sahara, more precisely to Dakhla and nearby zones. However, despite numerous dives and intense research even on shore, amongst beached shells, he did not manage to find a single specimen of *G. genuanus*.

"Nomenclatural status an unavailable name, described as a form after 1961. Taxonomic status, none (a specimen of *C. genuanus* Linnaeus, 1758)". Paul Kersten, in his Cone Collector's Guide, mentions it as a synonym of *C. genuanus*, Linnaeus, 1758, whereas WoRMS ignores it completely.

In the Cape Verde Islands it is most certainly found in the islands of São Vicente, Santa Luzia, São Nicolau, Boa Vista and Santiago.

In the Canaries, *G. genuanus* is found in the islands of Lanzarote and Gran Canaria and can apparently also be found in the island of Tenerife.

In the archipelago of São Tomé and Príncipe it is supposedly found in the island of São Tomé only.

The species usually lives down to depths of 20 metres, buried in sand or silty sand, or else hidden among rocks. It can also be trawled by nets at depths of 50-60 metres. In the Cape Verde Islands, it can also be found in shallow water, say 1 to 5 metres deep. Sometimes it is found in groups of three or more specimens. Of distinctly nocturnal habits, many of the specimens shown below have been collected during the night.

The present World Record size for the species is of 93 mm (information kindly supplied by Philippe Quiquandon). Nevertheless, I must confess that I do not fully trust all the published “records”, since in the early 1990s, I did see a 91 mm *G. genuanus* in the collection of a Venetian friend, at a time when the “official record” was of 81 mm (!!)

About the Specimens Shown Below

Before starting the trip through the several images, a short preamble is of great importance. Almost all this work is based on the labels accompanying shells, which means that it relies on those who actually wrote. Because this is a species that is often dredged, it is hard to know exactly where it actually happened: many times the locality indicated on the label refers to the place from where the boat left to dredge. Therefore, I will sometimes express my perplexity in view of all information I was able to gather.

Starting from the North and progressing towards South

in my collection, we find specimens from different localities. I am able to present many others, thanks to the kindness of a number of friends and collectors, who have given me permission to publish their photos. Their names will accompany each figure, in parenthesis.

1 – Canary Islands (figs. 1, 2, 3, 4)

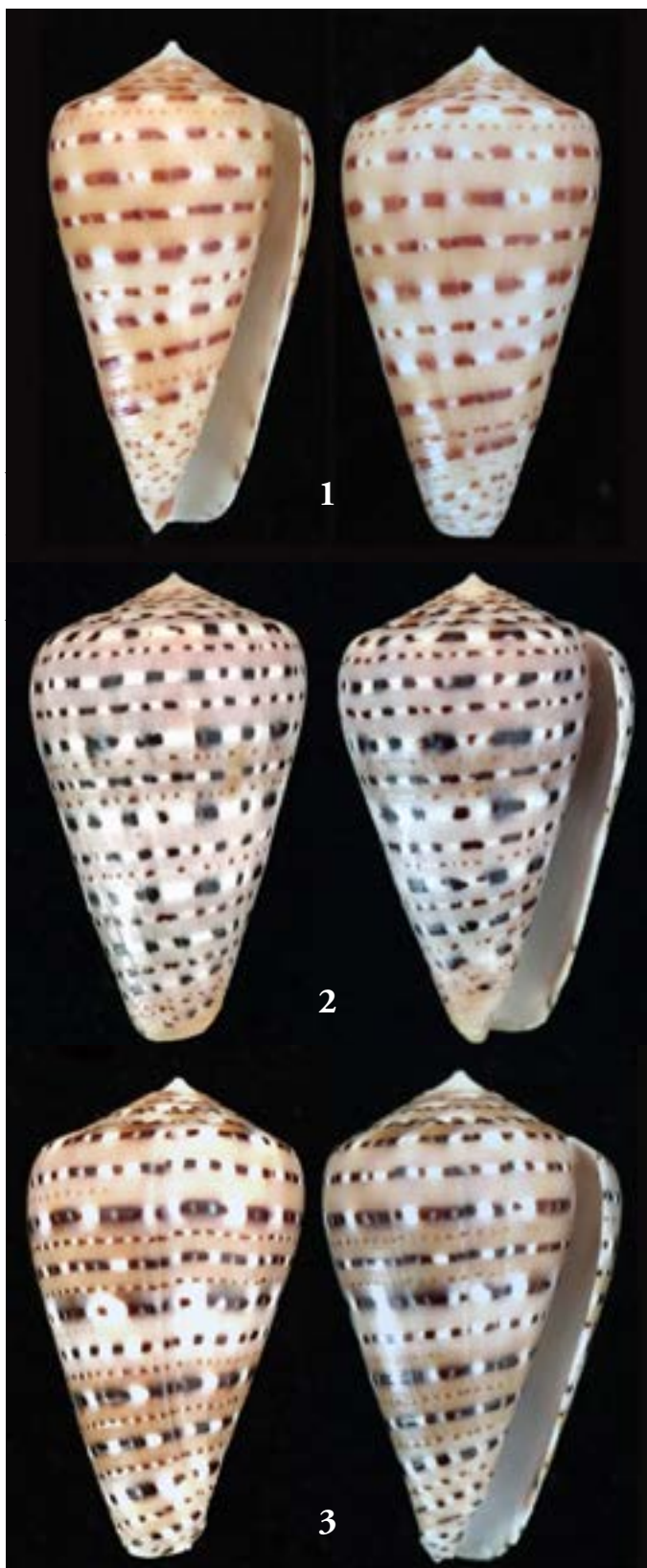
For some time now, the Canary Islands have been indicated as a locality where *G. genuanus* is found, albeit rather rarely. Nevertheless, as far as I know no images of actual specimens from there have been published. Thanks to Francisco “Paco” Deniz, from Las Palmas, I am able to present here three specimens, with accurate data, caught in two different places.

Fig. 1 shows a specimen collected dead at a depth of 35 m, at Veril, off Arrecife Bay, Lanzarote Island. It measures 38.4 mm and was collected in June, 2008.

Two further specimens were collected alive in the island of Gran Canaria, more precisely at Las Burras Beach, in the south of the island. They were found in fish pots, 30-40 m deep, on sandy bottom. The specimen in fig. 2 was found in May, 1997, and is 42.8 mm long; the one in fig. 3 was collected in July, 1995, and measures 36.7 mm.

These last two specimens have beautiful background colours, going from bluish gray to light hazelnut brown. Their profile is rather wide at the shoulder and narrower at the base, hence almost deltoid. The inside of the aperture is white, with a slight hazelnut shade in the distal half. The spire is moderately high. The pattern is rather abundant and the two “orange” bands are of variable width.

I still have a fourth specimen to show (fig. 4), which was supposedly dredged at a depth of 300 m in the island of Tenerife. However, I do have some doubts concerning about such provenance, since such depth is markedly strange and would even represent a real novelty for the species. For this reason, it would need to be confirmed



to live in La Somone (M'Bour area, region of Thiès), during my trip to Senegal in 1995. The profile and pattern of these shells remain constant, the only variant consisting in the presence or absence of the spiral lines of alternating white and brown dots.

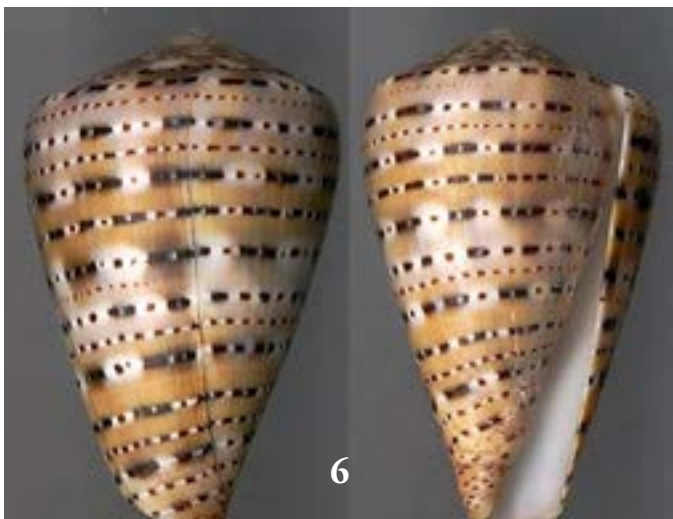
I obtained the specimens in figs. 13, 14 and 15 from fishermen from Joal Fadiouth (also in the M'Bour area, region of Thiès). They were dredged by nets at a depth of 30 to 35 metres. Nothing new here as far as the shape of the shells is concerned.

For the specimens in figs. 16, 17, 18, 19, 20 and 21, I have only the vague information "Senegal".

What is constant in the Senegalese shells is that the background colour tends to hazelnut pinkish, sometimes with violet shades in the darker specimens.

4 – Cape Verde Islands [São Vicente (figs. 22–26) Santa Luzia (figs. 27–30) Boa Vista (figs. 31–33)]

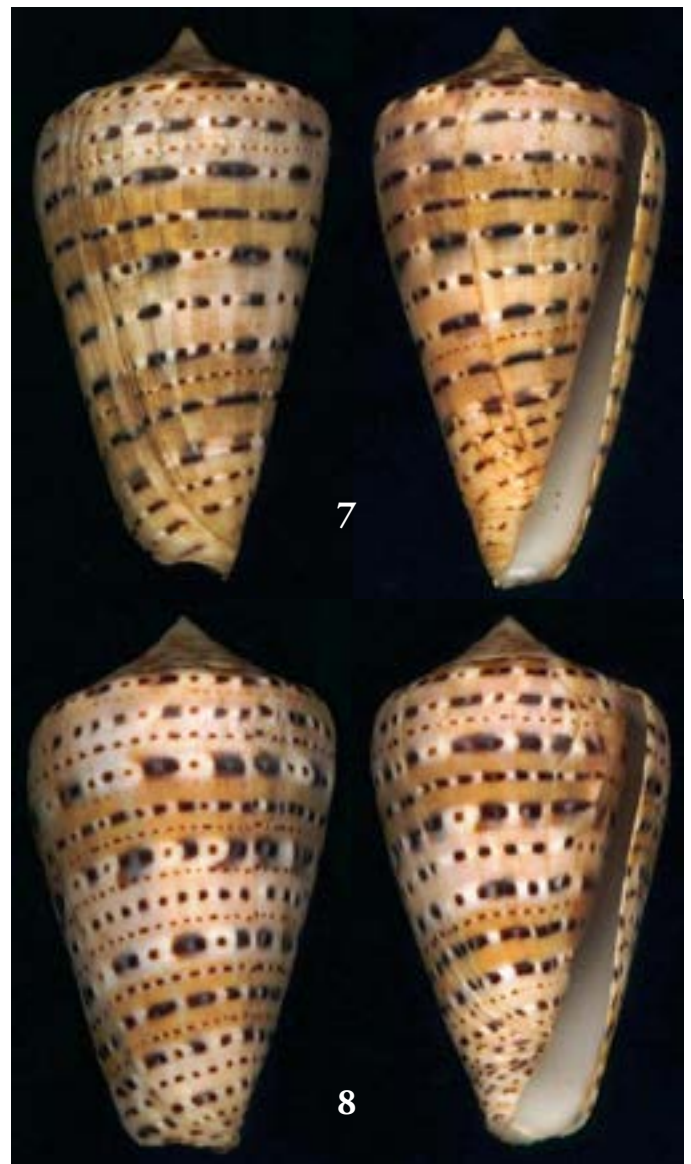
In the island of São Vicente, we begin to see the first divergences from the "classic" aspect of the species. First of all because of the dimensions, which rarely exceed 50 mm, meaning that the population in this island comprises decidedly smaller specimens than in

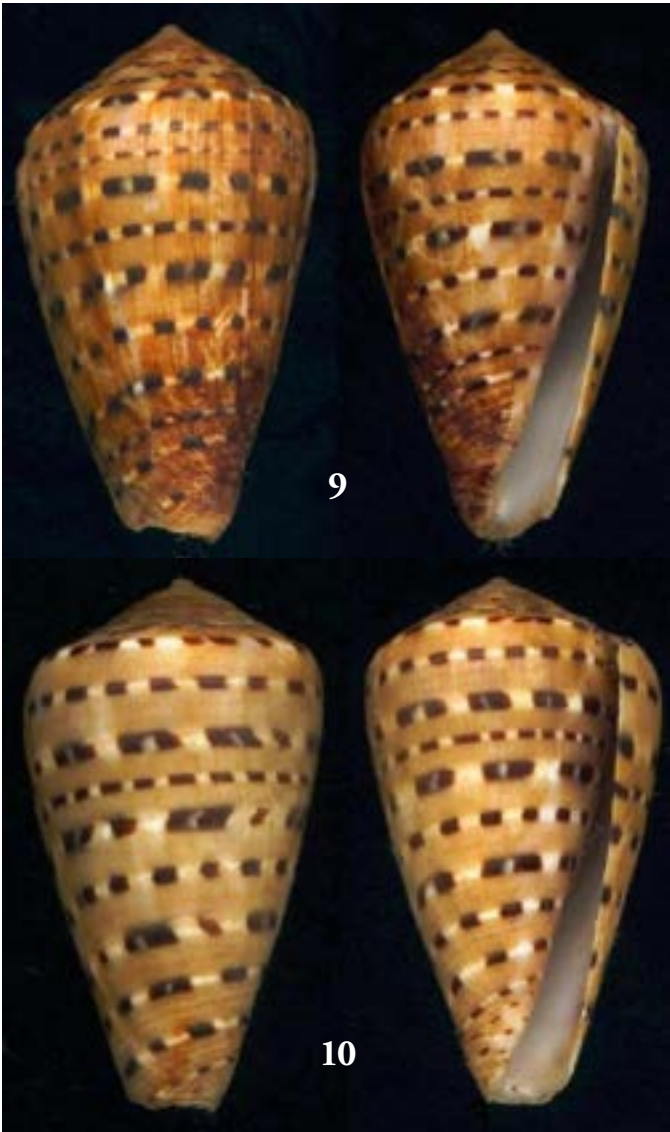


others. Then we have the colouration that is often more vivid and contrasted. The background presents violet and light bluish shades, not found on specimens from the continental coasts and that actually make the shells more attractive. Even the height of the spire appears to be somewhat inferior to the usual one, in average, the specimens presenting a slender profile, with a constantly narrow shoulder. As for the spiral lines of small dots, they may be present or not, like in other shells. The main collecting spots have been Mاتيота and the area just off Laginha (Mindelo); I obtained the specimen shown in fig. 25 from a boy who lived in Sao Pedro. But the species will probably be found in other places,

something I do plan to check once I start living there. In the close-by island of Santa Luzia, the tendency to get contrastingly coloured shells remains, but a striking feature is that the specimens from this location have slightly wider shoulders, and slightly convex profiles. In the population from Portinho there are specimens slightly above average size, but always under 50 mm.

Finally, from the island of Boa Vista, I am able to show specimens collected at Sal Rei. These are smaller, with a more slender profile, the general aspect of the





shells more remindful of the ones from the continental shores, since in their colouration hazelnut and pinkish tones predominate, with the bands no longer orangish, but instead tending to yellowish green. No need to mention the spiral lines of small dots, as it would only be a repetition of what I said above.

Unfortunately, I lack specimens collected in the islands of São Nicolau and Santiago.

5 – Guinea Bissau (figs. 34–42)

Back on the continent, we arrive at Guinea Bissau, a country from where I have no localities, only a label by Sandro Gori (fig. 42) in which a few geographic coordinates are indicated.

Examining my specimens and those shown in the photos I had access to, we see immediately that we face here a few distinct typologies in both shell structure and pattern. The first one refers to shells on which the orange bands tend to brown (fig. 34); the second





includes shells with almost absent banding and coloured in several tones of hazelnut; moreover, the profile is rather deltoid and similar to what we will find ahead, when we will get to Gabon (fig. 35). A third typology includes shells with several yellowish/ochre tones, and a fairly slender profile (figs. 36, 37, 38); in the fourth one we find an intermediate profile, with a wide, fairly rounded shoulder, and a background colour tending to whitish hazelnut, with not very noticeable yellow bands (fig. 39); the fifth refers to many specimens similar to those we described from Senegal (fig. 40); finally, the last typology is a variation tending to greenish, safe for a central hazelnut band, with only the lines of small dots contrasting with the background (fig. 41). I asked myself what else we would see, if only we had access to other specimens to publish...

6 – Guinea (figs. 43–47)

Here, a concrete locality does exist, but it is the “classic” Conakry. Every shell in the market, collected in Guinea, is accompanied by a label indicating “Guinea, Conakry”, even if they were collected somewhere else. To obtain reliable data, it would be necessary to go to Guinea in person to collect shells, or else talk to the fishermen directly.

Let us simply accept the location and examine the shells. I obtained those in figs. 43 to 46 from a single dealer, and they present constant characteristics: slender shells (only one of them has a slightly wider shoulder), coloration ranging from pinkish hazelnut to light brown, with bands tending towards orange; on the one with the wider shoulder, the colour tends to light violet gray and there are a few small patches in shades of bluish gray; the bands are orange to light brown. The shell in fig. 47 has its periostracum; hence the general look is of a darker orange.

7 – Ivory Coast (figs. 48–57)

The major problem in Ivory Coast is that at Abidjan





28



29



30



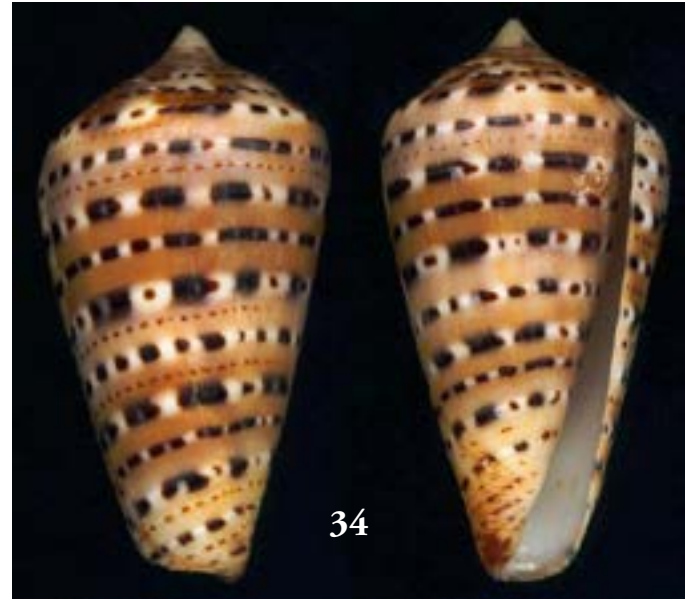
31

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32

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is based a large flotilla of offshore fishing boats that usually throw their nets towards west, attaining the waters off Liberia and Sierra Leone. For that reason, we must work from specimens bearing doubtful data, which is more complicated. I tend to trust more my four specimens from Assinie (figs. 49, 50, 51, 52), which present the classic aspect for the species, in profile, colour and pattern.

Examining the others, the strong contrast in the colours of the specimen in fig. 48 is instantly conspicuous: a light hazelnut background, bright orange bands and well outlined white and black markings. However, the very generic indication “Ivory Coast” is of no great help. The coloration of the specimen in fig. 57 is rather curious. The two classic bands almost blend with the background colour of the shell and a wide light hazelnut band stands out at mid-body.

The remaining four specimens share a background colour that goes from whitish light hazelnut to light hazelnut with shades of light violet.

8 – Ghana (figs. 58–68)

At last, for Ghana I am able to present specimens with



37



40



38



41



39

CONUS SENNANUS
GUINEA BISSAU
10.58 N. 16.47 W
-40 MT 1.11.90 10881
L. M. BA - OTERO

42

confirmed locality data, thanks to my friend Peter Ryall, who lives there most of the year.

Starting from the western part of the country, the first two (figs. 58, 59) were collected at Axim. I would say that we have before us shells with an almost uniform background, with the two “orange” bands that blend into the background colour. There is a lighter central band and even the pattern of white and black markings on spiral lines is reduced to the bare essentials.

On the other hand, those that have been dredged with nets off Axim (figs. 60, 61) present a more “normal” pattern: the two orange bands are present and are clearly noticeable over the hazelnut background; once again the spiral lines of white and black markings are reduced to the essential.

Continuing towards east, we arrive at Sekondi. The two specimens taken from nets off this locality (figs. 62, 63) are identical to the ones described above. Only the pattern is slightly “richer” and the shells are more decorated.

Farther ahead is Elmina (fig. 64, 65, 66). There are no major differences, the background is still light hazelnut and the bands can be clearly seen. Only the specimen in fig. 66 appears to have a spire higher than usual.

To end this short trip along the coast of Ghana, we arrive at Cape Coast, and off this locality the two specimens in figs. 67 and 68 were found. There are no substantial differences, and we may globally state that the species is fairly constant in all places of collection.

Cameroon

I open a parenthesis for this country, from which I have been unable to obtain any specimens at all, not even any photos of specimens, despite the fact that it is one of the locations from where *G. genuanus* is reported.

