



*THE  
CONE  
COLLECTOR*

*#29 January 2017*



*Editor*

António Monteiro

*Layout*

André Poremski

*Contributors*

Marco Bettocch

André Delsaerd

Gavin Malcolm

António Monteiro

Manuel J. Tenorio

*On front cover*

*C. orbigny eloskimenos,*  
from Mozambique

## *Note from the Editor*

Dear friends,

The project globally titled *The Cone Collector* has completed ten years, already an estimable age that we are very happy to acknowledge.

We started quite modestly, with a few pages of information destined to Cone collectors, and the trial issue of the bulletin was sent to a couple of dozens of friends, but the mailing list quickly grew to about two hundred addresses.

At the same time, we launched our website and keep it alive with the generous help of friends such as André Poremski and Gavin Malcolm. The several numbers of the bulletin are placed there for all to download freely, but the site has much more than that: interested visitors can find the well-known Checklist prepared by Paul Kersten and perpetually updated, the extensive work of Mike Filmer about types of Cone species, the celebrated *Manual of the Living Conidae* (affectionately known by the acronym of its three authors, “RKK”), as well as sections on newly described taxa, plus identification and classification of Cones.

Last but by no means least, we have organized no less than four International Cone Meetings: Stuttgart 2010, La Rochelle 2012, Madrid 2014, and Brussels 2016. Each of these meetings has met with a huge success, generally with about fifty participants, coming from up to fifteen different countries, in Europe and overseas. The programs have included a large number of important talks and many other interesting activities, but the main point has always been to put everybody in touch with each other in a relaxed, friendly setting, discussing our favourite group of shells. Warm thanks are due to the permanent members of the Organizing Committee, Bill Fenzan and Manuel Tenorio, as well as to the local organizers for each event, who have made it all possible and successful.

The frequency of publication of our bulletin *The Cone Collector* has been a bit slower recently than it was a couple of years ago. There are of course a number of reasons for this. First of all, writing articles takes time and after a first period in which many authors quickly submitted their papers, with informa-

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tion they already had in stock, we now have to wait a little longer for new ones to appear. On the other hand, social networks like Facebook allow information on new discoveries, new publications, new acquisitions, etc., to arrive extremely fast to all interested parties, which means that a great amount of such information finds no place in an irregularly published bulletin, which will mostly receive longer texts, also explaining the decrease in publication velocity. Modern means of communication are changing our habits and we must of course adapt.

That being said, it is with great pleasure that I present number 29 of TCC! In this issue you will find a few articles of great interest and also a detailed report of the Brussels Meeting that took place last October, together with the transcriptions of some of the presentations, which will be of interest to those who were able to attend, but especially to the majority who was not!

So, enjoy and let us know what you think. Remember that your views, comments, opinions, photos, and articles are always welcome! Do send them along for future publication.

António Monteiro

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# *Africonus irregularis* (Sowerby II, 1858) A Single Polymorphic Species or a Complex of Species?

Marco Bettocchi

I have been planning to write an article about *Africonus irregularis* (Sowerby II, 1858), as it showed to be a highly polymorphic species, following the discovery of populations that occasionally have little in common with the shell described by Sowerby in 1858. The recent introduction in the taxonomy of new taxa may have contributed to increase the complexity of an already messy situation.

I must state from the start that I have no intention of doing a “professional” job, in which I could describe new species or subspecies, let alone mere forms. I leave such a task to whoever has the necessary skills and professional preparation to do it. My background comes from a vastly different area, to do with the arts, having worked as an architect. I am now retired, so I occupy myself with painting and develop my interest for Cones of the Cape Verde Islands. So, nothing there to do with Biology and/or Malacology.

This means that do not have the necessary knowledge to write a “serious” article, but I believe I am knowledgeable enough to express my own thoughts, since I see myself as an advanced amateur who specializes on the subject I wish to comment.