For a few months I was in touch with two local dealers, but even after having sent them photos for reference, and given indications about possible habitats, neither of them was able to supply a single specimen.

A further confirmation of the remarkable difficulty in finding this species was given to me by Giovanni Prella, from Turin, who for several years kept a small fishing company in the Kribi area, currently “closed due to episodes of violence and guerilla that occurred in recent years.”

Another zone explored by G. Prella was the one around Semmé Beach, close to the border with Nigeria. There he got in touch with many local fishermen and even with a fishing boat with a Chinese crew, but always without success, and sometimes facing personal danger because of pirates’ activities.

“Unfortunately, although the malacological material I obtained was substantial, I have never found a single specimen of *genuanus*, so that I admit that it is absent from the area I explored,” was the comment that put an end to my hopes of finding at least one specimen.

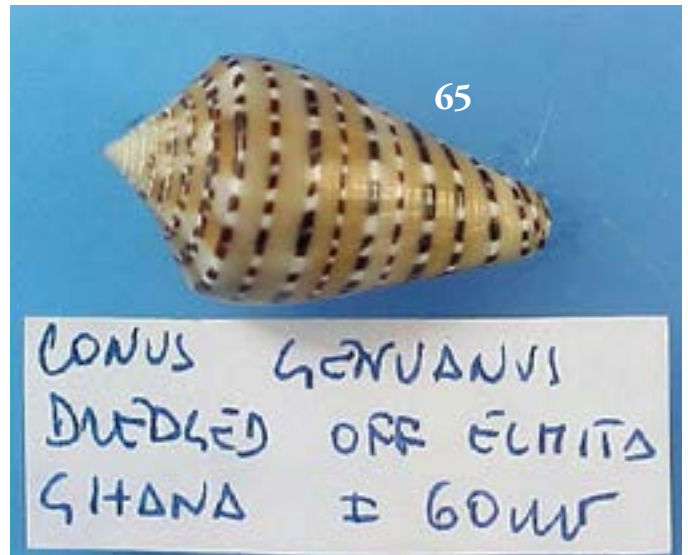
Perhaps this could also depend from the fact that the rivers running in the zone cast much sediment into the sea, which prevents the sand from being clean. The same may happen in Nigeria, because of the river Niger. Nevertheless, as sometimes happens, the unexpected awaited around the corner. No sooner had I sent my paper to António for publication, than I got from my friend Peter Ryall the photo 68bis. It depicts a 49.3 mm *genuanus* collected at a depth of 15 m at Buea, Cameroon. It is a very beautiful specimen, with a dark, contrasting pattern, and above all, with a decidedly deltoid profile, similar to the specimens from Gabon. Fortunately, it was still possible to include this photo in my article. The least I can do is to thank Peter Ryall.

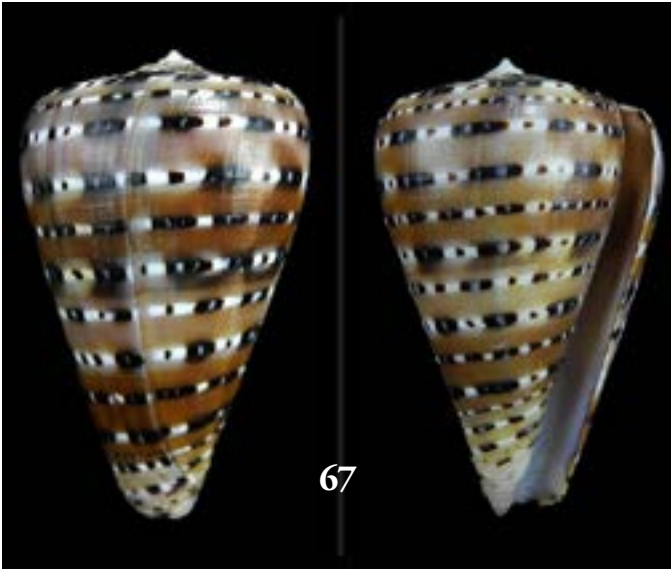
9 - Equatorial Guinea











67



70



68



71



69



72

I had the possibility of writing something about this locality thanks to Christian Galy-Cassit, who made some searches in the Internet and found, among others, a site showing a specimen from this locality. I immediately tried to get in touch with the owner of said site, but my e-mails and messages via Facebook remained unanswered. I do not know why that was so, but I certainly cannot worry about that. Anyway, I thought it would be interesting to mention it here. Not being able to publish the photo, since it is protected by Copyright, I simply include the link, so that everybody can go take a look, and will not comment on the specimen:

<http://www.conchylinet.com/page42/genuanus>

10 – Islands of São Tomé & Príncipe (figs. 69–83)

We now leave the continent and after a brief flight we arrive at this small archipelago, where *G. genuanus* appears to be found only in the island of São Tomé. I do have a certain number of specimens to show from this location, especially thanks to the kindness of Sandro Gori, diver and collector. I must say that I have not included all the photographed specimens, since they were quite numerous.

The ones shown come from different locations in the island and offer an interesting and exhaustive sampling of the typology of the species.

The area from where the larger number of specimens came is (figs. 73 Azul Fundão, 74 Azul/Morro Carregado, 75, 76, 77, 78). The first noticeable characteristic is the general colour of the shells, which, apart from the one in fig. 69, have a background coloration that is a mixture of white, gray, blue, light hazelnut and light violet, characteristics that will be constant also in almost all specimens from other locations. The profile varies from quite slender to slightly ventricose, and the spire is moderately high. The two orange bands are always present and vary from light to dark shades, sometimes tending to brown.

Similar shells are found off Praia Lagarto (figs. 69, 70, 71), Santana (fig. 72), in Kia Reef (fig. 79) and off Praia Quatorze (figs. 80, 81).

Still from the same island, I have two more specimens to show (figs. 82, 83). I do not have their precise collecting data, but I would say that their overall features allow us to confirm that they undoubtedly come from São Tomé.

11– Gabon (figs. 84–97)

In this country, things are more complicated, not because of the lack of specimens, but on the contrary because of the abundance of specimens in the market with insufficiently confirmed locality data.

The problem started long ago, when Pierre A. Bernard, in 1984, published his book *Coquillages du Gabon / Shells of Gabon* and, in Plate 44, showed four specimens with a decidedly deltoid profile, low spire, light yellow bands (“alternate pale yellow spiral bands”) and light background coloration. Those four specimens have been considered as models by all collectors (also because similar specimens from the collection of P. H. Hattenberger were offered for sale), making it hard to imagine that shells with a different profile might exist. But let us take a closer look. At first sight, only the specimens in figs. 87 and 89 present a deltoid profile. But the first of the two has been labelled by Bernard himself in 1972 (collected in Cap de Peres, Libreville, 2 m deep, on rocky bottom) and the other belonged to the collection of P. H. Hattenberger (Port Gentil, Gabon). So until now we stay within the “accepted and codified” bibliography.

Beyond that, the story changes, since all other specimens have a rather slender profile, very far from deltoid, only vaguely so in the specimen of fig. 91. It is rather interesting to observe the spire of the specimen in fig. 97, because its profile is decidedly convex, as



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76



74



77



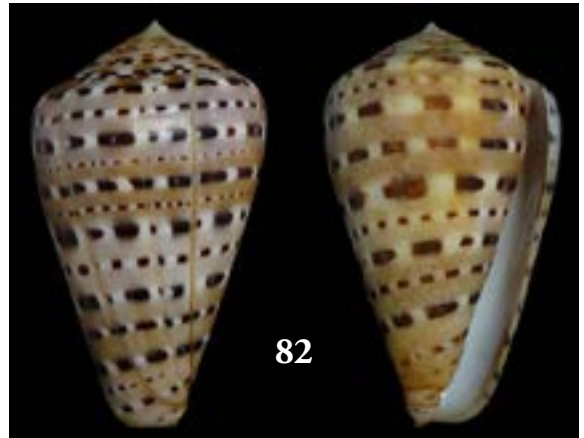
75



78



79



82



80



83

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81



84

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opposed to being straight or concave. As for colour and pattern, we can say that all fall within the range of variability of the species. The markings are always quite conspicuous against the background, the two orange bands almost always well-marked: only the specimens in figs. 93, 94 and 95 show distinctive details. The first only presents the band on the distal area, with a colour tending towards yellowish orange; the second is strongly contrasted and the orange bands are darker and wider than usual; finally, the third one the two bands are brown and neatly detached from the light hazelnut background.

The sole handicap of these specimens is that they are accompanied by labels bearing either a laconic “Gabon” or a slightly less so “Port Gentil, Gabon”, the actual finding places not certain, whereas in this case they would be quite necessary, given the differences found in the examined specimens. Nevertheless, since by saying so I may sound too particular, and considering that the specimens shown come from different sources, we may as well think that in fact in some populations from Gabon a certain pattern variability is to be found.

12 – Congo (figs. 98, 99)

Here we face the same problem as in Gabon, as I can show only two specimens (and even so I think myself fortunate...), which however greatly differ from one another. The one in fig. 98 was sold to me about ten years ago by an Italian dealer, with a label strictly concise: “Congo” and nothing more. Unfortunately, I was now unable to confirm the reliability of the label, because the seller died two years ago.

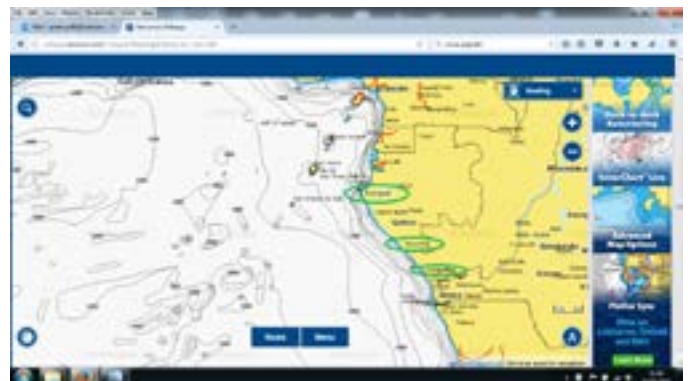
The said photo led my friend Peter Ryall to send me the photo in fig. 99, with the label “Pointe Noire, Congo”. We obviously have before us two vastly distinct shells, in both profile and coloration. Peter’s specimen has the advantage of being similar to those of close by Gabon, which can be found up to Mayumba; mine fits in what I said above.

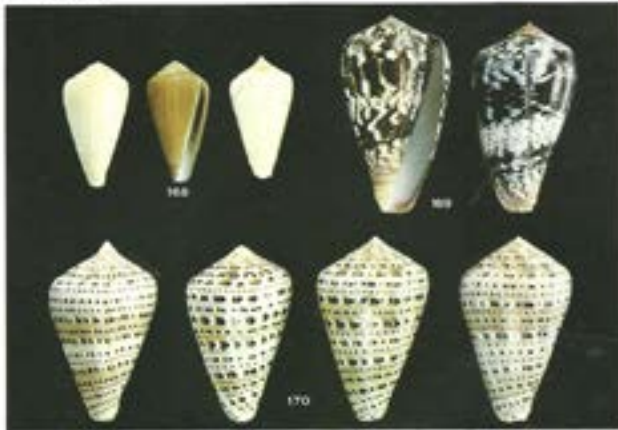
13 – Angola (figs. 100–110)

We arrive at last at the end of our continental voyage; only one last flight will remain to the middle of the Atlantic. For Angola I have only managed to get specimens from the area of Luanda and from the south. My hopes of obtaining also specimens from the north have not be fulfilled, so we will have to make do with what I could gather.

Almost all specimens come in fact from the area of Luanda. More precisely, the specimen in fig. 100 was collected at Capato; those in figs. 101 and 102, at Mossulo, Luanda; those in figs. 103, 104 and 105, at Lamba, Luanda; those in figs. 106 and 107, at Luanda Bay; and those in figs. 108 and 109, at Corimba. The specimens belonging to Sandro Gori used to belong to the collection of the late Francisco Fernandes. The specimen in fig. 107 was collected about 20 years ago in the Luanda Bay, in shallow water on mud and rubble. More recently, due to pollution, the species has disappeared from the bay (personal communication from Luís Ambar).

In general, we can say that the specimens from Angola all fit in the range of variability of the species, with a light hazelnut coloured background, only rarely with slight grayish violet hues; the pattern is the usual one and the two orange bands are always present. Only the specimens from Corimba have slightly livelier and





170 - *Conus genuanus* (Linné, 1758) - mm. 75 - C - sable - 5-50 m.
 Sans doute le plus beau spécimen africain, pour son ornementation consistant en bandes spirales alternées, jaune pâle, sur lesquelles se détachent des points et des tirets brun foncé séparés par des espaces blancs. Châtré dans la zone équatoriale et à Miramba, et trouvé dans la zone de P. Gentil, à faible profondeur.

more contrasting colours. The profiles are all rather slender, and only one specimen from Corimba has a shoulder that is slightly wider than usual. The spire presents straight or concave sides, and only in a few cases the whorls of the teleoconch rise almost vertically.

All of this would lead us to think that in Angola there are no surprises for this species, but in fact there is something unexpected. Thanks to my friend Gavin Malcolm, I am able to publish the photo of a specimen dredged at a depth of 300 m, in the area of Equimina, Benguela Province, in the south of Angola (fig. 110). This specimen measures 57 mm, and besides having lost the colours of the background and of the bands (which makes us think that it may be a sub-fossil), shows the particularity of not having spiral lines of large black and white dots, but only spiral lines of small points, so that at first sight they resemble the markings of *Dendroconus betulinus* from the Indo-Pacific.

However, the structure of the shell agrees with that of *G. genuanus*, and hence we may be facing a deep water form, if not even a subspecies. The fact remains that before advancing any daring hypothesis, it would be preferable to wait for the collection of a few living specimens, to be able to perform all necessary studies on the animals.

14 – Ascension Island (fig. 111)

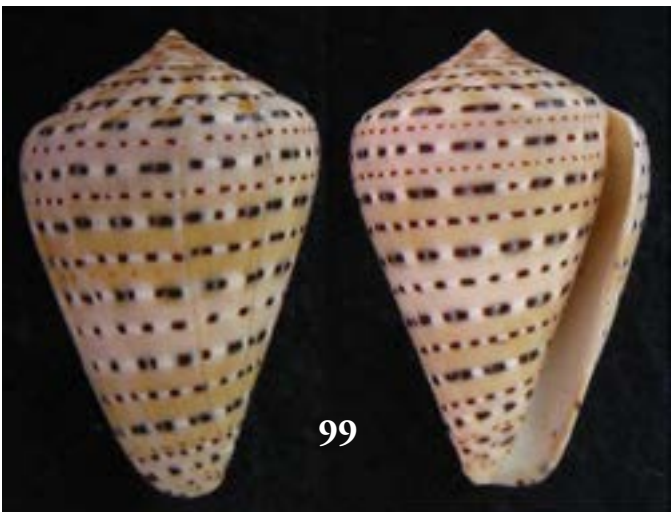
Along our lives, there is always something new to learn. I ignored that this species would extend its geographic range until mid-Atlantic, so this photo constituted a great surprise. As can be seen, it was taken at the National Museum of Natural History, in Leiden, Netherlands, and is available on the Internet, for anyone who needs it. The specimen in question is in a relatively poor condition, it is possibly a sub-fossil, but is undoubtedly a *G. genuanus*. The colours and the bands are gone, but the pattern remains, which is of great help. The spire is slightly higher than usual and the profile is slender. Unfortunately, no information is available about its habitat and the depth at which it was taken.

Conclusion

After this trip that I knew to be rather long, I can say that it was slightly more “tiresome” than initially foreseen, because of the difficulty in obtaining specimens from certain areas, but even so it was quite interesting, which allowed me to learn a few things and at the same time to get to know some kind, helping people.

G. genuanus is a species that turns out to be fairly constant in profile, pattern and coloration, all along the continental coasts. Considering the profile, we can say that the shell is almost always rather slender, and the spire moderately high. Only in Gabon do specimens present a decidedly deltoid profile, with a wide shoulder and the spire lower than average. As for the pattern, usually the two orange bands are present, with only rare exceptions. About the spiral lines of larger or small white and black dots, what I said above stands: they are almost always present, albeit variable in number, and only occasionally absent. The coloration is not very variable, usually in shades of light brown, even if in a few cases we have found strikingly contrasting colours; all however within the range of variability of

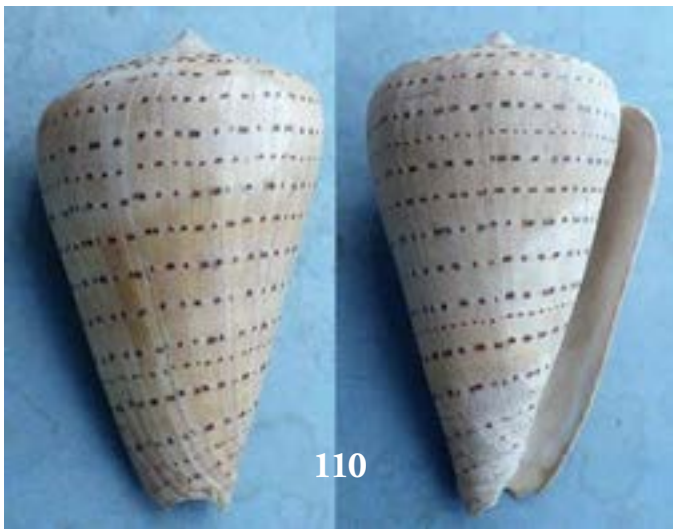








109



110



111

the species.

On the contrary we did find some variants, when compared with the continental specimens, in the Cape Verde Islands, and in the island of São Tomé. Those from Cape Verde often have more bluish to light violet background colour that actually make them more pleasant to the eye. Another aspect concerns the size, which rarely reaches 50 mm, while in the continent the species attains 93 mm and it is not uncommon to find specimens in the 70-80 mm range. In São Tomé we find a similar situation, which can mean that evolution is in motion and that perhaps in some future time such variants may come to merit a new name.

Acknowledgements

This work would not be the same without the help and contribution of many friends and collectors, for which reason I feel it my duty to thank them all (and not simply because it is customary to do so).

In first place is undoubtedly Peter Ryall, well-known collector and author, who has shown to be a real “malacological friend”, offering me all the specimens from Ghana that I was able to show, having supplied many useful informations and given me the possibility of getting in touch with other collectors and researchers. Thank you very much, Peter, this work is also a bit yours.

I must address a special thank you to Francisco “Paco” Deniz, from Las Palmas (Canary Islands), for allowing me to publish photos of specimens in his collection, and to Jesus Santos Benitez, for having made such an opportunity possible.

Another collector and author that I must thank is Guido T. Poppe, who has allowed me to use several photos published in his website CONCHOLOGY, INC.

Thank you also to Tenemar Perez, Christian Galy-Cassit, Brian Hammond, Christophe Roux, Carlos [Camané] Afonso, Ian Holden, Luís Ambar, Paul Merrill, Gary King, Claudio Galli, Peter Egerton and Jacques Colomb, for their information, and for having allowed me to publish their photos.

Warm thanks to my dear friends António Monteiro and Éric Monnier, who have allowed me to get in touch with several collectors, all “subscribers” of *The Cone Collector*.

Special thanks too to Gavin Malcolm (with whom dialog is ongoing) for the photo of the specimen found at Equimina.

Another warm thank you must be addressed to Giovanni Prella, from Torino. His information, always supplied with a kind cordiality, has been precious for a better understanding of the situation in Cameroon.

Of particular value was the help I obtained from Sandro Gori, from Livorno, with whom an advantageous exchange of ideas and information has been established. From him I received as gifts a pair of specimens from São Tomé, and a remarkable number of photos, partially published here.

To the end I left Gianluigi Bini, director of the Museo Malacologico MALAKOS, from Città di Castello, Italy; to the end, but first in my heart. Gigi and I have been friends for many years and I must thank him for having gone through the museum’s collection in search of specimens that might be useful for the present work.

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An Ocean Away

Dale Bittner

It was a unanimous decision for Melissa and I to make the trip to Hawaii for our honeymoon September/October 2016. Aside from being a special occasion, neither of us had visited and we knew our interests aligned well with what these incredible volcanic islands have to offer. We decided to spend half of our time on both Kona and Maui and the other half on Kauai visiting good friends, the icing on the "wedding cake" for us. Cameron and his wife Marti are "locals" having lived there for over twenty years. Cameron and I have known each other since we were twelve years old and later were college roommates. They were fantastic hosts and showed us many of the great sights and adventures to experience on this beautiful island.

During the first week of our stay we chartered a dive boat to snorkel Captain Cooks monument in Kona and went to several scenic spots off the Northwest coast of Maui. The tropical fish and coral are incredibly abundant. We were not accustomed to how close these locations were to shore as the drop off is rapid in most places from the volcanic slope.

The allure of finding some amazing Hawaiian *Conus* on the trip was persistent even with all of the other exciting activities. We were fortunate as the first day on Kauai with Cameron and Marti they took us to Poipu Beach on the south side of Kauai. While Cameron went surfing the three of us went snorkeling nearby. We could not have been in the water for five minutes and I found a live *Conus bandanus* and took several photographs. Then Melissa found *Conus leopardus* which she thought was too big to be real in comparison to the size of cones we find in the Keys. I found a large one under a low ledge and partially buried. We found several cones to photograph and were thrilled with our first experience with Pacific *Conus*. What an incredible abundance to be found within a stone's throw of the highway. I knew Melissa was disappointed that we only took photographs of her large *Conus leopardus* discovery.





However, her feelings would change on Christmas morning when she unwrapped a large *Conus leopardus* I purchased to help relive the memory of the one she found the first morning in Kauai.

Our next visit was to the Internationally famous town known as Hanelei on the North side of the Island. We went in a little further North near Tunnels Beach, while Cameron paddled out beyond the break to surf. I was happy to find a fresh dead *Mitra stictica* in the sand. We also found several cones including *Conus pulicarius*.

On a boat trip to the Nepali Coast we made a brief stop to snorkel an area with water about 6-8 meters. From the surface I noticed a large cone on the bottom. It was a dead *Conus striatus* and interesting to find the second of Hawaii's highly venomous cones.



As we were on another road trip we made several stops for Cameron to look for surf able waves. At one of the stops I noticed an expansive shallow area with some rubble looking bottom, which was accessible via a hike down a cliff through a wooded area. I asked Cameron if we could return to this area as it looked like excellent cone habitat. Melissa and I were glad we were able to return. In short order we found numerous *Conus ebraeus*, *Conus abbreviatus* and *Conus lividus*. It was shallow and they camouflaged very well. We were not able to stay in the water for very long and unfortunately did not have an opportunity to return to this very productive location.



Although, our collecting is focused solely on Western Atlantic shells, it was a very memorable part of our honeymoon to spend time in Kauai's clear and vibrant waters with great friends sharing one of our interests.

Trip to Turks & Caicos

Dale Bittner

Our four day trip to Turks & Caicos (Providenciales) was unplanned and more of a whim. In fact, it was decided one week before our direct flight from Miami to Providenciales leaving January 27th.

We stayed in a vacation rental home off the main highway at the south end of Providenciales. We were several miles from the airport, main resort area (east side of the island) and the tourist areas for dining, shopping, etc. It is a large island (30 miles and a resident population of approximately 25,000), thus a rental car is recommended. However, T&C are a British Territory so driving on the opposite side of the road takes getting accustomed to. Well into the trip while not being mindful we had a harrowing experience that we will never forget. Thankfully, the locals are great drivers and must be used to mistake prone tourists.

Our plan for the trip was to see a different Caribbean island, tour some of the less populated areas, enjoy fresh conch dishes (they are able to harvest locally and have a conch farm) and of course do a lot of beach entry snorkeling/shelling wherever it looked interesting. We were not disappointed with our hasty decision. The locals were friendly, the water was clear, not too cold and snorkeling access was very easy.

We checked out seven different locations in three days on Provo, North Caicos and Middle Caicos. In order to get to North and Middle Caicos, we had to take a Ferry from Provo to North Caicos and rent another car once on North Caicos. The Ferry is surprisingly fast with triple eight cylinder outboards and a light aluminum hull. It is the "de facto" bus system for the locals to and from work. There is an automobile bridge from North Caicos to Middle Caicos. These two islands are far less developed than Provo. In reviewing Google Earth, I was intrigued with Middle Caicos since the blue water comes in very close and collecting is permitted. Also, there are a number of sanctuaries around Provo and West Caicos, which prohibit collecting. West Caicos is a well-known locale for amazing collecting on the



vertical drop off at night. A number of rare *Conus* species, among others have been found in abundance there.

Our best collecting was off Middle Caicos in the areas known locally as Mudjin Harbor and Bambarra Beach. The taxi driver we met at the Ferry dock directed us to Mudjin Harbor. It is a very scenic beach with a large cave along the path to the beach. Also, there is a large rock close to the shore and an easy swim. We looked around this area for a long time and found numerous shells including several *Conus mus*. From there we headed south for an easy snorkel off a very shallow protected bay adjacent to Bambarra Beach. Here, after following the edge of a shallow grass bank, Melissa caught a glimpse of orange and began fanning the sand to uncover a striking *C. spurius*. In my opinion it was the best find of the trip. Unfortunately, we were not able to find any others in the area. We did find numerous *C. jaspideus*. A little north of this location I went in the water with heavy reef area close to shore and found a very interesting small chocolate colored *Latirus (Latirus angulata)*. During the trip we found a few very small *C. regius* and *C. mindanus* plus variety of other shell species.

Regal Bite

Dale Bittner

My good friend and long-time Key West commercial diver Pete Kehoe and I headed offshore recently with our typical plan of diving two to three different locations. Our first stop was to one of the local reefs located west of Key West. The gulf stream current was in close providing crystal clear water where we anchored the boat over the backside of the main reef. The current was very light and combined with the bright sun and clear water made for perfect conditions as we dropped over the side of the boat to begin our descent. We were to meet back at the boat after thirty minutes of collecting.

On the dive, I did not find any conus, however, I found a perfect pair of *Monoplex vespaceus* (Lamarck, 1822) Dwarf Atlantic Hairy Tritons under a rock along with a mixed bag of other small shells. As usual, I stayed in a little later and Pete was back in the boat when I surfaced. I was looking forward to sharing my find with him and quickly paused when I recognized he was shaking his head. My mind flashed back to the first dive we ever made together. On that day when I returned to the boat Pete was bleeding profusely from his hand. A moray eel had bitten him, which we promptly bandaged with gauze and electrical tape then proceeded to keep diving for the day. Fortunately, the laceration from the moray's sharp needle like teeth did not require stitches.

Pete proceeded to explain he had found a small (35 mm) *Conus regius* and placed it under the left sleeve of his skin suit by his wrist. He continued along for ten minutes or so and suddenly felt a sharp stinging sensation, realizing he had been bitten by the aggravated cone. The welt on his wrist was obviously visible and after making sure he was stable, I took several pictures. Pete described the bite as wasp like from a pain standpoint and wore off after about an hour. He did have an itching sensation, no burning pain nor warmth around the bite. I knew he was fine when he smiled and stated "if my ailing shoulder feels better as a result of this bite, it will become a routine part of my therapy."



I then countered we might have to find a live *Conus ermineus* to have any chance of that working on his bum shoulder.

Fossil Cones in Morocco

Alessandro Zanzi

Recently I conducted a research to try to understand if *Conilithes dujardini* (Deshayes, 1845), a species from Miocene, and *Conilithes canaliculatus* (Brocchi, 1814), a species from Pliocene, was also present in Morocco to study what was the expansion of these species in North-West Africa.

First of all I should have looked for any findings of *Conus* that could be identified as one of these two species, even if they were simply referred to as *Conus sp.*, otherwise I would have to understand if it was possible that these two species were present in Morocco.

Conilithes dujardini is quite common in France, but its presence is also reported in Turkey, Austria, Italy, Germany, Belgium, and in Portugal during Middle-Upper Miocene (Pereira Da Costa, 1866) and Algeria (Pomel et al., 1897). The specimen MNHN-F-A26662, described as internal mould of *Conus cf. dujardini* from Messinian of Algeria (Saint Martin, 2008), may confirm the presence in Africa of specimens belonging to the *C. dujardini* - *C. canaliculatus* group, but the presence of *C. dujardini* was already reported in the Tortonian at Kalaà, Mendes and Nasses, not far from Morocco (Pomel et al., 1897). *C. dujardini* is closely related to *C. canaliculatus* and can be considered its ancestral form (Peyrot, 1932). Moreover, *C. canaliculatus* has been found also near Estepona, Lower Pliocene (Muniz, 1999), but no indication of *C. dujardini* or *C. canaliculatus* has been made until now, with reference to Morocco. Is there a reason for this absence or should we think that *C. dujardini* arrived in Algeria without transiting through Morocco?

Tetuan

A clue could be given by the type of *Conus* present in the Tetuan site (Lower Pliocene), now located below the city's buildings, where specimens of fossil shells could be found in the 90's. In this place, numerous specimens of *Conilithes antediluvianus* (Bruguère, 1792) have been found: the specimens AZFC 196-10,

AZFC 196-13, AZFC 196-14, AZFC 196-15 are in my collection.

The presence of *Conilithes antediluvianus* in the region was known for a long time, so that Bronn applied the name *Conus acutangulus* (Deshayes) for the specimens of *C. antediluvianus* recorded by Eichwald, von Buch and Dubois de Montpèreux from Central Paratethys localities, as well as for occurrences in Algeria (Janssen et al., 2014). An interesting aspect of the *Conilithes antediluvianus* specimens coming from Tetuan is that these are characterized by large beads on the carena, just like the specimens from the Piacenzian of Molins de Rey (Barcelona) or Estepona (AZFC-196-11). The thin spiral lines that can be seen under the beads of the last whorl of the specimen AZFC N. 196-15 are very interesting: similar spiral lines are also present in other *Conilithes*, such as *C. dujardini*, *C. dujardini sallomacensis*, *C. dujardini var. pseudoantediluviana*, *C. exaltatus*.

For what concern *C. dujardini*, this species seems to have inhabited muddy seabeds, and for this reason it is not common in areas such as Piedmont, where there are mainly sandy deposits (Sacco, 1893) and where *C. antediluvianus* is instead very frequent, so that Sacco examined about a thousand specimens. The same situation could have occurred also in Tetuan and for this reason it would seem that *C. dujardini* and *C. canaliculatus* was not present.

In my Collection there is also an interesting specimen of *Conus subraristriatus* (da Costa, 1866) from Tetuan. This species, typical of Middle – Upper Miocene, has never been described from Morocco and has never been found in Lower Pliocene deposits, like that of Tetuan. This specimen retains a beautiful color, formed by spiral lines of light brown color dots. Its coloring could make it confuse with *Conus berghausi* (Michelotti, 1847) or with *Conus maculosus* (Grateloup, 1835), but it is easily distinguished from *Conus maculosus* due the shape of the spire, the absence of spiral and space grooves at

the base, the smaller dimensions of the colored dots, which in *Conus maculosus* are almost small rectangles, and the largest number of spiral lines formed by the colored dots on the last whorl. *Conus subraristriatus* has a convex spire, while *Conus berghausi* has a concave and lower spire and a broader last whorl.

Other interesting Pliocene species come from the Tetuan site, for example *Conus brocchii* (Bronn, 1828) AZFC N. 191-04, *Conus corynetes* (Fontannes, 1880) AZFC N. 471-02, *Conus laeviponderosus* (Sacco, 1893) AZFC N. 411-02, *Lithoconus mercati* (Brocchi, 1814), *Conus noe* (Brocchi, 1814) AZFC N. 502-01.

As for *Conus brocchii* and *Lithoconus mercati*, there is not much to say, except that these species were also present in Spain and *L. mercati* was reported in Tetuan by Lecointre in 1952.

The specimen of *Conus corynetes* AZFC 471-02 is really interesting. As you can be seen in the photograph, last whorl is entirely covered by spiral lines very close to each other. This characteristic is common in *Conus belus* (d'Orbigny, 1852), which represents the predecessor of *Conus corynetes* during the Miocene, but is also found in some specimens of *Conus corynetes* (for example some Italian specimens), typical of Pliocene, in which the spiral lines can cover only part of the last whorl. In the Moroccan specimen, I found the outline of the spire particularly interesting. In fact, normally *Conus corynetes* has a convex spire and it has been designed by Sacco in this way. Instead, this specimen has a decidedly concave spire, just like the specimen of *Conus pyrula* depicted by Grateloup, on whose design d'Orbigny based his definition of *Conus belus* (see fig. 12 and 13). Before seeing this specimen, the drawing represented by Grateloup in 1840 seemed to me very strange and deformed, compared to the real specimen, just like other *Conus* depicted on the same plate, due to the interpretation of the author of the drawing, but now I believe that also the specimen described by Grateloup had a concave spire.

The specimen of *C. laeviponderosus* AZFC 411-02 from Tetuan gives me the opportunity to make a comparison with the specimen depicted by Muniz in fig. 8M-N, indicated by him as *Conus sp.1*, due to the lower spire, compared to other specimens that he observed and identified as *C. laeviponderosus*. Even the specimen from Tetuan has a somewhat low spire, but both, in my opinion, should be considered *C. laeviponderosus*, because, in *Conus*, the height of the spire can vary within a certain range, and the colour formed by wavy longitudinal lines, combined with the morphological characteristics of the specimens, leave no alternatives to identification as *C. laeviponderosus*.

Conus noe was not included by Muniz among the species present in Spain, but the figures 7M-N, which he referred to as *Conus mucronatolaevis* (Sacco, 1893) from Pliocene of Velerin, actually refer to a *Conus noe*: in *Conus noe* last whorl definitely ventricosely conical, just as in the figures of Muniz and in the specimen from Morocco, while in *Conus mucronatolaevis* last whorl is clearly conical, an aspect that Muniz probably did not carefully evaluate. Moreover, in *Conus mucronatolaevis* the shoulder is rounded but more swollen, the apex is more pointed and slender and the basal part of columella is much more regular and short. Moreover, *C. mucronatolaevis* lived during Miocene, while the specimen illustrated by Muniz belongs to Pliocene. Previously I had not paid attention to this figure, but now, since I am looking for the presence of *Conus noe* in Spain, I have observed the figure by Muniz more carefully.

Dar Bel Amri

Another interesting locality where fossils *Conus* can be found in Morocco is Dar Bel Amri, in Bou Regreg Basin. This outcrop represents one of the classic sections of the Neogene of Morocco for malacological studies.

“It is located on the right bank of Oued Beht, 1.5 km from Dar Bel Amri. At the base of the series emerge 9

m of fine-grain yellow sands that are very bioturbated and with isolated ostreids, which pass to medium-grained sands towards the top, between which fine-grained areans and green argillas are interspersed. The series culminates with coarse-grained and calcarenite sands that are very poor in fauna. Levels equivalent to the lower section have been studied 6 km to the south, in the section called Fayard. The age of this section is a widely debated question. Some authors consider it Upper Miocene-Lower Pliocene, while for others it would be lower Pliocene in its entirety. The presence of *Globularia margaritae* throughout the entire section without detection *G. puncticulata* only allows to estimate an age of Upper Messinian-Lower Pliocene” (Civis et. al., 1997).

From this locality, Glibert report *Conus striatulus* (Brocchi, 1814), referring also to Pl. IX Fig. 30-39 of Sacco, but some of these drawings, for example fig. 37 and 38, can be easily considered as *Conus canaliculatus* (Brocchi, 1814), especially because of the absence of coloration. Moreover, as the name *Conus canaliculatus* (Chemnitz, 1795) already existed, Sacco did not consider the name *Conus canaliculatus* given by Brocchi as valid, and for this specie Sacco indicate the name *Leptoconus brocchii* var. *excanaliculata* (Sacco, 1893) without representing it. From Dar Bel Amri, I own a *Lautoconus gastricus* (Coppi, 1876), which is very similar to the one illustrated by Rafael Muñoz Solís in 1999 from Lower Pliocene of Estepona – Malaga (Fig. 7 C-D). It is a rare species spread from Miocene in Italy to lower Pliocene in Italy, Spain and Morocco. This species has been described on the basis of some relatively poorly preserved specimens, and this could be the reason why, in the original description, no reference is made about the ornamental design. Recently I worked on a specimen of *Lautoconus cloveri* (Walls, 1978) from Senegal, so, observing the typical texture of last whorl of *L. gastricus*, I could hypothesize that this specimen of *L. gastricus* may have represented a stage of the journey that would have led it to evolve in some species of Senegal, which are characterized by a similar

texture in their ornamentation, as *Lautoconus cloveri*. Moreover, I think that the conformation of basal part of columella of this specimen is very characteristic.

The Atlantic Littoral of Morocco

I was also interested in a third area: the Atlantic littoral of Morocco. This area clearly provides one of the most complete Pleistocene succession of the world, between 0 and 20 m. (Howell, 1962, in Stearns, 1978). Due to the current trend of rising global sea level and in particular of urban and port development in recent years, witnesses of the lower terraces have almost completely disappeared since 1980 (Weisrock, 2013). In this area were found 164 *Lautoconus ventricosus* and 1 *Conus* sp. (Brebion, 1984), but having observed the specimen MNHN.F.R53969 collected and identified by Brebion, we believe that at least some these specimens are not identifiable as *L. ventricosus* (Gmelin, 1791), but rather as *Conus corynetes* (Fontannes, 1880): in the specimen MNHN.F.R53969 the shoulder is clearly rounded, while in *L. ventricosus* the shoulder is always subangulate. The specimen MNHN.F.R53969 extends the presence of *C. corynetes* up to the Pleistocene. I have no information regarding the specimen indicated as *Conus* sp.

Brebion in 1979 also presents a *Lithoconus mercati* (Brocchi, 1814) of Pliocene, from Akoui n'Taïssit, in the municipality of Aït-Iddir. This is a specimen in poor conditions and therefore difficult to identify, but it seems to me that it is actually a correctly identified specimen.

Conclusion

In conclusion we can affirm that all the species of fossil *Conus* described in this article and found in Morocco are similar to those found in Spain. It is therefore possible to assume that the closure of the communications between the Atlantic and Mediterranean domain during the upper Neogene (Messinian), which allowed

the formation of a gulfs between southern Spain and northern Morocco, has facilitated the passage of the fossil species present in Spain from Europe to Africa. I think that, among these species, we can also include *C. dujardini*, which was present in Algeria, although until now it has not been found in the territory of Morocco, but we must not forget that many of the species described in this article had not been described previously as present in Morocco. New sites have been discovered, for example Malalyine outcrop, that is located 10km NE of Tetuán and is crossed by the highway from Tetuán to Fnideq in whose construction it has been exposed: it is possible that *Conus dujardini* or *Conus canaliculatus* will be found?

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List of the fossil *Conus* present in Morocco, described in this article:

Tetuan (Lower Pliocene):

Conilithes antidiluvianus (Bruguière, 1792) - [AZFC 196-10,196-13,196-14,196-15]

Conus brocchii (Bronn, 1828) - [AZFC 191-04]

Conus corynetes (Fontannes, 1880) - [AZFC 471-02]

Conus laeviponderosus (Sacco, 1893) - [AZFC 411-02]

Lithoconus mercati (Brocchi, 1814) - [Lecointre]

Conus noe (Brocchi, 1814) - [AZFC 502-01]

Conus subraristriatus (Da Costa, 1866) - [AZFC 498-02]

Dar Bel Amri (Lower Pliocene):

Lautoconus gastriculus (Coppi, 1876) - [AZFC 452-01]

Chelyconus striatulus (Brocchi, 1814) - [Brebion]

Akouï n'Taïssit (Pliocene)

Lithoconus mercati (Brocchi, 1814) - MNHN.F.R53062

Agadir (Pleistocene):

Conus corynetes (Fontannes, 1880) - MNHN.F.R53969

Conus sp. - [Brebion]

(*) The specimens present in my collection are indicated with the abbreviation AZFC.