## TAXONOMIC METHODOLOGY

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

## HISTORY

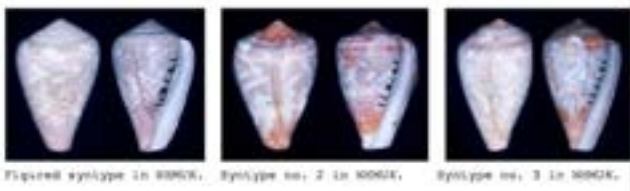
In 1866, G. B. Sowerby, F.L.S. published Volume III of his *THESAURUS CONCHYLIORUM, MONOGRAPHS, GENERA OF SHELLS*. In this volume, on page 29, we find the description of “242. IRREGULARIS, Sowb.” and Plate 18 includes figures 418 and 419, which illustrate the species (figs. A,B).

The textual description of *Conus irregularis* Sowerby II,



1858 reads as follows: “*C. brevis, laevis, caeruleus, infra et ad spiram castaneus, lineis albis binis prope angulum et infra medium cinctus, plus minusve albo floccatus* (f. 418, 419). – Short, bluish, chestnut at the ends, with two white lines across, one near the angle, and, when well developed, with white markings over all.”

The locality from which it comes is not mentioned and no holotype is designated. Nevertheless, we do know of three syntypes present in the collection of NHMUK (Natural History Museum of United Kingdom), thanks to the research of the late Mike Filmer (R. M. Filmer 1926-2014).

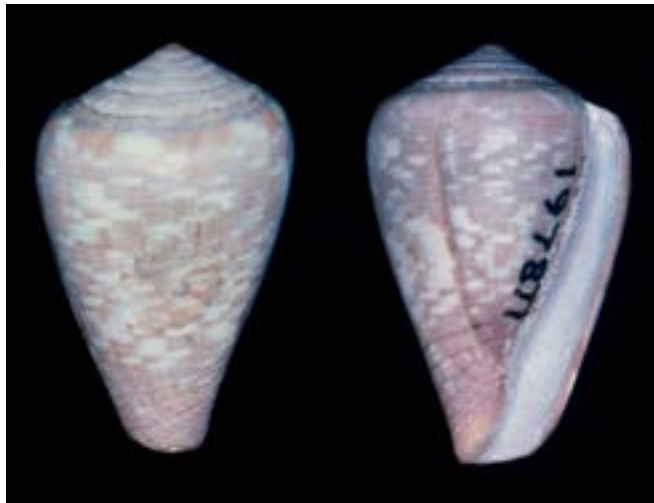


**Figure 1**



**Figure 2**

1. Maio, Navio Quebrado. Two main varieties can be found. One of them has a bluish gray background colour, with a light band above the middle of the body whorl, and a pattern of small lines and white dots interspersed with brown lines and dots arranged in spiral lines that cover the whole body whorl. Sometimes a light band is present immediately below the shoulder. The spire is of the same colour as the body whorl. On the basal zone there is a slight brownish hue. The inside of the aperture is light bluish white, with the upper half a bit darker. The outer lip is marked on the inside by a