Conus antdiluvianus (Bruguière, 1792) - [AZFC N. 196-13] [28,2 x 12,3 mm.] - Tetuan (Pliocene)



Conus antdiluvianus (Bruguière, 1792) - [AZFC N. 196-10] [21,5 x 8,4 mm.] - Tetuan (Pliocene)



Conus antidiluvianus (Bruguière, 1792) - [AZFC N. 196-14] [39,2 x 15,5 mm.] - Tetuan (Pliocene)



Conus antidiluvianus (Bruguière, 1792) - [AZFC N. 196-15] [53,2 x 19,9 mm.] - Tetuan (Pliocene)





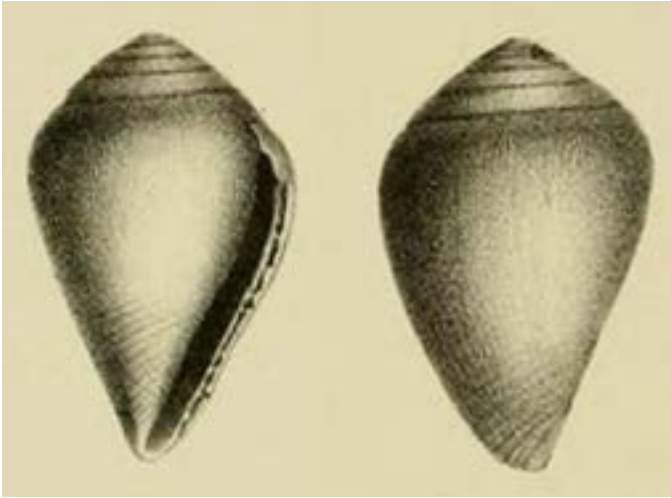
Conus antidiluvianus (Bruguière, 1792) - [AZFC N. 196-11] [45,2 x 18,5 mm.] - Piacenzian - Pliocene – Estepona Basin el Velerin Conglomerates



Conus gastricus (Coppi, 1876) - [AZFC N. 452-01] [34,5 x 19,9 mm.] – Dar Bel Amri (Pliocene)



Conus subraristriatus - (Da Costa, 1866) - [AZFC N. 498-02] [25,4 x 14,5 mm.] - Tetuan (Pliocene)



Conus corynetes

Fontannes, F., 1880. Les Invertébrés du Bassin Tertiaire du Süd-est de la France les Mollusques Pliocènes (Pl. VIII – Fig. 13)



Conus corynetes (Fontannes, 1880)
[AZFC 471-01] - [25,2 x 15,7 mm.]
Piacenziano - Pliocene – Estepona Basin el Velerin Conglomerates



MNHN.F.R53969 - *Lautoconus ventricosus* (Gmelin, 1791) ? Agadir – Morocco (Pleistocene)

Brébion P., 1979 - Iconographie critique des Gastéopodes marins du Pliocène supérieur et du Quaternaire marocains atlantiques. Bulletin du Muséum d'Histoire naturelle de Paris, sér. 2, t. 1, vol. 2, p. 137-149 (pl. 4 fig. 13)

<https://science.mnhn.fr/institution/mnhn/collection/f/item/r53969?listIndex=110&listCount=244>



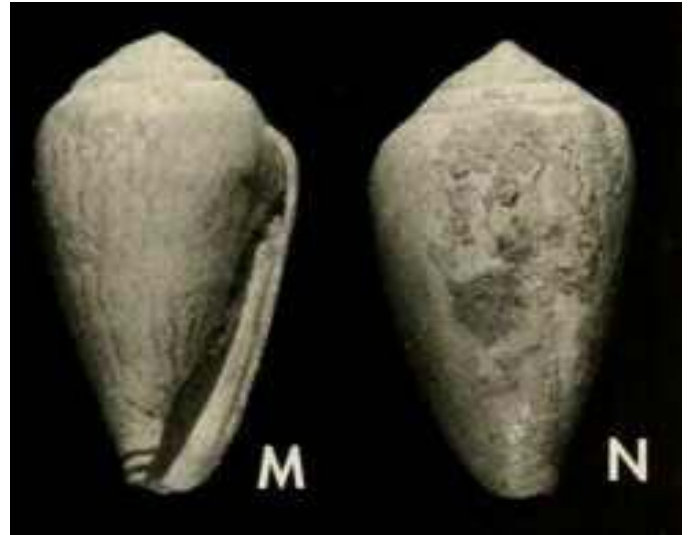
MNHN.F.R53062 - *Lithoconus mercati* (Brocchi, 1814) Aït-Iddir - Akoui n'Taïssit - Morocco (Pliocene)

Brébion (P.), 1979 - Iconographie critique des Gastéopodes marins du Pliocène supérieur et du Quaternaire marocains atlantiques. Bulletin du Muséum d'Histoire naturelle de Paris, sér. 2, t. 1, vol. 2, p. 137-149 (pl. 4 fig. 12)

https://science.mnhn.fr/institution/mnhn/collection/f/item/r53062?lang=en_US



Conus brocchii (Bronn, 1828) - [AZFC N. 191-04] [40,9 x 18,5 mm.] - (Pliocene)



Conus sp.1 (Fig. 8M-N: MUÑIZ R.,1999)
Conus laeviponderosus (Brocchi, 1814)
 Velerin - Spain



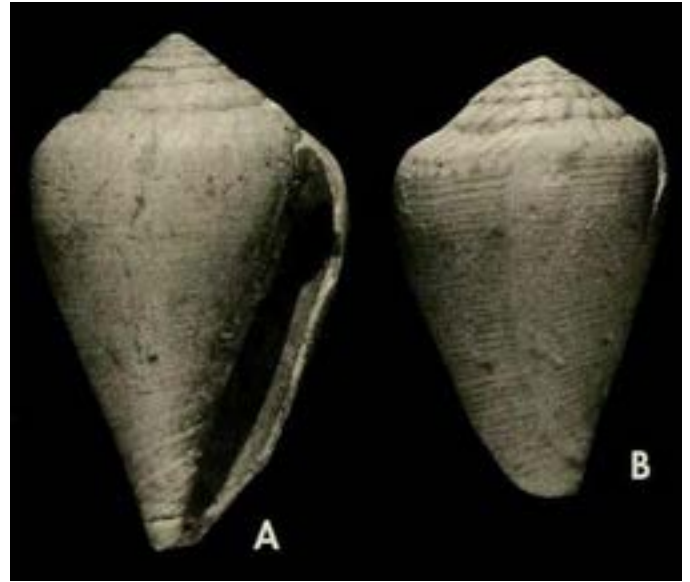
Conus laeviponderosus (Sacco, 1893) - [AZFC N. 411-02] [38,5 x 21,1 mm.] - (Pliocene)



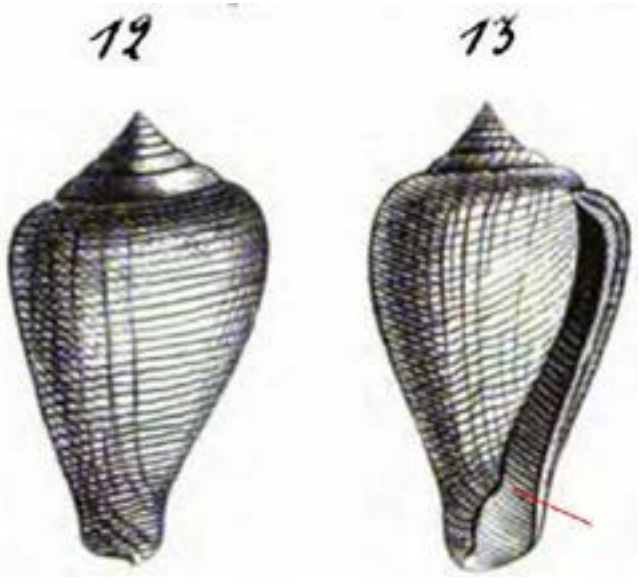
Conus noe (Brocchi, 1814) - [AZFC N. 502-01] [55,1 x 26,3 mm.] - (Pliocene)



Conus corynetes (Fontannes, 1880) - [AZFC N. 471-02] [28,8 x 16,8 mm.] - (Pliocene)



Conus belus (d'Orbigny, 1852)
Muniz,1999: Fig. 9A-B



Conus belus (d'Orbigny, 1852)
= *Conus pyrula* by Grateloup (Pl.44 Fig. 12-13)

Brisbane Shell Club Annual trip to Swain Reefs Group 19-26 August 2017

Rémy Devorsine

Our friend Rémy Devorsine sent us some very nice photos of the Brisbane Shell Club trip to the Swains Reefs Group, in August 2017.

Here's what Rémy had to say about the trip:

Where we have been...

The Eastern Voyager left Gladstone Marina Saturday the 19th August at 4:00 pm, heading to Sandshoe Reef, where we arrived at 10:00 am the next day. We did shell there. Not a very prolific reef.

On the 21st we left at 6:00 a.m. for Mackerel Reef where we anchored at 11:00 a.m. After a quick snack we went shelling. Not a very prolific reef either!

Hoping tomorrow will be better! We left Mackerel Reef at 6:00 a.m. on the 22nd for Perfect Lagoon Reef and anchored there at 10:00 a.m. We went shelling, dredging, and fishing every day.

The dredging was good, and we did get some *Voluta peristicta*, *Murex queenslandicus*, and numerous other shells that were also of interest. On the fishing side, every fisher person did catch their fair share of fish, even though the sharks took a few!

The reef shellers and snorkelers did quite well, many species of *Conus* were found. *Conus magnificus* was the most prevalent. The most outstanding of the cones was *Conus ammiralis* found by Ray when snorkeling. *Lyria deliciosa* was found mostly by the snorkelers. Not many *Cypraea* were found on the trip. *Cypraea talpa*, *Cyp. melwardi*, *Cyp. cicercula*, *Cyp. punctata* and *Cyp. nucleus* were the most interesting *Cypraea* found during the trip. We arrived back at the Marina early morning on the 26th August, after a most enjoyable trip.

Everybody appears to have had a really good time and many interesting specimens were found. Here are a few examples of Cones found during the expedition.









Robyn Bradbury, Cheryl Myles, Julie Healey,
Jack Worsfold, Sally Johnsen, Karen Ivey,
Robert Ellis, Lorraine Rutherford, Ray Pascoe
Drew Strickland, Liz Pascoe, Michael Barlow
Ray Walker, Steve Grail, Chris Clarke
Remy Devorsine



On the Oviposition and Egg Masses of *Conus regius* (Neogastropoda: Conidae) from Northeastern Brazil

Geraldo Pomponet Oliveira, et al.

A Note on Brazilian Cones

The following article by Pricila Bento Gonçalves, Silvio Felipe Barbosa Lima, Geraldo Semer Pomponet Oliveira and Rudá Amorim Lucena was published in *Biota Neotropica* 17(4): e20170434, 2017.

The third author has kindly given us permission to reproduce it here.

On the oviposition and egg masses of *Conus regius* (Neogastropoda: Conidae) from northeastern Brazil

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Gonçalves, P. B., Lima, S. F. B., Oliveira, G. S. P., Lucena, R. A. On the oviposition and egg masses of *Conus regius* (Neogastropoda: Conidae) from northeastern Brazil. *Biota Neotropica*. 17(4): e20170434.

<http://dx.doi.org/10.1590/1676-0611-BN-2017-0434>

Abstract

Characteristics of the egg masses of *Conus regius* Gmelin, 1791 are described and figured for the first time for the coast of Brazil based on a female specimen found in the process of oviposition during the day in the state of Bahia, northeastern Brazil. Two clusters of egg masses were found in the subtidal zone of Itapuá beach attached to rocky substrate in a completely unprotected site. Oviposition likely began at least one day earlier, since the specimen had already affixed an entire egg mass and was ovipositing a second cluster at the time it was found. The egg masses were arranged in short, irregular rows of three to nine closely spaced capsules in parallel and facing the same direction.

One egg mass cluster consisted of 34 capsules. *Conus regius* capsules are semi-transparent, vasiform in side view, higher than broad and have flattened to slightly convex sides with slight wrinkles constituted by transversal ridges.

Conus regius is on the IUCN Red List of Threatened Species, but is still intensively collected in the study area and surrounding coastal environment by fishermen for the purposes of selling shells and as a food source.

Keywords

Gastropoda, Conoidea, reproduction, ootheca, Bahia

Introduction

Conus Linnaeus, 1758 is a highly diversified genus of predatory marine neogastropods, with approximately 770 recent species worldwide (Bouchet & Gofas 2015). They live predominantly in shallow tropical habitats (Kohn 1966, Penchaszadeh 1984, Olivera et al. 1990, Kohn 1998, Duda et al. 2001, Terlau & Olivera 2004, Peters et al. 2013, Flores-Garza et al. 2014). Species of

Conus are among the most well-known mollusks due to the beautiful color patterns of the typically heavy, obconical or biconical shells (Terlau & Olivera 2004, Kohn 1998).

These species are also particularly dangerous due to a harpoon-like radular tooth that injects neurotoxins into prey (Olivera et al. 1990, Terlau & Olivera 2004, Braga et al. 2005, 2013, Haddad et al. 2006, 2009, Peters et al. 2013, Flores-Garza et al. 2014) and that can also injury and even death to humans (Olivera et al. 1990, Kohn 1998, Terlau & Olivera 2004, Haddad et al. 2006, 2009, Flores-Garza et al. 2014). There is economic importance in the extraction of compounds of medical and pharmacological interest (Olivera et al. 1990, Terlau & Olivera 2004, Braga et al. 2005, 2013, Gowd et al. 2005, Haddad et al. 2006, 2009, Peters et al. 2013) and as a food source for fishing communities on some Pacific islands (Terlau & Olivera 2004) and in northeastern Brazil.

Species of *Conus* that inhabit the intertidal to subtidal zones usually live in a heterogeneous habitat (Kohn 1959, 1998, Peters et al. 2013, Flores-Garza et al. 2014). They are quiescent when exposed to sunlight and typically seek shelter in shaded areas under algae, rocks and the sediment (Kohn 1998). Most species forage actively at night (Kohn 1998, Terlau & Olivera 2004, Flores-Garza et al. 2014) preying on a diversity of worms (e.g., polychaetes), hemichordates, echiurans, crustaceans, fishes and other mollusks (e.g., bivalves and gastropods) (Olivera et al. 1990, Kohn 1966, Cruz et al. 1978, Zehra & Perveen 1991, Kohn 1959, 1998, Duda et al. 2001, Terlau & Olivera 2004, Gowd et al. 2005, Haddad et al. 2006, 2009, Flores-Garza et al. 2014). *Conus* are dioecious gastropods (Kohn 1961a, Flores-Garza et al. 2014).

Reproductive aspects related to spawning, egg masses and larvae have been studied for a number of species worldwide (Lebour 1945, Ostergaard 1950, Natarajan 1957, Kohn 1961a,b, D'Asaro 1970a,b, Nybakken

1970, Bandel 1976, Cruz et al. 1978, Perron 1981a,b,c, Penchaszadeh 1984, Zehra & Perveen 1991). Females deposit dozens of large, usually flask-shaped egg capsules on or within different substrates (Perron 1981c, Zehra & Perveen 1991, Kohn 1998). Each egg capsule may contain a few to hundreds of embryos (Kohn 1998).

Conus fauna on the coast of Brazil includes about 20 species, five of which are endemic to the country (Rios 2009). *Conus regius* Gmelin, 1791 is a common, potentially dangerous and predominantly nocturnal species (Braga et al. 2005, 2013, Haddad et al. 2006, 2009, Rios 2009). It mainly lives on and under rocky, coral reefs and calcareous reef environments from Florida to Brazilian waters and actively feeds on worms, especially polychaetes (Bandel 1976, Braga et al. 2005, 2013, Lee 2009, Tunnell et al. 2010, Haddad et al. 2006, 2009, Rios 2009). This species may also be found half buried in the sand (Bandel 1976). Egg capsules from *C. regius* were succinctly described and poorly illustrated only by D'Asaro (1970a) and Bandel (1976) from south Florida – Bahamas and the Caribbean sea of Colombia, respectively. *Conus regius* was once recognized as a very abundant shallow-water species, especially in northeastern Brazil (Haddad et al. 2009), but is currently on the IUCN Red List of Threatened Species (IUCN 2017).

To the best of our knowledge, so little information has been published about the reproductive biology of any Atlantic *Conus* species. Thus, the purpose of the study is to provide additional information on the oviposition and mainly egg capsules of *Conus regius* based on a specimen found in the subtidal zone in northeastern Brazil.

Material and Methods

1. Study Area

This study was conducted in the shallow subtidal zone of Itapuã beach (12°57'27"S, 38°21'21"W), which is

located approximately 20 km from the city of Salvador in the state of Bahia, northeastern Brazil (Silva et al. 2009). The study site has a coastline of approximately 600 m (Silva et al. 2009) and reef platforms that are under the direct influence of wave impacts from the Atlantic Ocean (personal observation) (Figure 1).

The study area and surrounding coastal environment is a high-energy region characterized by a slightly steep subtidal zone composed of sandy, carbonate and rocky substrates as well as reef outcrops that are nearly exposed at low tide (Alves & Cerqueira 2000). The hard substrates undergo a strong weathering process in the region originating sediments composed of sand, quartz and carbonate (Bittencourt 1975). The environmental complexity of Itapuá and other beaches of Salvador offers a variety of micro-habitats and macro-habitats that favor the establishment of diverse communities of invertebrates (Alves & Cerqueira, 2000), especially mollusks, which constitute the second most diversified phylum in the world (Lima et al. 2017).

The area is under the influence of urbanized areas that input nutrients and domestic sewage. Moreover, fishing pressure on Itapuá beach has drastically reduced the populations of fishes, crustaceans and mollusks.

2. Field observations and laboratory procedures

This paper is based on observations of the oviposition and egg capsules of a specimen of *Conus regius* on 12 December 2016 at low tide in the subtidal zone of Itapuá beach. The female in oviposition was observed for approximately 25 minutes, was not handled during the oviposition process and was not collected to be deposited in a scientific collection. This species is well known in the literature and is threatened with extinction, especially at the study site, where it is captured for the purpose of selling the shell and as a food source. The rocky substrate with the first attached egg mass was manipulated for approximately four minutes to photograph it out of the water and for the removal

of a few egg capsules. The egg capsules removed were preserved in 70% ethanol. The capsules were measured in the laboratory using the three dimensions described by Kohn (1961a) as well as an additional measure: ea – length of escape aperture, hp – height of peduncle, mh – maximum height, and mw – maximum width. The total number of capsules in the egg mass was counted during manipulation of the substrate. Illustrations were also prepared from drawings.

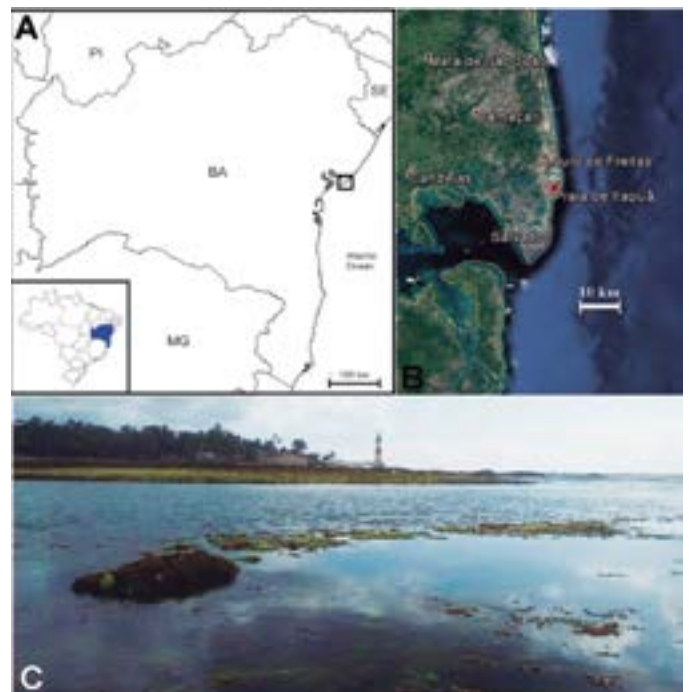


Figure 1. (A) Map of the Brazil (small square) highlighting the state of Bahia and the state of Bahia (large square) highlighting the location of the Itapuá beach (northeastern Brazil); (B) Map of stretch of the coast of Bahia showing the location of the Itapuá beach; (C) Photo of the area of observation and collection of spawning of *Conus regius* at Itapuá beach. Abbreviations: SE — Sergipe, BA — Bahia and MG — Minas Gerais.

The specimen of *Conus regius* shown here (Figure 2A) is deposited in the Coleção Zoológica do Laboratório de

Zoologia, Universidade Federal de Campina Grande (UFCG_MOL 01), Centro de Formação de Professores, Cajazeiras, Paraíba, Brazil. The capsules are housed in the malacological collections of the Laboratório de Invertebrados Paulo Young, Universidade Federal da Paraíba (UFPB MOLL 3629: 03 capsules), João Pessoa, Paraíba; Museu de Zoologia, Universidade de São Paulo (MZSP 132042: 04 capsules), São Paulo, Brazil and UFCG_MOL 02: 06 capsules.

Results

1. Oviposition

A specimen of *Conus regius* (shell measuring approximately 54 mm in total length) was found ovipositing during sunny daylight (approximately 8:50 a.m.) in the subtidal zone of Itapuá beach (Figure 2). It was found in a completely unprotected site with a mixed substrate of gravel, sand and small to medium-sized pieces of rocks at depth of approximately 30 cm. The oviposition process had likely begun at least one day earlier, since the specimen had already affixed an entire egg mass cluster to the substrate (Figure 2B – left horizontal arrows). It was observed ovipositing the second egg mass cluster at the time it was found (Figure 2B – vertical and right horizontal arrows). The second cluster was being affixed to the rocky substrate, which was partially covered with macroalgae filaments. No other spawn was found on the surrounding substrates. The specimen remained relatively motionless during the oviposition process, which was observed for approximately 25 minutes. It was not possible to photograph in detail and observe the entire extrusion process of the second egg mass cluster due to the rising tide.

2. Egg masses and capsules

Two clusters of egg masses of *Conus regius* were found on the substrate (Figure 2B – left and right horizontal arrows). One cluster had likely been produced by the

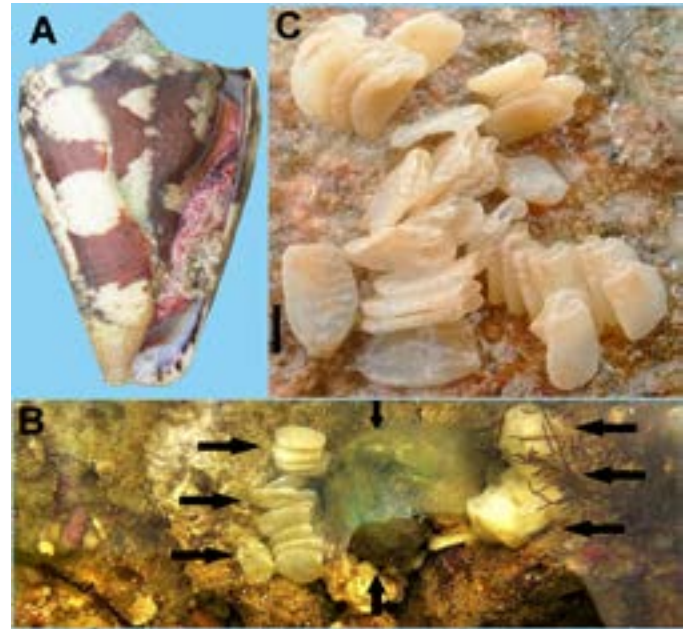


Figure 2. *Conus regius* from coast of Bahia: (A) Specimen collected from Morro de São (state of Bahia, northeastern Brazil – UFCG_MOL 01: 54 mm); (B) Female specimen in oviposition process on Itapuá beach (vertical arrows pointing to specimen; left horizontal arrows pointing to first egg mass; right horizontal arrows pointing to second egg mass being deposited); (C) Clusters of egg masses photographed out of water (same as Figure B indicated by left horizontal arrows; scale bar of nearest ootheca: 5 mm).

specimen (Figure 2B – left horizontal arrows) and another was being extruded and affixed to the substrate at the time it was found (Figure 2B – horizontal and right horizontal arrows). Both clusters were well separated from each other (Figure 2) and arranged in short, irregular rows of three to nine closely spaced egg capsules exhibiting the same pattern (one alongside the other) and oriented in parallel facing the same direction, all attached at the underside of the piece (Figure 2C). In each cluster, immediately adjacent groups of rows of egg capsules were situated at various angles (Figure 2C). The first egg mass cluster consisted of about 34 capsules (Figure 2B – left horizontal

arrows) and was carefully removed from the water to be better studied and photographed (Figure 2C). Most of the capsules were empty (without embryos) in this cluster (Figure 2C). The second egg mass cluster in oviposition contained about 18 capsules (Figure 2B – vertical and right horizontal arrows). This cluster under construction was not handled or studied in detail so as not to interrupt the oviposition process. A minimum of 52 egg capsules in both egg masses were likely laid by the female. The clusters of egg masses were affixed to the substrate without any overlapping or confluence of the pieces of the capsules.

Conus regius has thin, semi-transparent, vasiform (side outline) capsules (Figure 2C). Such capsules are much higher (mh – about 12 to 14 mm) than broad (mw – about 7 to 8.5 mm) (Table 1) with flattened to slightly convex sides that are slightly and unevenly wrinkled by few, low and rather well-spaced transversal ridges running from apical region to peduncle (Figures 2C and 3). Capsules with typically convex lateral edges and ridges (Figures 2C and, 3). Each capsule rises vertically from a short stalk with slight skew to one side (Figures 2C and 3). Capsules composed of two equal membranous halves along axis interrupted only by escape aperture (Figures 2C and 3). Capsular apex usually sigmoid shaped (Figures 2C and 3). Escape aperture very narrow and elongated (slit shaped: ea – about 3.9 to 5.5 mm), slightly concave extending along capsular apex (Figures 2C and 3). Peduncles short (hp – about 2 to 3 mm) (Table 1), narrow to enlarge, usually positioned in central part of capsular base (Figures 2C and 3). Basal membranes discrete and fused between peduncles (Figures 2C and 3). Empty capsules of opaque white (semi-transparent) color. Full capsules (with embryos) are light pinkish brown. Most of the capsules in the egg masses photographed were apparently empty (Figure 2C).

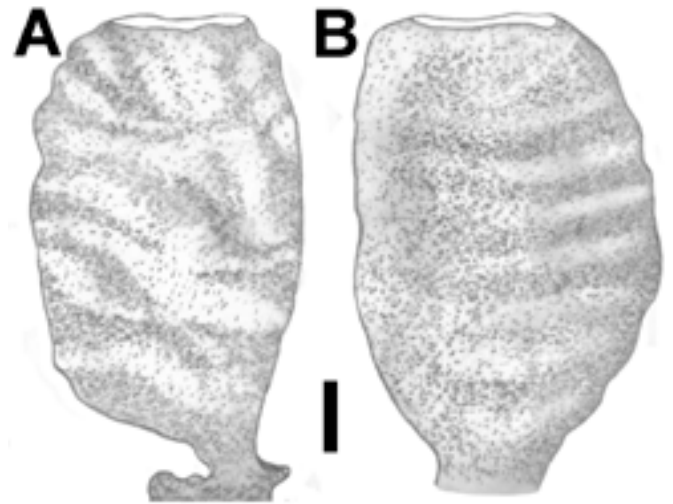


Figure 3. Two egg capsules of *Conus regius* from the coast of Bahia: A. Ootheca well wrinkled with narrow peduncle positioned in subcentral region of capsular base and part of basal membrane; B. Ootheca moderately wrinkled with wide peduncle positioned in central region of capsular base. Scale bar: 2 mm.

Table 1. Linear measurements (mm) of capsules of *Conus regius* found in the subtidal zone of Itapuá beach.

	<i>Conus regius</i>			
	N	R	M	SD
ea	11	3.90-5.50	4.62	0.56
hp	10	2.00-3.00	2.40	0.49
mh	11	12.0-14.0	12.7	0.75
mw	12	7.00-8.50	7.89	0.41

Discussion

Conus regius is one of the about 10 conid species widely distributed in the western Atlantic (Rosenberg 2009) and is found in a considerable variety of coastal habitats on rocks (Diaz & Puyana 1994), rocky reefs (Warmke & Abbott 1962) or similar reef structures (Abbott 1974), calcareous environments (Tunnell et al. 2010) and sediments as well as under rocks

(Bandel 1976, Redfern 2013), gravel and calcareous algae bottoms (Rios 1994) associated with coral reefs (Bandel 1976), coral fragments (D'Asaro 1970a), dead corals and cavities under semispherical coral colonies, sea-grass bottoms or even buried in the sand (Bandel 1976). This species typically lives in these habitats on the coast of northeastern Brazil (Haddad et al. 2009), even on substrates exposed to the atmosphere at low tide. The coast of the state of Bahia, including the Abrolhos Archipelago is recognized as an area of important diversity of *Conus* due to the considerable environmental complexity of the coastline and islands, which results in a large variety of marine habitats (Coltro 2004). However, *C. regius* and congeners are currently rather rare in the habitats of Itapuá beach and adjacent areas of the coast due to environmental degradation and the intensive collection by fishermen for the sale of shells and as a food source.

Egg masses of *Conus regius* have been rarely studied in the western Atlantic (see D'Asaro 1970a: 434–435, fig. 9F–H, Bandel 1976: 184–185, fig. 9). In previous studies, egg capsules of the species was found only on coral fragments in Florida (D'Asaro 1970a) as well as under *Acropora* fragments and hollow hemispherical corals in Colombia and Curaçao (Bandel 1976). Unlike these studies, the specimen observed herein was in an unprotected site with a mixed substratum of gravel, sand and rocks (Figure 2B). Geraldo Oliveira has studied mollusks on the coast of Bahia (especially Itapuá beach) for approximately 40 years and this is the first time that the researcher has found a female specimen in oviposition and egg masses in the region.

Among the species of the western Atlantic, *Conus regius* has an capsule morphology somewhat similar to those of *C. ermineus* Bom, 1778 (see Bandel 1976: fig. 12A–B; Penchaszadeh 1985: fig. 4) and *C. mus* Hwass, 1792 (see Lebour 1945: fig. 31a), especially in the outline, conspicuous pattern of transversal wrinkles and elongated, narrow escape aperture. On the other hand, the egg capsules of *C. regius* differ in

shape from those previously observed for *Conasprella puncticulata* (Hwass in Bruguière, 1792) (see Bandel 1976: fig. 10), *C. stearnsii* (Conrad, 1869) (see D'Asaro 1986: fig. 4D–F), *Conus anabathrum* Crosse, 1865 (see D'Asaro 1986: fig. 4A–C), *C. largilliertii* Kiener, 1847 (see Bandel 1976: fig. 11) and *C. spurius* Gmelin, 1791 (see Penchaszaded 1985: fig. 1A–D), especially in the rather regular outline and narrower escape aperture and peduncle.

The coastal ecosystems of Brazil exhibit an important biodiversity of Conidae (Coltro 2004, Rios 2009) that has been insufficiently studied, especially with regard to reproductive aspects. The conid fauna and the entire coastal invertebrate community have been drastically affected by multiple anthropogenic impacts (Migotto & Marques 2006, Peters et al. 2013). The destruction and pollution of habitats constitute the most serious global threat to marine biodiversity (Gomes et al. 2000, Amaral & Jablonski 2005, Migotto & Marques 2006, Peters et al. 2013). In particular, populations of Conidae have undergone considerable decline in recent times, with a number of species currently on the IUCN Red List of Threatened Species (IUCN 2017). In 2011, the IUCN assembled a committee to assess the threat levels of more than 600 species of *Conus*, with the results in the paper prepared by Peters et al. (2013) (Dr. Alan J. Kohn, personal communication, august 2017). The IUCN committee voted not to deem *Conus regius* as “threatened”, but rather with status “Least Concern” (IUCN 2017). Conids have undergone population reduction especially in the study site due to intensive collection by fishermen for the purposes of selling the shells and as a food source. To reverse the decline of such populations, local governments need to develop conservation strategies and act more effectively to impede the capture of threatened mollusks, especially conids that are recognized as having economic importance in terms of a food source and the extraction of compounds of medical and pharmacological interest.



Acknowledgments

The authors would like to thank biologist Ana P. S. Araujo (Laboratório de Bentos Costeiro, Departamento de Biologia, Universidade Federal de Sergipe) for help in obtaining literature; Dr. Paulo Roberto Medeiros (UFMG/CFP/UACEN, Brazil) and anonymous reviewer for critically reviewing the manuscript; our best thanks to Dr. Alan J. Kohn (Department of Biology, University of Washington, USA) by the important revision, suggestions and corrections to the manuscript.

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Some Outstanding Specimens

Rémy Devorsine



Our friend Rémy Devorsine sent us a few photos of the latest Brisbane Shell Show. When it comes to Cones, here what Rémy told us: "We had two competitors in the *Conus* category worldwide, Peter Pienaar and Ron Moylan. First place was awarded to Ron (display with *C. lamberti*, below)."



Cone Shells in the Siquijor Shell Show April, 2018

Rémy Devorsine

I did attend the 1st shell show ever held in the Philippines History. This shell show was organised by Mark and Elgie REEKI on the Island of SIQUIJOR, at Tubod, Village of SAN Juan on the 7 & 8/04/2018.

The venue was held at Marelle's Museum.

But first let start with what we did last: the visit of Guido & Philippe Poppe Office.

This was quite interesting and I recommend to every shell collectors going to Cebu to pay a visit to Guido and Philippe POPPE... You won't be disappointed... This I can promise you!

This was on the morning of April 10, we all went to BFAR to get our permits for International travel. We had a mini tour of Cebu City followed up with a beautiful tour of Conchology Inc.

Here are the photos taken in Guido's facilities:







And now, for the specimens I obtained at the SIQUIJOR Shell Show. I should stress the *dusaveli*, which is the most beautiful I have ever seen, and a large specimen too!















Note from the Editor:

I have never had the opportunity and the pleasure of visiting the offices of Conchology Inc., but I obviously endorse Rémy's words above.

My personal friendship with Guido Poppe has extended for a few decades now, possibly more than either he or I would like to number... We exchanged shells and met before he founded Conchology Inc.

Although our newsletter *The Cone Collector* does not include publicity to shell dealers, it is more than fair to say that Guido's – and Philippe's – efforts have turned their firm and website into much more than a mere shell selling facility (in itself not a bad thing by any means).

As we browse their website, the Encyclopedia section alone more than justifies the visit: when it comes to Cones (among all other families, of course, totaling

almost one million shells) we are speaking of nearly 81,000 specimens shown in high quality photographs, readily available for comparison purposes and study, whether or not any one visitor wishes to actually purchase them!

Nowadays, Conchology Inc. collaborates with a number of prestigious institutions, such as the Houston Museum of Natural Science (Houston, U.S.A.), the Koninklijk Belgisch Instituut voor Natuurwetenschappen (Brussels, Belgium), the Muséum National d'Histoire Naturelle (Paris, France), the Senckenberg Naturmuseum (Frankfurt, Germany), the British Museum Natural History (London, England), the Academy of Natural Sciences of Philadelphia (Philadelphia, U.S.A.), the National Science Museum (Yokyo, Japan), the Unitas Malacologica, the Northern Territory Government (Australia), the Encyclopedia of Life (EOL), etc.

Other distinctive features of the Conchology Inc. website are possibly too many to list in their entirety, but a few deserve special references: a detailed calendar

of Shell Shows and other relevant meetings worldwide is constantly updated; shell-related items, such as stamps and telephone cards have their special sections, with many examples presented; the section “Poppe Images” includes stunning photos of marine life; a section on “Collecting Shells” gives beginner and advanced collectors valuable information and advice concerning the hobby; etc.

Of special importance is the “Shellers from the Past and the Present” section, where a great wealth of biographical information about professional malacologists and amateur shell collectors can be found. The section covers almost 53,000 names, more than 13,000 publications and includes about 58,000 “information bits”, 10,500 species named after individuals, almost 32,000 species ascribed to their describers, and a total of almost 18,000 photographs!

Moreover, a number of well-known shell magazines are available for consultation online as searchable archive. They include 44 years of *Hawaiian Shell News* (the well-known newsletter published by the Hawaiian Malacological Society) ranging from 1960 to 2011; 34 years of *Of Sea and Shore*, the journal created and maintained by Tom Rice, from 1970 to 2004; 31 years of *Gloria Maris*, the bulletin of the Belgian Society of Conchology, from 1962 to 2005; 11 years of *MalaCo – Journal of Continental Malacology*, from 2005 to 2016; 18 years of *Rossiniana* (Bulletin of the Association Conchyliologique de Nouvelle Calédonie), from 1978 to 1995; 6 years of *Conchologia Ingrata* (by Richard E. Petit), from 2008 to 2014.

And that is not all: Guido Poppe and Conchology Inc. (often in collaboration with ConchBooks, founded by my good friend Klaus Groh and currently managed by Carsten Renker) has been responsible for a large number of important publications, including a series of comprehensive books about *Philippine Shells*, the series *A Conchological Iconography* and the magazine *Visaya*, all of them indispensable to anyone interested in shells and shell collecting.

In all, the malacological world must undoubtedly thank Guido, Philippe and their valuable team for all their work within our field. And of course, they sell shells too.

A Few Favourites

Jan Kåre Nymoen

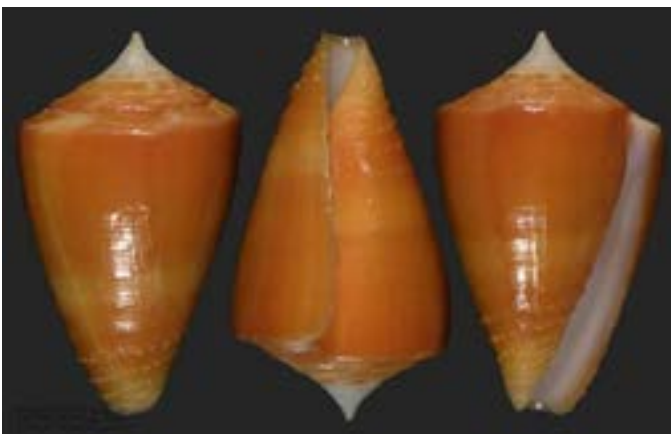
Here are pictures of some favorite conus in my collection that I would like to share with all readers of TCC:



C. aculeiformis, Madras, INDIA, 29,0 mm



C. sculpturatus, Bohol, Philippines, 38,0 mm



C. rawaiensis, Rava Island, Thailand, 28,6 mm



C. sandwichensis, Oahu, Waianae, Hawaii, 32,6 mm

A New Cone Book!

António Monteiro

A Taxonomic Iconography of Living Conidae, Vol. 1-2, by Éric Monnier, Loïc Limpalaër, Alain Robin & Christophe Roux. 2018. Ed. ConchBooks & Association Française de Conchyliologie (AFC). Price: €148.00 (per volume); reduced price for members of AFC

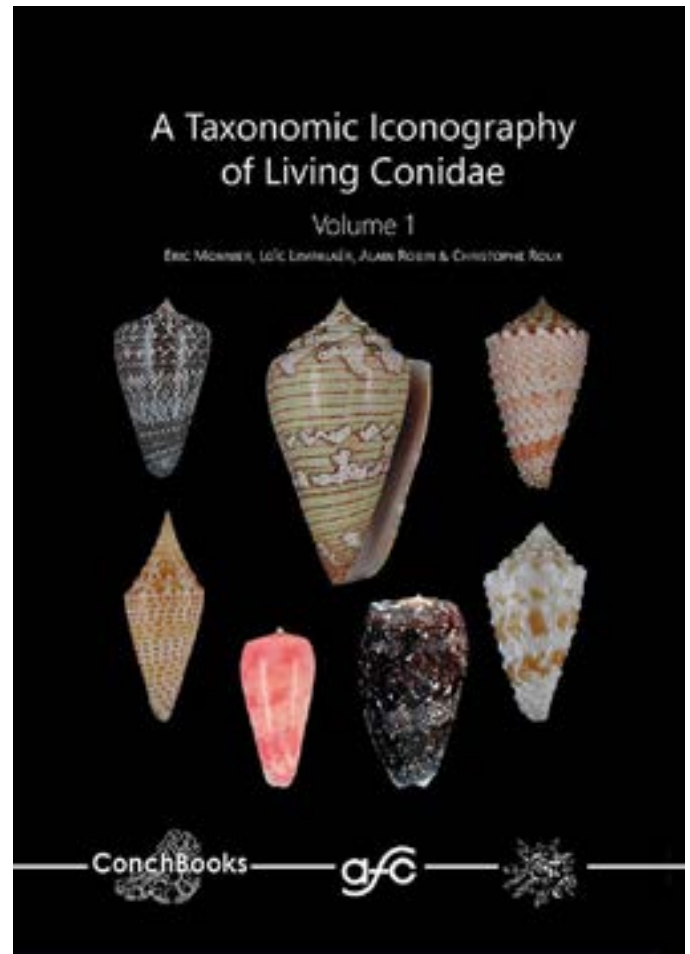
The four authors of this important work, our French friends Éric Monnier, Loïc Limpalaër, Alain Robin and Christophe Roux, have quite different professional careers: Monnier is a Chemistry professor, Limpalaër is a chartered accountant, Robin served in the Navy and Roux worked in export of medical devices. Nevertheless, they all share among themselves and also with us a fascination for the shell world in general, and particularly for Cones, our favourites.

The recently published book presents a panorama of the, a panorama that is as exhaustive as possible. The study of Cones advances steadily and there is much that we still do not know, and for this reason the book mentions a number of hitherto unidentified populations, which the authors understandably did not wish to leave out. Revisions will certainly be needed in the future, as new populations are discovered and some of them may be described as new taxa.

It is symptomatic (and even slightly ironic) of the rapid development of cone studies that the parcel I received on the mail with the two volumes of this book, also included the latest issue (vol. 5, n° 1) of the magazine *Visaya*, published by Conchology Inc., containing the description of a new Cone species, *Pionoconus aliwalensis* Veldsman, 2018, from South Africa.

In the (more or less) recent past, only a few books tried to tackle the family Conidae comprehensively.

The first of them was *Cone Shells of the World*, by J. A. Marsh & O. H. Rippingale, published in 1964. It was illustrated with drawings in watercolor, actually not always truly faithful to the specimens, and the



book suffered from the handicaps inherent to its age, in which many species that are nowadays relatively common (including *Conus gloriamaris*, *C. dusaveli*, *C. aurisiacus*, etc.) were still extremely rare, whereas a large number of species presently recognized as valid were still undescribed.

The second such books was *Cone Shells: A Synopsis of the Living Conidae* (1979), by Jerry G. Walls, which is rather hard to describe and classify, with a very poor graphic presentation and lots of extremely doubtful opinions about several of the included species.

More recently, in 2013, our friends John K. Tucker and Manuel Jimenez Tenorio published their *Illustrated Catalog of the Living Cone Shells*, following other works on the taxonomy of Cones, particularly at the

Phasmoconus (Phasmoconus) richeri (Richard & Muehlenbeck, 1888)

Holotype in BMNH. Type locality: North Island, New Caledonia. The species has an inflated aperture (obscured at the base) and a pinkish pink shell, it has a very strong yellowish-brown coloration.