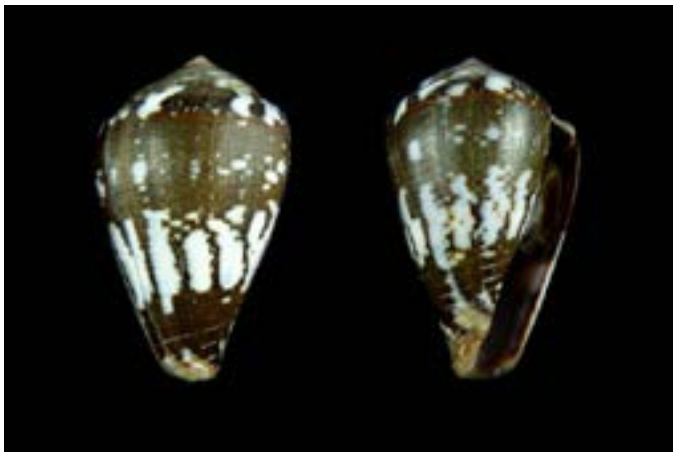
## PRESENT SITUATION

The first confirmed findings of *A. irregularis* (as regularly published) occurred along the coasts of the island of Maio, at the locality of Navio Quebrado. In recent years, the species has also been found in the area of Porto Cais and Pau Seco. At the same time, other findings were made along the coasts of Boa Vista Island, more specifically in Sal Rei Bay, Santa Teodora Bay, Ponta do Sol, Derrubado and in Gatas Bay (always according to the available literature). Personally, I am able to add at least five other localities to that list: Lagosteira Bay (Morro d'Areia), Baía Grande, Praia Antónia, Praia Zebraca and Jorita Bay. Praia de Cabral, on the north part of Sal Rei, could probably be added too, but here we are entering the geographical distribution of *Africonus cabraloi*, which may be a separate species or a mere form of *irregularis*.

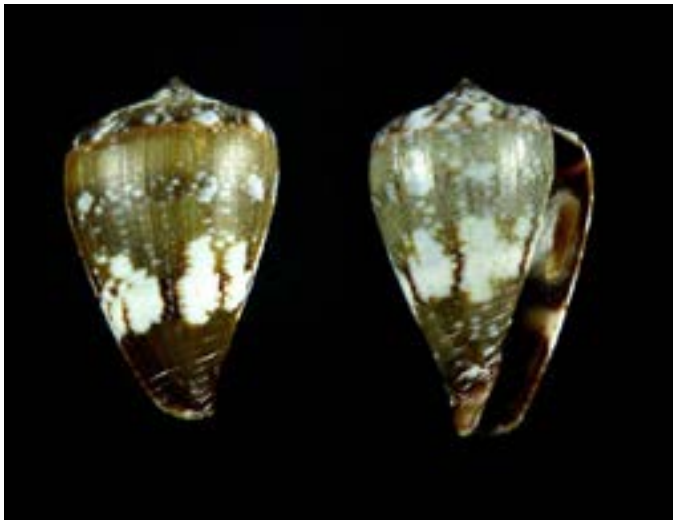
Certainly the morphological and colouration differences are rather clear between the several localities and populations and they can be summarized as follows:

brown line (fig. 1).

In the second variety the spire and body whorl are brown, occasionally greenish brown, with a central band formed by whitish irregular blotches, the same blotches appearing on the spire. Over the entire brown surface there are subtle continuous dark brown spiral lines. The basal zone is of a sienna colour. The inside of the aperture is always light bluish white, the upper half slightly darker. Again, the outer lip is marked on the inside by a brown line (fig. 2).



**Figure 3**



**Figure 4**

2. Maio, Porto Cais. The first differences are already clear. This population presents shells that show a greenish background until the basal third of the body whorl, then becoming dark brown, with a light brown basal zone. The spire has the same colouration as the body whorl and presents irregular white axial blotches. About the middle of the body whorl there is a large spiral band formed by irregular white axial blotches.

A narrow black spiral band can be seen immediately below the shoulder. Over the whole body whorl, there are small white blotches and dots, irregularly arranged, as well as subtle interrupted greenish brown spiral bands. The inside of the aperture is dark brown, with a lighter spiral band roughly half-way up. The outer lip is marked on the inside by a whitish line (figs. 3, 4).

In both populations the profile of the shell shows a moderately high spire, with a straight to concave profile, whereas the body whorl has straight to slightly convex sides, with a clearly marked, broad and rounded shoulder.



**Figure 5**

3. Maio, Pau Seco. In this locality we can also find specimens that change the pattern colour, which becomes a beautiful orange brown. The arrangement