- 1. P. richeri 100 mm (holotype) New Caledonia, 1888
- 2. P. richeri 40 mm (New Caledonia)
- 3. P. richeri 80 mm (New Caledonia)
- 4. P. richeri 120 mm (New Caledonia)
- 5. P. richeri 150 mm (New Caledonia)
- 6. P. richeri 180 mm (New Caledonia)
- 7. P. richeri 200 mm (New Caledonia)
- 8. P. richeri 250 mm (New Caledonia)
- 9. P. richeri 300 mm (New Caledonia)
- 10. P. richeri 350 mm (New Caledonia)
- 11. P. richeri 400 mm (New Caledonia)
- 12. P. richeri 450 mm (New Caledonia)
- 13. P. richeri 500 mm (New Caledonia)
- 14. P. richeri 550 mm (New Caledonia)
- 15. P. richeri 600 mm (New Caledonia)
- 16. P. richeri 650 mm (New Caledonia)
- 17. P. richeri 700 mm (New Caledonia)
- 18. P. richeri 750 mm (New Caledonia)
- 19. P. richeri 800 mm (New Caledonia)
- 20. P. richeri 850 mm (New Caledonia)
- 21. P. richeri 900 mm (New Caledonia)
- 22. P. richeri 950 mm (New Caledonia)
- 23. P. richeri 1000 mm (New Caledonia)

Cylindrus glaucomaris (Chemnitz, 1777)

Holotype in BMNH. Type locality: North Island, New Caledonia. The shell is inflated and simple in appearance, with a smooth surface. The aperture is large and rounded. The shell is inflated and simple in appearance, with a smooth surface. The aperture is large and rounded. The shell is inflated and simple in appearance, with a smooth surface. The aperture is large and rounded.



- 1. C. glaucomaris 100 mm (holotype) New Caledonia, 1777
- 2. C. glaucomaris 150 mm (New Caledonia)
- 3. C. glaucomaris 200 mm (New Caledonia)
- 4. C. glaucomaris 250 mm (New Caledonia)
- 5. C. glaucomaris 300 mm (New Caledonia)
- 6. C. glaucomaris 350 mm (New Caledonia)
- 7. C. glaucomaris 400 mm (New Caledonia)
- 8. C. glaucomaris 450 mm (New Caledonia)
- 9. C. glaucomaris 500 mm (New Caledonia)
- 10. C. glaucomaris 550 mm (New Caledonia)
- 11. C. glaucomaris 600 mm (New Caledonia)
- 12. C. glaucomaris 650 mm (New Caledonia)
- 13. C. glaucomaris 700 mm (New Caledonia)
- 14. C. glaucomaris 750 mm (New Caledonia)
- 15. C. glaucomaris 800 mm (New Caledonia)
- 16. C. glaucomaris 850 mm (New Caledonia)
- 17. C. glaucomaris 900 mm (New Caledonia)
- 18. C. glaucomaris 950 mm (New Caledonia)
- 19. C. glaucomaris 1000 mm (New Caledonia)

Kohnkonus Tucker & Tenorio, 2009

This genus contains species living in tropical waters on both sides of the Atlantic of America, shells have a glossy but often dull surface (rarely with a coarse reticula). The aperture is relatively large compared to the aperture size, the aperture is usually...

Kohnkonus emarginatus (Reeve, 1844)

Holotype in BMNH. Type locality: North Island, New Caledonia.

The shells are easily recognized by their characteristic brown and black spots on a pinkish background. The aperture is relatively large compared to the aperture size, the aperture is usually...

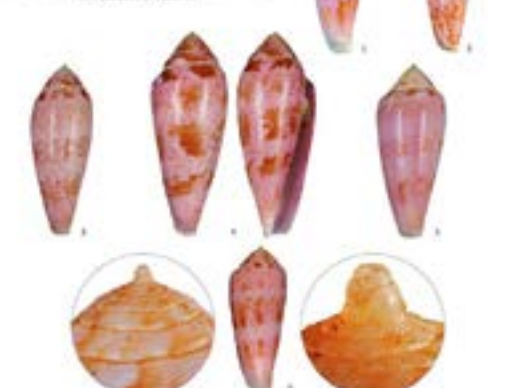


- 1. K. emarginatus 100 mm (holotype) New Caledonia, 1844
- 2. K. emarginatus 150 mm (New Caledonia)
- 3. K. emarginatus 200 mm (New Caledonia)
- 4. K. emarginatus 250 mm (New Caledonia)
- 5. K. emarginatus 300 mm (New Caledonia)
- 6. K. emarginatus 350 mm (New Caledonia)
- 7. K. emarginatus 400 mm (New Caledonia)
- 8. K. emarginatus 450 mm (New Caledonia)
- 9. K. emarginatus 500 mm (New Caledonia)
- 10. K. emarginatus 550 mm (New Caledonia)
- 11. K. emarginatus 600 mm (New Caledonia)
- 12. K. emarginatus 650 mm (New Caledonia)
- 13. K. emarginatus 700 mm (New Caledonia)
- 14. K. emarginatus 750 mm (New Caledonia)
- 15. K. emarginatus 800 mm (New Caledonia)
- 16. K. emarginatus 850 mm (New Caledonia)
- 17. K. emarginatus 900 mm (New Caledonia)
- 18. K. emarginatus 950 mm (New Caledonia)
- 19. K. emarginatus 1000 mm (New Caledonia)

Koconus (Koconus) richardae (Richard & Korn, 1992)

Holotype in BMNH. Type locality: North Island, New Caledonia.

This handsome species has been confused for long with K. (K.) richardae, a common species having a different colour and pattern. The aperture is relatively large compared to the aperture size, the aperture is usually...



- 1. K. richardae 100 mm (holotype) New Caledonia, 1992
- 2. K. richardae 150 mm (New Caledonia)
- 3. K. richardae 200 mm (New Caledonia)
- 4. K. richardae 250 mm (New Caledonia)
- 5. K. richardae 300 mm (New Caledonia)
- 6. K. richardae 350 mm (New Caledonia)
- 7. K. richardae 400 mm (New Caledonia)
- 8. K. richardae 450 mm (New Caledonia)
- 9. K. richardae 500 mm (New Caledonia)
- 10. K. richardae 550 mm (New Caledonia)
- 11. K. richardae 600 mm (New Caledonia)
- 12. K. richardae 650 mm (New Caledonia)
- 13. K. richardae 700 mm (New Caledonia)
- 14. K. richardae 750 mm (New Caledonia)
- 15. K. richardae 800 mm (New Caledonia)
- 16. K. richardae 850 mm (New Caledonia)
- 17. K. richardae 900 mm (New Caledonia)
- 18. K. richardae 950 mm (New Caledonia)
- 19. K. richardae 1000 mm (New Caledonia)

supraspecific level. Its vast scope notwithstanding, this work is (as indicated in the title) no more than a catalogue, in which each specific name is accompanied by a brief discussion of its taxonomic status, those found to correspond to valid species being accompanied by a photo of a single specimen.

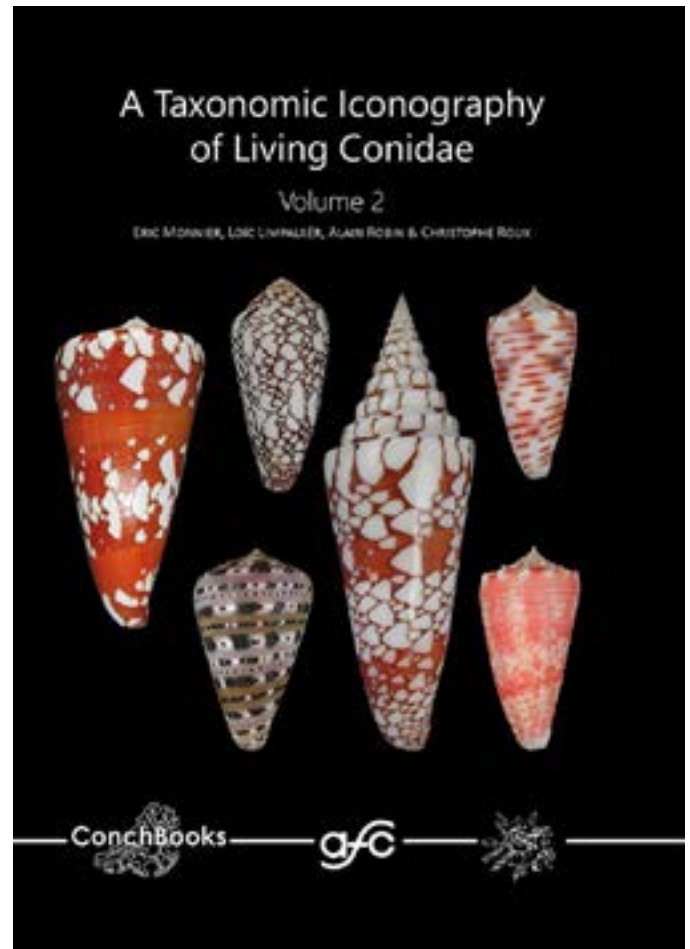
Besides these general works, the contemporary bibliography for the family Conidae (s.l.) is obviously vast, and a number of volumes concentrate on the faunas of particular regions. Among them we can mention *Manual of the Living Conidae* (1995), by Dieter Röckel (a late lamented friend), Werner Korn and Alan J. Kohn, a work that had been programmed for three volumes, of which only the first one appeared. It has quite high quality (even though it is now slightly obsolete in a few aspects and details) and deals with the Indo-Pacific region.

We can also remember three volumes of *A Conchological Iconography*, a series published under the editorship of Guido T. Poppe; the three installments were dedicated to the Cones of the Mediterranean and Eastern Atlantic (2004), South Africa (2008) and Eastern Pacific (2012), respectively, and were written by António Monteiro, Manuel J. Tenorio, J. K. Tucker and H. W. Chaney.

Finally, Alan J. Kohn's *Conus of the Southeastern United States and Caribbean* also deserves a reference here.

Against this editorial background, it is easy to understand the great curiosity that surrounded the publication of the new book by Monnier et al, which had been in the making for over eight years.

Throughout the ages, Cone Shells have drawn the attention of collectors – fascinated by their beauty and by the variability of many of the known species – of taxonomists – to whom the identification of the many species and their classification in any number of genera poses mightily interesting problems – and even of chemists – who try to analyze and synthesize



substances with important pharmaceutical uses, from the different poisons the animals produce.

In all, let me state right away that the new book does not let down in any way the expectations that accompanied its preparation and publication, as far as both its contents and its graphic presentation are concerned.

In their work, the authors aimed at presenting, in a clear, synthetic way, all the recent species that they consider valid, basing their conclusions in morphological and morphometrics features of the Shells and the animals' radulae, in matters of geographical distribution, ecology and shell development, as well as in details of molecular genetics.

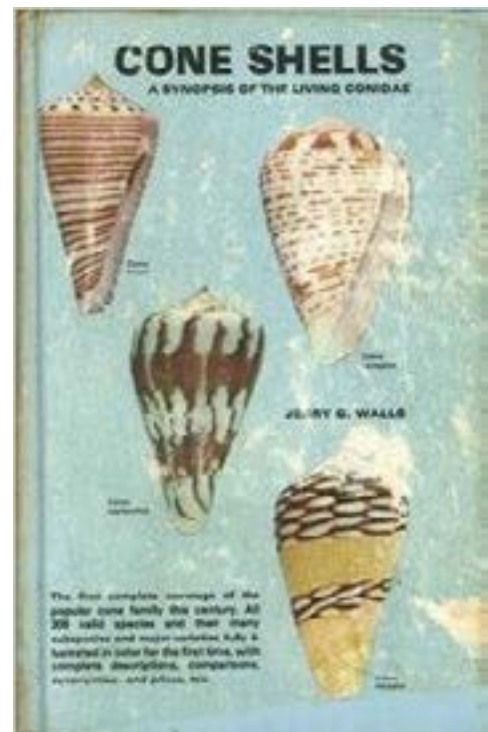
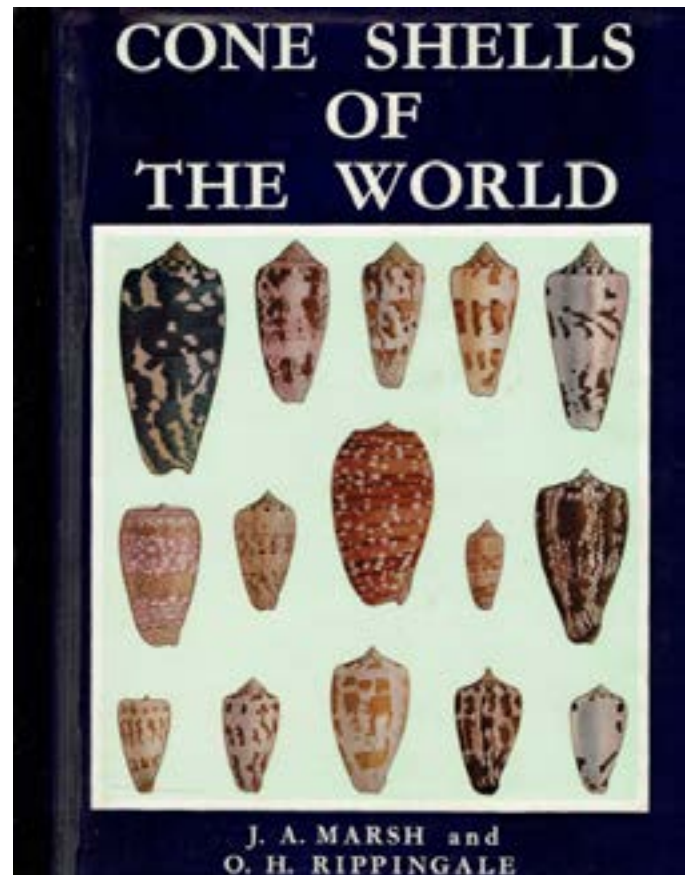
In a total of about 1200 pages, more than one thousand species and subspecies are presented (after a short general introduction), some of them, as said above, still waiting for further study that may lead to a fuller identification. Each of those species or subspecies is illustrated by photographs of several specimens (totaling almost 6700 photos), from the collections of the authors, some major museums, and a few other private collections.

Each species is accompanied by a very short description (leaving the task of perfectly identifying the corresponding populations to the excellent photos), in which the main morphological features are underlined, as well as the current location of the type specimens, the type locality, etc. A distribution map accompanies each species and includes an indication of their status according to the Red List of Threatened Species, prepared by the International Union for Conservation of Nature (IUCN).

Moreover, a very easy to read code indicates the following, for each individual species: minimum and maximum size known for adult specimens, range of depths at which the species it to be found, type of protoconch (paucispiral or multispiral), study of DNA having been performed, feeding habits (vermivorous, piscivorous or molluscivorous), and radular morphology having been examined.

As stated above, the graphic presentation of the book is outstanding. Each species usually occupies one page, although some use only half that space and others extend along several pages, according to the number of specimens the authors saw fit to show. The species are grouped by genus, which greatly helps in the use of the book for identification purposes, since similar species are presented in adjacent pages of the book.

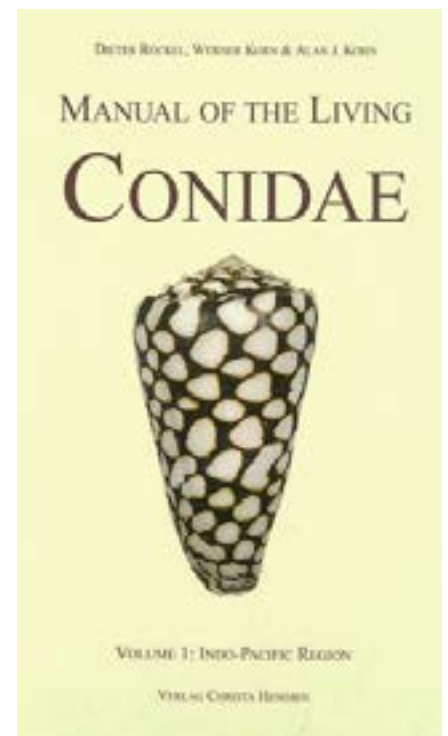
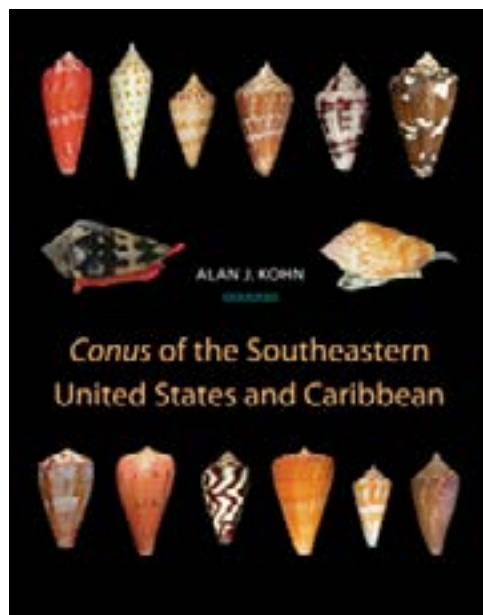
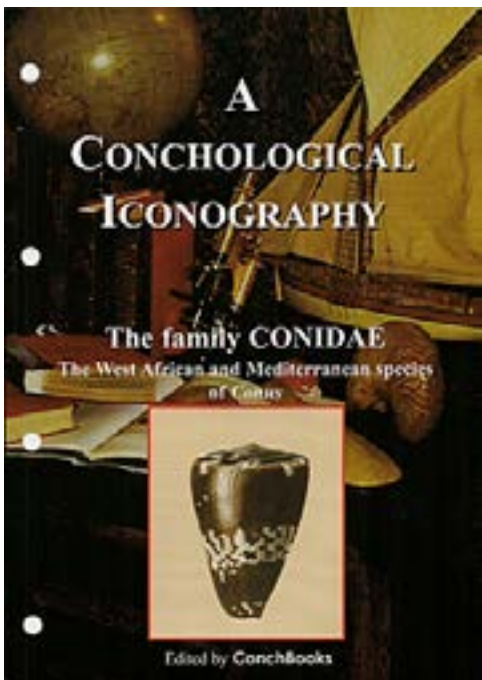
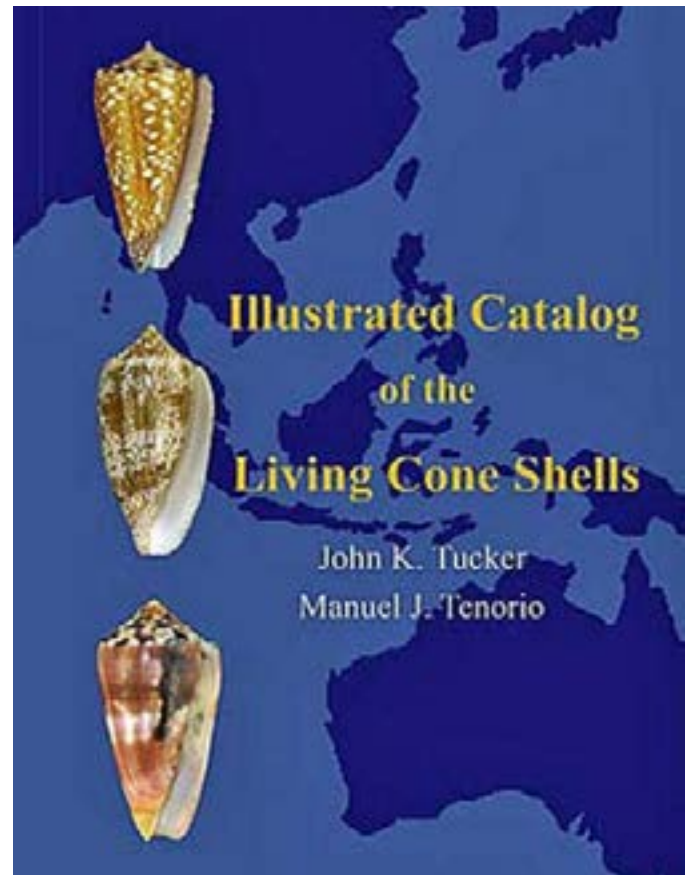
What is more, the authors chose a white background for the photos (as can be seen in the accompanying examples), which is much preferable to what has



been done in other recent books; the use of a black background colour, in particular, is absolutely dreadful, not only because darker specimens will disappear entirely but even lighter colours will tend to lose part of their brilliancy.

A minor note, that has been recognized by the authors as a slight oversight, is that the index of genera and species appears only at the end of the second volume, which means that we frequently have to switch from the first volume to the second when searching for some name (and believe me, the volumes, printed in high quality paper, are heavy!). But, as I said, this is a very minor note that does not in any way diminish the value and interest of this work.

In all, this is a truly outstanding work, absolutely indispensable in the library of anyone with an interest in Cones, and for which the authors must be heartily congratulated. Inevitably, not everybody will see eye to eye with them when it comes to the validity of some of the taxa included, but the fact that we have so much information together in a single work will allow each reader to decide for him(her)self in each instance.



Cones: You Could Eat Them!

George Muchleisen

I was thinking of naming this one *Snackoconus marylandus*...

In image #2 you will see there are several species already described.



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Is Mitochondrial DNA Testing a “Magic Bullet” or Sleight of Hand? An Iconographic Study of Cape Verde Cones

Ramiro Fiadeiro

Science is always evolving, confirming expectations or giving answers to questions, so I greet all those who dedicate themselves to science and clarify our world. Any study done by private or public means should always seek to simplify and add something to our knowledge.

All scientific work is interesting, so as a serious cone shell collector I find that it is always a good thing to receive a scientific opinion on the classification of the cone shells of Cape Verde Islands. However, whenever a scientific methodology creates confusion instead of clarification such method should be contested or tested. It is difficult for me and for many other collectors to understand that in such a short space of time, the same scientific investigators have on the same subject altogether different opinions. Is there a problem with their methodology? Is there a lack of verification, or a lack of rigor?

After the presentation of the work “Phylogenetic relationships of cone snails endemic to Cape Verde based on mitochondrial genomes”, by Samuel Abalde, Manuel J. Tenorio, Carlos M.L. Afonso, Juan E. Uribe, Ana M. Echeverry and Rafael Zardoya, 2017 *BMC Evolutionary Biology* 17(1):231, there was an a large and unexpected amount of confusion among collectors, dealers and others about the Conoidean gastropods of the Cape Verde Islands.

I am not a scientist, but rather a lover of the cone shells of the Cape Verde Islands and I think also think and consider profoundly about both the habitat and morphology of these cone snails. In the last 4 years I have introduced to the Malacological World more than 30 new species and patterns of *Africonus* which have never been seen, a result of much field work and passion, diving in totally virgin places and sometimes in very dangerous conditions.

Thus, and in the first analysis, I find the changes proposed in this recent article to the classification

criteria of the *Africonus* snails of the Cape Verde Islands to be both profound and quite strange. Scientists who have both claimed the right to impose their rules and methodology are the same people who have then changed those same rules completely, in a short space of time, casting doubt on the validity of any work done by them, since it is hard to believe that their work can be a reflection of worldwide scientific opinion.

Historical Analysis

In 1975 Herculano Trovão used the morphology of the radula studies to separate species when he described the first of his authors: *Conus cepasi*, *Conus musicus*, etcetera. However, the use of the radula was made in articles by several authors, including James Nybbaken, 1970 (Radular Anatomy and Systematics of the West American Conidae (Mollusca, Gastropoda), in *American Museum Novitates*, No. 3414) and Germaine Warmke (1960, "Seven Puerto Rico Cones: Notes and Radulas", *Inst. Of Marine Biol., Univ. Of Puerto Rico, Mayaguez - The Nautilus*, vol 73, no.). In an appreciation of the description made by Emílio Rolán (*A. Conchological Iconography of the West African and Mediterranean Species of Conus*, 2004, A. Monteiro, M. Tenório & G. Poppe, page 84), we see that the study of radula was a fundamental part of the study of systematics of Conoidean gastropods and served as the basis for the separation of species.

Additionally, in 2004, Tenório and Afonso (*Visaya*, November 2004, Vol 1, nº 2) studied and describe the new species: *Conus vulcanus*, *Conus claudiae*, *Conus isabelarum* and *Conus crioulus*, based on morphological analysis of the shell and radular tooth analysis.

Soon after, Emilio Rolán in "Malacological Fauna From the Cape Verde Archipelago" (2005), made a new classification of *Conus* using the same methodology (shell morphological study and radular tooth study).

In January 2014, a new methodology for the Cape Verde *Africonus* species - the use of "DNA" (*Xenophora*, 2014,

M Tenório, C. Afonso, R. Cunha & E. Rolán, No. 2) appears in the cone shell literature for the first time in the description of 2 new species: *Africonus fiadeiroi* and *Africonus swinnyi*, while maintaining the then current state of the art systematics methodology based on shell morphology and radular tooth analysis. The use of the three parameters (shell morphology, tooth radular and DNA) was maintained in 2014, in the description of 3 new species: *Africonus santanaensis*, *Africonus gonsaloi* and *Africonus condei* (Xenophora, 2014, M. Tenório & C. Afonso, nº 3).

In late 2017, a paper was presented by M. Tenório & C. Afonso, a study based on a new methodology - mitochondrial genomes. This non-unanimous study contradicts almost all the previous classification bases trying to create what seems to me to be new and absurd classifications, cataloging species or subspecies that by previous studies had nothing in common, either morphologically, in the type of radula or in DNA.

Does DNA mean nothing so quickly? Will the species radula change so quickly and will it be that correct samples have been used in the tests or long ago invented? Some of the species are only strictly of the coordinates now presented and not those that the study presents, proving what seems to me to be another mistake.

This paper will present each so-called “species” group together with a succinct explanation about collection site, habitat conditions and morphology of each species or subspecies as originally named, and documented color photographs to allow the reader to make their own critical analysis. The different radular tooth images of each of these species can be found in the biography of works presented above.

No analysis is done in this new paper of the species and subspecies of *Trovaconus* (*venulatus*, *pseudonivifer*, *trochulus*, *ateralbus*, *atlanticoselvagem*) that have now been moved to the genus *Kalloconus* because I consider this subject to be worthy of a deeper and more

comprehensive study.

Species / Author / Locality Habitat / Size

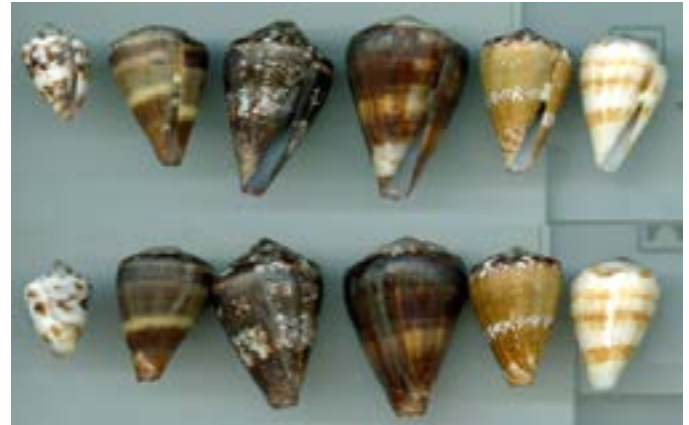


Figure 1. *Africonus cuneolus* “species” group, from left to right: *A. serranegrae*, *A. fontonae*, *A. bernadinoi*, *A. pseudocuneolus*, *A. mordierae*, *A. cuneolus*.

Africonus cuneolus "species" group = *A. bernardinoi* = *A. fontonae* = *A. mordeirae* = *A. pseudocuneolus* = *A. serranegrae*. (see Figure 1).

cuneolus Reéve, 1843

Sal: west coast between the Bay of Fontona and Sta Maria

Cavities and on the rocks

-27 mm

bernardinoi Cossignani, 2014

Sal: between Baía da Parda and Pedra do Lume

Under rocks in the algae and in the rock sand intervals

-28 mm

fontonae Rolán & Trovão, 1990

Sal: Baía da Fontona

On the rocks in the algae and their cavities

-24 mm

mordeirae Rolán & Trovão, 1990

Sal: between Mordeira and Calheta Funda

On the rocks in algae and rock / sand intervals

-25 mm

pseudocuneolus Röckel, Rolán & Monteiro, 1980

Sal: east coast between Serra Negra and Baía da Parda

Between and under rocks

-32 mm

serranegrae Rolán, 1990

Sal: between Serra Negra and Santa Maria

Under the rocks

-14 mm



Conus crotchii "species group": *Conus cabraloi* = *C. condei* = *C. docensis* = *C. evorai* = *C. fiadeiroi* = *Conus irregularis* (Gatas, Morro Areia e Estanchinha) = *C. salreiensis* = *C. teodorae* (Figure 2)

crotchii Reeve, 1849

Boavista: between Santa Mónica Beach (Porto) and Arrife do Chaves

Boavista: between Santa Mónica Beach (Porto) and Rif of Chaves

Up to 5 meters deep under and between rocks

-26 mm

cabraloi Cossignanni, 2014

Boavista: it exists only in Praia Cabral, in a small area of about 300 m² between rocks and at a depth of 0.5 m

Between rocks and at a depth of 0.5 m

-16 mm

'16°11'13"N/ 22°55'96"W

Not at 16°13'12"N /22°55'9"W (wrong location)

condei Afonso & Tenório, 2014

Boavista: Baía Grande do Derrubado

Depth up to 2 meters between and on rocks

-22 mm

docences Cossignanni & Fiadeiro, 2014

Boavista: Baía de Água Doce

Exists under the rocks up to 4 meters deep

-17 mm

16°13'15"N/22°46'23"W

Not at 16°12'29"N/22°44'7 W (wrong location)

evorai Monteiro, Fernandes & Rolán, 1995

Boavista: between Baía da Esburaca and Gatas

On rocks between algae to a depth of up to 3 meters

-23 mm

fiadeiroi Tenório, Afonso, Cunha & Rolán, 2014

Boavista: in the Bay of the Port of Derrubado

Between and on rocks to a depth of up to 4 meters

-30 mm

irregularis G. B. Sowerby II, 1858

Boavista: Baía das Gatas

Under rocks to a depth of up to 3 meters

-45 mm

irregularis G. B. Sowerby II, 1858

Boavista: Morro de Areia

Under rocks to a depth of up to 5 meters

-45 mm

irregularis G. B. Sowerby II, 1858

Boavista: Estanchinha and in the bays between Praia da Cruz and Ervatão north of Sal Rei

Under rocks to a depth of up to 10 meters
~45 mm

salreiensis Rolán, 1980

Boavista: Sal Rei area, between the Ilhéu and Ervatão Beach (Baía Teodora)

On and between the rocks in the algae to a depth of up to 4 meters
~25 mm

teodora Rolán & Fernandes, 1990

Boavista: between Cruz Beach and Ervatão Beach (Baía Teodora)

Up to 6 meters deep, under, on and between rocks
~26 mm

~~~



*Conus longilineus* "species group": *C. cagarralensis* = *C. melissae* (fig. 3 e 3a)

*longilineus* Röckel, Rolán & Monteiro, 1980

Sal: existing in the zone between Serra Negra and Parda to the East of the Island

Under rocks to a depth of up to 3 meters  
~18 mm

*cagarralensis* Tiziano Cossignanni, 2014

Sal: Bay of Cagarra to Northeast of the Island of Salt  
Between rocks in the algae to a depth of up to 4 meters

~20 mm

*melissae* Tenorio, Afonso & Rolán, 2008

Sal: Baía da Parda to the east of Sal Island

Up to 3 meters deep under rocks and in algae  
~17 mm

~~~



Conus galeao: = *C. claudiae* (fig. 4 e 4a)

galeão (damottai) Rolán, 1990

Maio: Baía do Navio Quebrado and Praia Real

Depth of up to 4 meters between and under rocks
~27 mm

claudiae Tenório & Afonso, 2004

Maio: Baía do Navio Quebrado e Praia Real

Depth of up to 4 meters under rocks and between them in algae
~16 mm

~~~





C. longilineus  
C. miruchae

Pic. 5 – Conus miruchae "specie"

*Conus miruchae* = *C. longilineus* (fig. 5 e 5a)

*miruchae* Röckel, Rolán & Monteiro, 1980

Sal: Northeast of the island (Baiona, Palhona and Ponta Preta)

At a depth of up to 2 meters above and between rocks  
~11 mm

*longilineus* Röckel, Rolán & Monteiro, 1980

Sal: Area between Serra Negra and Parda  
Under rocks to a depth of up to 3 meters  
~18 mm

---



C. fantasmalis  
C. cf. delanoyae  
C. silviae  
C. messiasi  
C. fuscoflavus

Pic. 6 – Conus fuscoflavus "specie"

*Conus fuscoflavus*: *Conus* cf. *delanoyae* = *C. fantasmalis*  
= *C. messiasi* = *C. silviae* (fig. 6 e 6a)

*fuscoflavus* Röckel, Rolán & Monteiro, 1980

Boavista: Derrubado bays to Gatas and can also appear  
in the North Bay of Morro de Areia

Depth to 3 meters under and between rocks  
~26 mm

cf. *delanoyae* Trovão, 1979

Boavista: Derrubado area between Baía Grande and  
Baía Antónia

Depth up to 3 meters under rocks  
~25 mm

*fantasmalis* Rolán, 1990

Maio: between Porto Cais and Praia Real  
Depth up to 5 meters under rocks  
~26 mm

*messiasi* Rolán & Fernandes, 1990

Boavista: Derrubado bays to Gatas and can also appear  
in the North Bay of Morro de Areia

Depth to 3 meters under and between rocks  
~26 mm

*silviae* Tiziano Cossignanni, 2014

BoaVista: Morro de Areia

Between and under rocks to a depth of up to 4 meters  
~25 mm

---



*Conus vulcanus* = *C. migueliadeiroi* (fig. 7 e 7a)

*vulcanus* Tenório & Afonso, 2004

Boavista: Porto Ferreira North / East Zone

Up to 4 meters deep under and in the intervals of the rocks

~28 mm

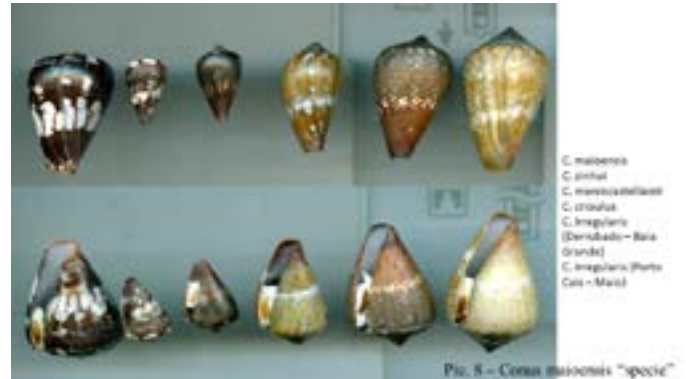
*migueliadeiroi* Cossignanni & Fiadeiro, 2015

Boa Vista: Praia do Canto

Under and between rocks to a depth of about 5 meters

~43 mm

~~~



Conus maiensis: *Conus crioulus* = *C. irregularis* (Porto Cais) = *C. marcocastellazzi* = *C. zinhoi* (fig. 8 e 8a)

maioensis Trovão, Rolán & Felix- Alves, 1990

Maio: Porto Cais

Depth of up to 5 meters under, on and between rocks
~29 mm

crioulus Tenório & Afonso, 2004

Maio: Praia Real

Depth to 3 meters under and between rocks
~30 mm

irregularis G. B. Sowerby II, 1858

Maio: Porto Cais

Depth of up to 5 meters under and between rocks
~40 mm

marcocastellazzii Cossignanni & Fiadeiro, 2014

Maio: Praia Real

Depth to 3 meters under and between rocks
~20 mm

15°19'17"N/23°10'26"W

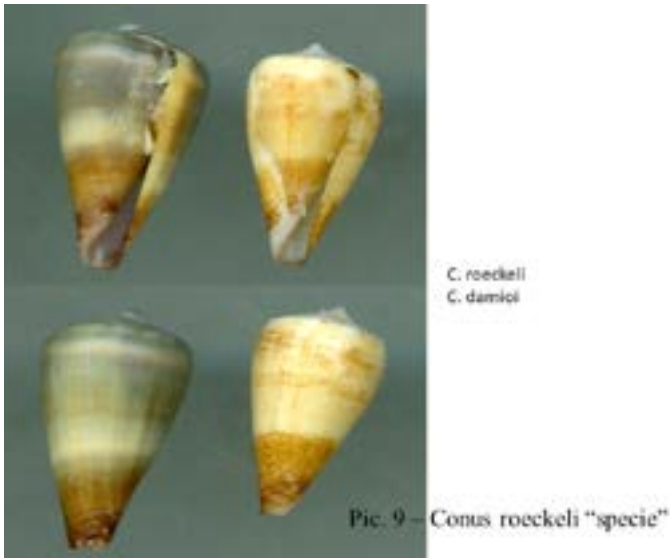
Not at 15°18'32"N /23°8'17"W (wrong location)

zinhoi Cossignanni, 2014

Boavista: Curral Velho

Up to about 5 meters in the holes of the rocks
~18 mm

~~~



*Conus roeckeli* = *Conus damioi* (fig. 9 e 9a)

*roeckeli* Rolán, 1980

Boavista: Praia do Canto

Under and between rocks to a depth of about 3 meters  
~20 mm

*damioi* Cossignanni & Fiadeiro, 2015

Boavista: zona do Derrubado, Baías Grande, Antónia e Água Doce

Found in sand between rocks up to about 4 meters deep  
~26 mm

16°13'23"N /22°47'00"W

Not at 16°12'24"N /22°44'7"W (wrong location)

~~~



Conus damottai damottai "species group": *Conus derrubado* = *C. umbellinae* (fig 10 e 10a)

damottai damottai Trovão, 1979

Boavista: Zona das Gatas

Under rocks to a depth of up to 3 meters
~23 mm

derrubado Rolán & Fernandes, 1990

Boavista: Baía Grande da Zona do Derrubado

Depth up to 4 meters
~24 mm

umbellinae Cossignanni, 2014

Boavista: Espingueira

In the sand up to 2 meters deep
~19 mm

16°12'13"N/22°49'13"W

Not at 16°12'55" N/ 22°47'49"W (wrong location)

~~~





C. regonae  
C. fontonae

Pic. 11 - Conus fontonae "specie"

*Conus fontonae* = *C. regonae* (fig. 11 e 11a)

*fontonae* Rolán, 1990

Sal: Baía da Fontona

On and between rocks up to 3 meters deep

~24 mm

*regonae* Rolán & Trovão, 1990

Sal: Baía da Fontona to Baía da Regona

On and between rocks up to 3 meters deep

~20 mm

~~~



C. marckeppensis
C. marckeppensis
C. josephinae
C. josephinae

Pic. 12 - Conus josephinae "specie"

Conus josephinae = *C. marckeppensis* (fig 12 e 12a)

josephinae Rolán, 1990

Boavista: between Morro da Areia and Teodora Bay

Maio: between Navio Quebrado e Praia Real

Under rocks at depths up to 4 meters

~30 mm

marckeppensis Cossignanni & Fiadeiro, 2017

Boavista: Baía de Fátima

In algae on the rocks to a depth of about 4 meters

~24 mm

16°11'33"N/22°54'54"W

Not at 16°12'3"N/22°54'43"W (wrong location)

~~~



Fig. 13 – *Conus delanoyae* "specie"

*Conus delanoyae*: *Conus luquei* = *C. swinnyi* (fig 13 e 13a)

*delanoyae* Trovão, 1990  
 Boavista: between Zona do Derrubado to Baía das Gatas

The depth of about 3 meters under and between rocks  
 ~30 mm

*luquei* Rolán e Trovão, 1990  
 Boavista: Zona das Gatas to Praia do Canto

Under and between rocks to a depth of up to about 3 meters  
 ~30 mm

*swinnyi* Tenório, Afonso, Cunha & Rolán, 2014  
 Boavista: Baía do Porto Ferreira

Under and between rocks to a depth of up to about 4 meters  
 ~30 mm

~~~



Fig. 14 – *Conus diminutus* "specie"