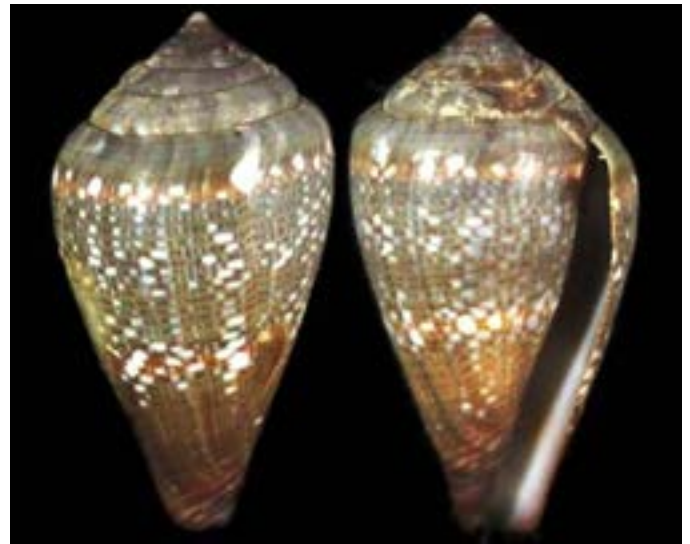
of the white markings is quite scattered and the brown spiral lines are more subtle. The aperture is of the same colour as described from the last two locations (fig. 5).

If in Maio the situation already appears slightly “complicated”, in Boa Vista the problem greatly increases, since *A. irregularis* has colonized almost the entire coast of the island, from the West to the East, going along the northern coast, and showing a remarkable variation in pattern and colouration. So, starting from the West, we have:



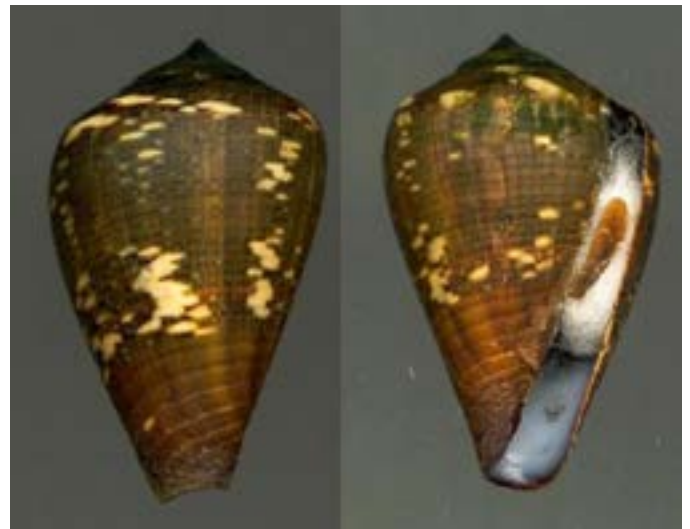
**Figure 6**

4. Boa Vista, Morro d’Areia. At a first superficial glance, these shells could remind us of the ones from Navio Quebrado, in Maio. But when we examine them more closely, a detail is immediately apparent: the profile is totally different, the shoulder is strongly rounded and the spire is concave, whereas the body whorl presents slightly more convex sides. The background colour is bluish brown, the basal third is brown and the base is dark brown. At about mid-body and below the shoulder there are two narrow brown bands, partly covered with small white blotches. Very small whitish spots cover the rest of the shell, and there are also small spiral brown



**Figure 7**

lines. The spire is almost patternless and of a bluish brown colour. The inside of the aperture is whitish, the upper half darker. The outer lip is marked on the inside by a brown line (figs. 6, 7).



**Figure 8**

5. Boa Vista, Lagosteira Bay (Morro d’Areia). In this bay I have personally collected, among the others, the two figured specimens. They must represent a population distinct from the above described one. The first difference lies in the profile, which is more conical, with straighter sides, spire only slightly convex and