Conus diminutus = *C. morroensis* (fig. 14 e 14 a)

diminutus Trovão & Rolán, 1986
 Boavista: Baía de Sal Rei to Baía Teodora

On and between rocks to a depth of up to about 3 meters
 ~20 mm

morroensis Cossignanni & Fiadeiro, 2014
 Boavista: Baía de Morro da Areia

Under rocks to 2 meter deep
 ~14 mm

~~~



*Conus verdensis* = *c. nelsoniagoi* (fig 15 e 15a)

*verdensis* Trovão, 1979

Santiago: Zona do Tarrafal and West of Santiago  
Between and under rocks to a depth of up to about 4  
meters  
~20 mm

*nelsoniagoi* Cossignanni & Fiadeiro, 2014

Santiago: Zona da Pedra do Badejo (East of Santiago)  
Between and under rocks to a depth of up to about 5  
meters  
~25  
15°08'19"N/23°31'56"W  
Not at 15°16'50" N/23° 45'15"W (wrong location)

## Conclusion

In this small iconographic study I made an evaluation in which some of the species under discussion are used in comparison. It is easy to see the different shell morphology between various *Africonus* species and/or subspecies that others now contend are all the same species. As morphologically shown these cone shells are at least aberrant, and many of them coexist in the same habitat.

I appreciate scientific inquiry and methods but it is difficult for me to accept the results of the mitochondrial DNA analysis. If prior DNA results are contested and rejected by these new mitochondrial DNA studies, it begs the question whether all scientific studies based on DNA should be called into question, and therefore related fields like forensic sciences would have huge problems (such as in criminal sentences). For all this, I believe that there must be some error in this study, maybe based in incorrect sampling methods, mistakes in mechanical calibration, errors in the analysis or interpretation of results, debatable criterion or a lack of knowledge/sensitivity of the species under study.

In conclusion I believe that the scientific community and the whole world of cone collectors do not accept the recently published study in question as conclusive, as it calls into question all previous studies on those same species, which undoubtedly puts an obligation on the authors to correct or further explain the work they have done.



# Cones From Meva Bay, Angola

Christfried Schoenherr

For many years, I have made collecting trips to dive for cones in the South of Angola, in the provinces of Benguela and Namibe. At Xmas 2012, I was diving at the Bay of Meva and took home many different specimens of cones, including a group of 13 small similar cones which I put aside for later study. At the start of 2018, I rediscovered these cones and was convinced that they may be an undescribed species. However experience of the variability of Angolan cones has taught me to consider describing any new species only when I have a wide variation of specimens including preserved live specimens for radula testing and if possible DNA analysis. Therefore I decided to revisit the Baía de Meva and set out on March 17 2018.

This was a special trip for me as I am recovering slowly from a severe car accident which has limited my ability to drive and dive. I started out with a driver and a diver to help with the collecting. Access to Meva Bay is not possible by road. We spent the night in a pension at Baía Farta and started early the next day to the Bay of Equimina about 850km south from my home in Luanda. We lost time preparing the boat and reached Meva around noon, due to a strong swell limiting the speed of the boat.



Meva is not an enclosed bay, being open to the ocean waves on one side. I was landed on the sandy coast and the diver was collecting among the rocks where most cones are found. About 1 km behind the coast is a small village built with simple natural materials and on the coast there were fishing boats and

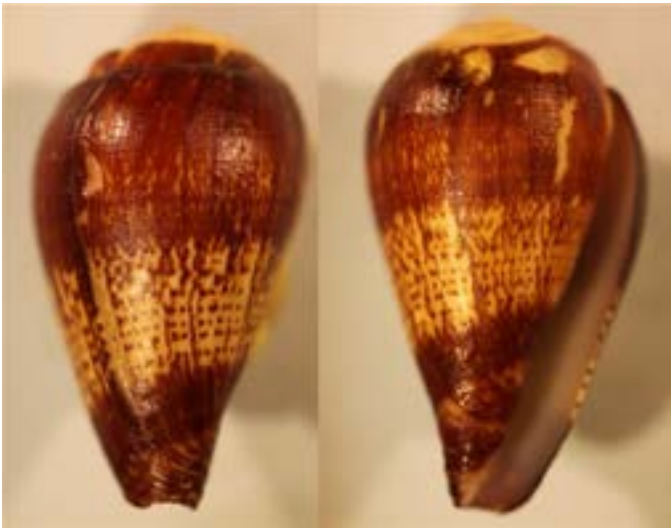


sheds for processing fishes. I was approached by some of the fishermen who thought that I was taking their fish from the bay but after some discussion, they were reassured.

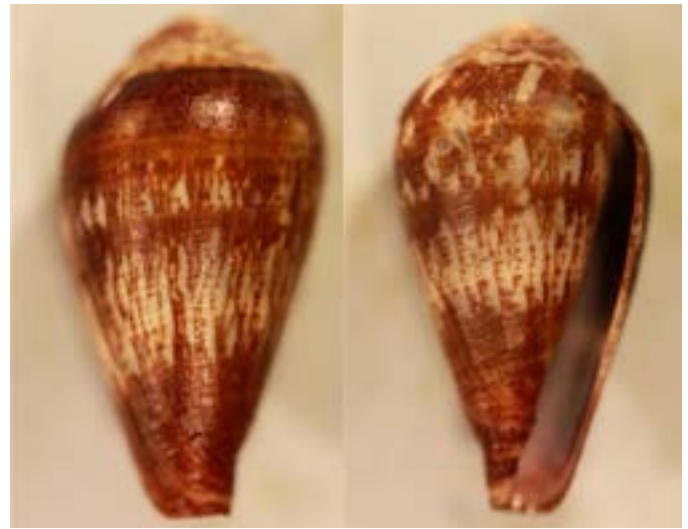
After several hours collecting, I got back in the boat to start back to Equimina. After half of hour, we were hit by a squall of rain and wind began which intensified, accompanied by flashes of lightning. I had a good skipper for the boat, but the waves were getting higher and higher and it was with great relief that we were able to dock the boat without damage in the darkness.

Equimina is now a small village. 4 years ago, the government constructed 65 little houses and the people there, live by fishing and the cultivation of tomatoes, onions etc., thanks to the river Equimina which rises as a spring in the higher mountains of the desert and has generated a flat fertile area along its course.

My driver of the car was waiting my arrival at Equimina. It was already rather dark. We had to go 3 km to pass a dry river. But it had rained in the mountains during the last few days and the normally dry rivers were running at a high level. Unfortunately, my driver lacked the expertise of crossing rivers in flood; we got stuck in the mud and were pulled out by the locals. In the end, despite my damaged leg, I had to take over and drive through the swollen river.



24mm *aff africanus/naranjus*



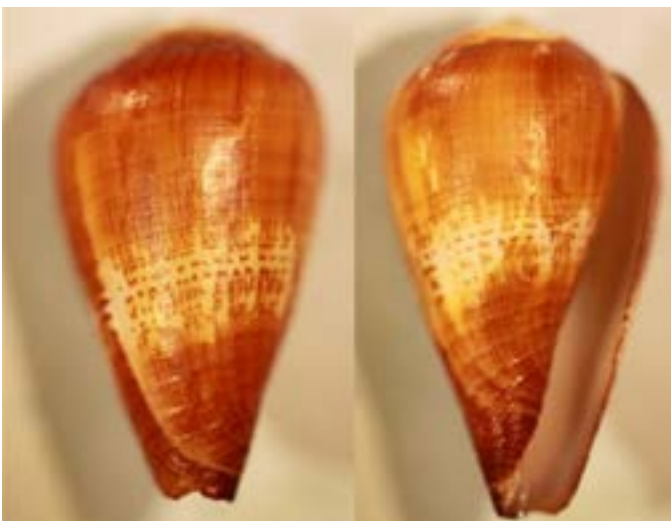
18mm *aff variegatus/naranjus*



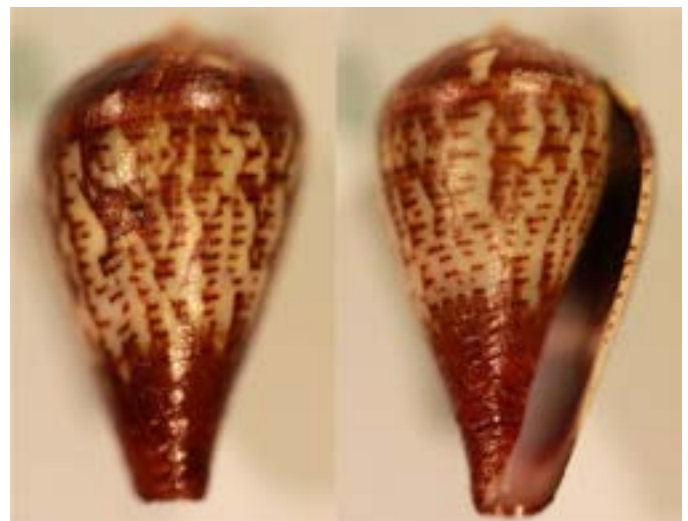
30mm *aff variegatus*



20mm *aff africanus/franciscoi*



27mm *aff africanus*



19mm *aff variegatus*





17mm *aff bulbos/musivus*



16mm *aff franciscoilbulbus*



20mm *aff zebroides/bulbus*



22mm *aff zebroides*

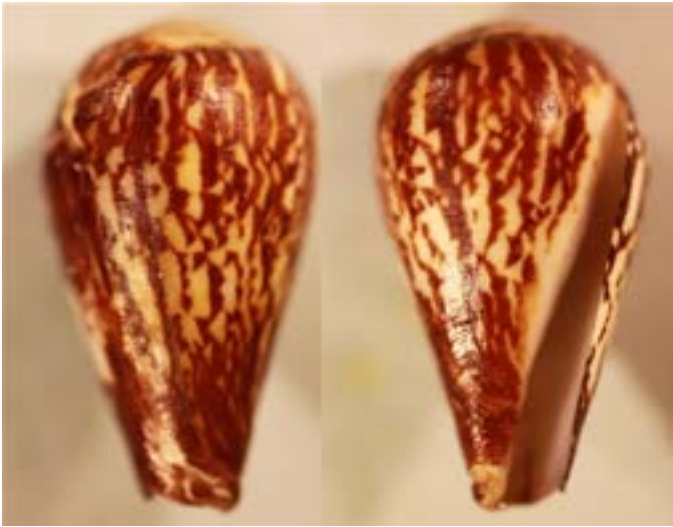


18mm *aff franciscoilbulbus*

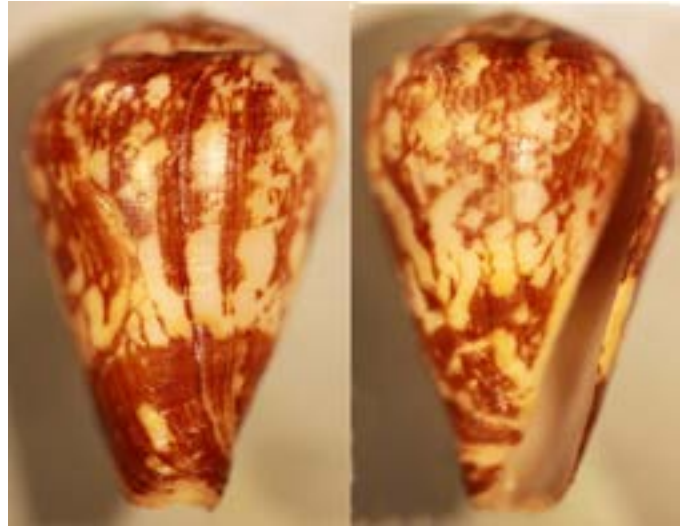


35mm *aff filmerilcepasi* (albino)





26mm *aff musivus*



28mm *aff bulbus/naranjus/franciscoi*



16mm *aff musivus*



24mm *aff musivus/naranjus*



25mm *aff musivus/naranjus*



26mm species



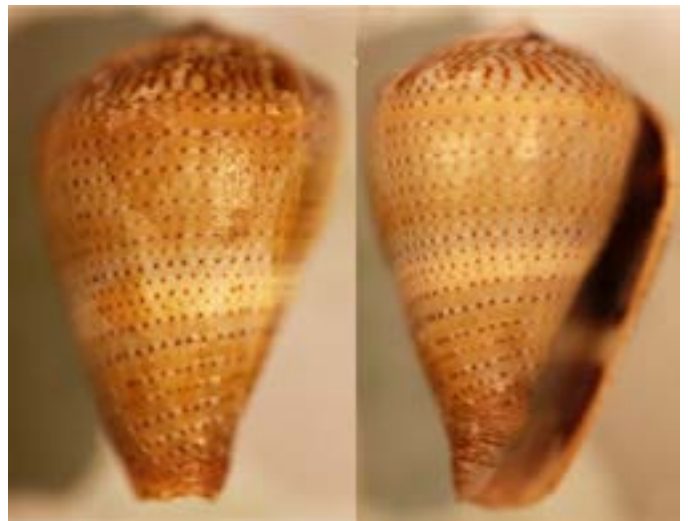
16mm *aff juv micropunctatus*



29mm species *aff micropunctatus*



25mm *aff lineopunctatus/micropunctatus*



23mm *aff variegatus/micropunctatus*



22mm *aff fuscolineatus*

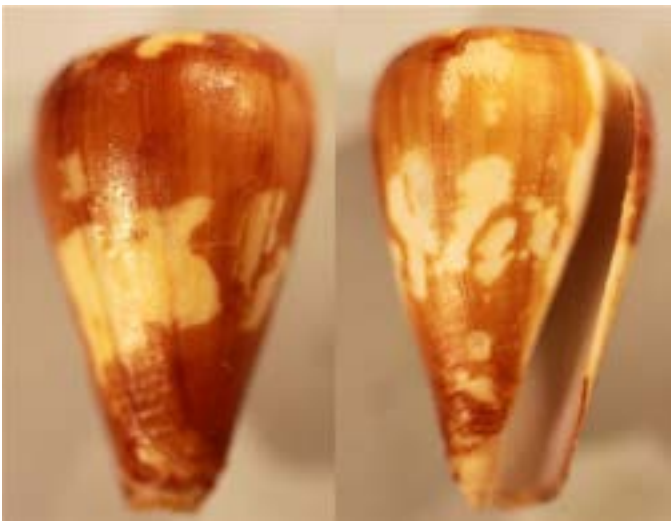


18mm *aff variegatus/fuscolineatus*





24mm *aff naranjus* species



22mm *aff babaensis/franciscoi*

Variety of cones is abundant at Meva. We found over 150 specimens including many species and variations. As usual, very few of the specimens could be interpreted as typical of any species, their patterns and shape often suggesting relationships to more than one species

A review of Rockel and Rolán's listing of Angolan cones would suggest that the following species may be found at Meva or nearby Canoco: *bulbus*, *carnalis*, *lineopunctatus* (*neoguttatus*), *micropunctatus*, *musivus*,

*naranjus*, *nobrei*, *tenuilineatus*, *variegatus*, *zebroides*.

We found with certainty, typical specimens of species like *bulbus*, *micropunctatus*, *musivus*, *naranjus*, *variegatus*, and *zebroides*.

The other specimens have characteristics which cannot be related to any one of the accepted species. Some with pattern features of *africanus*, *franciscoi*, *babensis*, *filmeri* not reported from this part of the coastline. Herein lies the problem of the endemic cones of Angola.

I follow the classification of Rolán in evaluating Angolan cone species with its focus on the radula and shell morphology.

However at least 80% of the cone specimens that I find have shell morphology features attributed to at least 2 of the currently recognized species.

The results of DNA studies of Angolan cones, until now have only resulted in more issues of species identification. The current DNA results based on the normally reliable COI gene show little genetic difference between several of the currently recognized species. These preliminary results also challenge two accepted findings: in that species with significantly different radula are found to be separated by little genetic distance and secondly that species endemic to Luanda are genetically close to species from Southern Angola despite the geographic separation zone created by Cuanza Sul province where cones are not found.

Perhaps, a study with a wider range of genes can shed light on the validity of the currently recognized species. It may be that we have only a few species, each with several variable traits in terms of colour and pattern or that the current "species" are still diversifying but can interbreed, resulting in the many hybrid forms as illustrated in the Meva specimens.

So any future DNA study will need to start again with



carefully selected target genes.

I am tempted to describe many of the cones that I find but I have a rule of thumb that one should have 20 identical specimens. I have had unfortunate past experience of shell friends describing new species in other families using a couple of specimens that I provided for evaluation.

So I continue to search for new species trying to get a significant set of both live and cleaned specimens. I am setting aside preserved specimens with the intent of making them available for radula and DNA testing. Angola is my home and I would like to try to involve and help develop marine scientists from Angolan institutions. It is unlikely that they have the skills today to tackle a sophisticated DNA project but perhaps some educational transfer can be arranged in conjunction with one of the European centres of science.

I am already planning my next shell collecting trip!

*My thanks to Gavin Malcolm for his ideas and comments on the Meva cones and for his encouragement and help in developing my ideas.*

# A YouTube Channel Dedicated to the World of Shell Collection!

David Touitou

## HOW TO IDENTIFY SEASHELL'S FAMILIES



It is now twenty-one years since I managed the website [www.seashell-collector.com](http://www.seashell-collector.com) and I animate its dedicated English-speaking forum. Many sites have appeared since 1997, with a peak in the years 2000-2010 but most have been disconnected since, especially since the emergence of social networks that offer a fast and free service. This is the good and bad side of the internet, there is a lot of information but they can faint in an instant. A new mode of sharing has appeared with video thanks to dedicated storage sites that use this great tool that is "streaming". I have always wanted to embed video on my site but the files are too heavy.

It is for this reason that at the end of January 2018, I launched a channel on the well-known site: YouTube. The videos are at the same time integrated into [www.seashell-collector.com](http://www.seashell-collector.com).

This chain is dedicated to Shells and Minerals, my two passions. I started in the minerals (mainly prospecting) since 2014 so of course it is the shells that will be mostly

represented on the chain.

The goal of the chain is to present many aspects of the shell collection. I have already covered several topics in the form of tutorials such as cleaning shells (bleach), identifying large families, storage and presentation of shells.

I of course mounted some films "field" including one on our last getaway in the Maldives. And of course some videos are dedicated to the collection: I started to present pieces of my collection and I put online a video on the Stock Exchange of La Garde of 2018. I will go to Paris next year. is promised (since the time that I say that I will go up ...)! I also intend to present the conchylological literature. In this regard, if you are an author, do not hesitate to contact me if you want me to present your book because I do not have all the books on the subject! Subsequently I intend to do many reports on collections (Museums and collections proved), as well as interviews.





Seashells, Minerals & Mushrooms Channel

128 abonnés

ACCÈS

VIDEOS

PLAYLISTS

CHAÎNES

DISCUSSION

À PROPOS



The Wonderful World Of Seashells : On the field **TOUT REGARDER**



Two days shelling at Sanibel Island | Wonderful beachcombing at

Seashells, Minerals & Mushrooms...  
983 vues · il y a 2 mois



Sea shells from France : Mediterranean Seashells

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276 vues · il y a 2 mois



Sea shells from France : Erucaria spurca snail shell

Seashells, Minerals & Mushrooms...  
132 vues · il y a 2 mois



Sea shells from France : Luria lurida snail shell cowrie from

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SEASONIER

Dr. Nozman

SEASONIER

GaminixTrelz

The Wonderful World Of Seashells : Tutorials **TOUT REGARDER**

# LA GARDE SHELL SHOW FRANCE 3-4 MARCH 2018







For the moment the videos are shot in English because it is the language of communication on the web but these videos will be subtitled thereafter and some will be made in French too! Everything is a matter of time. Make no mistake, editing videos and a YouTube channel is time consuming.

If you like this kind of project, I urge you to come and visit the channel at this address: <https://www.youtube.com/channel/UCbLgSCsgDiRG9IUqSrilpFA> (you can type "seashell channel" in the YouTube search bar).

Some people are probably wondering why there was also mentioned "mushrooms" in the name of the channel ... Quite simply because I also intended to add content on mushrooms but I decided to later make a dedicated channel and 100% Francophone. So this term will disappear when I can change the name on Google + (it takes 90 days to change it).

I'm counting on you to support us, it's important. You can help us by giving a "I like" (blue thumb) to each video you watch and especially by subscribing to our channel. It should be known that only the chains of 1000 subscribers are truly recognized by the streaming platform. So I'm counting on you to boost our subscriber count!

In this regard, to subscribe or add a "like" on a video, it is imperative to have a Gmail account, Google + or YouTube (or any other Google service). If you do not have one, create one on YouTube, it's fast and it allows you to be informed of uploaded videos.

I hope this new type of content will please you and we count on your support!

# MEDITERRANEAN SEA

THE   
**WWS**  
CHANNEL

Full HD  
1080p

# COWRIES



*Luria lurida*

Photo Credit : Laurent Khaïer

Full HD  
1080p

# MEDITERRANEAN SEASHELLS

Images from Hyeres, France

THE   
**WWS**  
CHANNEL

Photo's credit : Laurent Khaïer



# Volunteer Required

Volunteer required to take over as

## Webmaster for the Cone Collector website

For a number of years André Poremski has acted as production manager of the magazine *The Cone Collector* and also as webmaster for the administration, updating, integration of new material and communication with the contributors.

We would like a volunteer with some experience of website management to join the team with a view to taking over as webmaster. Someone who has developed their own website would be typical of the skill level required.

The role would include

- a. Working with steering committee of Bill Fenzan, Manuel Tenorio and António Monteiro to suggest and review new ideas.
- b. Redesigning, creating, managing the homepages which link the various sections.
- c. Encouraging community members to submit new content and integrating any new sections.
- d. Loading any updates to current sections (about 20 per year) and ensuring website backups.

Each of the current sections has an editor and a production manager who are responsible for creating the updated pages for their section. The page updates are prepared and tested in Dropbox by the production manager, ready for the webmaster to synchronise the folders.

The objective of the website is to provide high quality material for all levels of cone collector, to encourage community sharing of knowledge and to attract more interest in cones from other collectors who visit the website.

One of the advantages is that the webmaster is at the centre of the flow of information of new developments in the world of cones.

It is intended that the website will remain a source of knowledge based content and that commercial activities will not be supported.

If you are interested in exploring this opportunity further then please contact António Monteiro.

**We hope to see  
your article in  
the next TCC!**