**Figure 9**

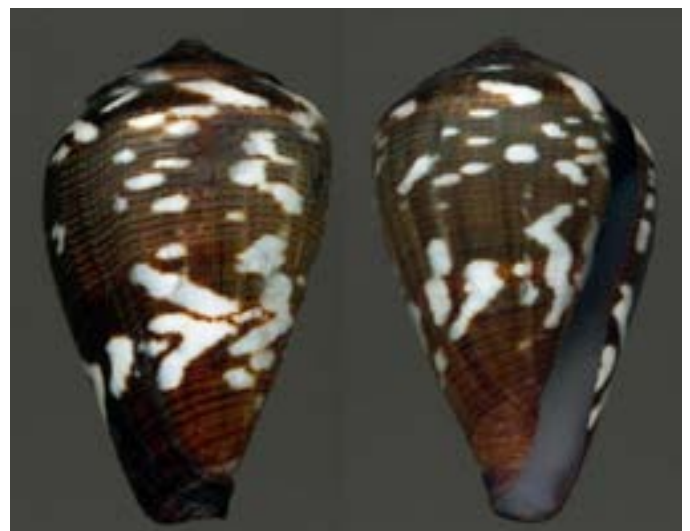
rounded shoulder, but broader. The background colour is also distinct, varying from brownish to very dark brown (it must be underlined that the specimen on fig. 8 retains its yellowish, semitransparent periostracum). The white spots on the body whorl are always present and irregularly arranged; they are also found on the spire and can be of different dimensions. There are also subtle brown spiral lines, much harder to see in the darker specimen. The interior of the aperture is of a beautiful light blue colour, only slightly darker on the adapical half. The outer lip is marked on the inside by a brown line (figs. 8, 9).

6. Boa Vista, Sal Rei Bay. In this area, brown shades predominate. Both the spire and the body whorl have a uniform background colour that goes from brown to dark brown. The irregular white blotches are always present, albeit variable in number, and they cover the body whorl and the spire. There are also subtle spiral brown bands, often interrupted along the stronger growth lines. In the specimen on fig. 10 the lines end close to the basal third, which has a compact brown colour. The shell profile is not very constant, as it varies from a definitely rounded shoulder with a convex spire to a broad round shoulder with a concave spire. The interior of the aperture varies from light to dark bluish white, according to the external colouration of the

shell; the upper part is slightly darker than the lower part. The outer lip is marked on the inside by a brown line (figs. 10, 11).



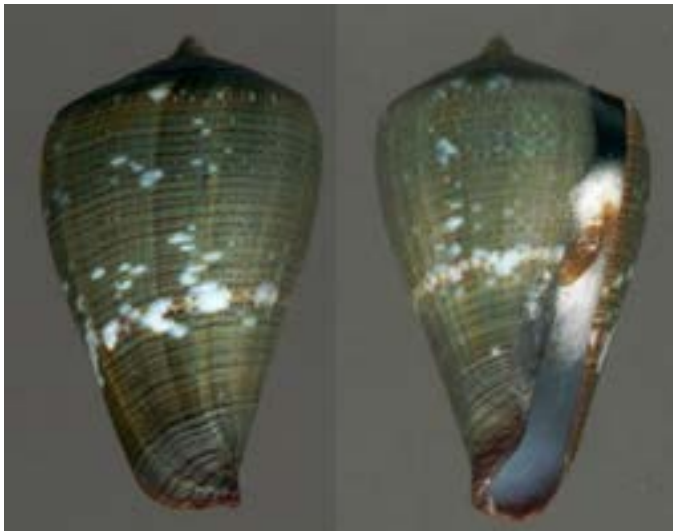
**Figure 10**



**Figure 11**

7. Boa Vista, Cabral Beach (Sal Rei). In this area things get a little more confusing, because two populations, in my opinion very similar, live together here. One is the one I illustrate here, whereas the other has been recently described as a valid species, under the name of *Africonus cabraloi* Cossignani, 2014. In my modest





**Figure 12**



**Figure 13**

opinion, it is merely one of the many variations of *A. irregularis*. But I will return to this later. Looking at fig. 12, we see a shell that is something of a novelty, from the point of view of colouration. As a matter of fact, in this area the whole body whorl is grayish green, with only a hint of brown on the columellar zone. At about mid-body, there is a subtle lighter coloured band. There are irregular blotches of varying sizes, arranged casually over the entire surface. The brown spiral lines are whole, broken and dotted. The interior of the aperture is grayish to bluish white and the border of the

outer lip is always lined in brown. Nothing remarkable about the profile of the shell, which presents a broad rounded shoulder and a slightly convex spire.

8. Boa Vista, Santa Teodora Bay. This bay is located not far to the north of Sal Rei. Nevertheless, I have a single specimen to show, which I consider similar to the one on fig. 11, as far as colour and profile are concerned. The real pattern is a bit hidden by the periostracum (fig. 13).

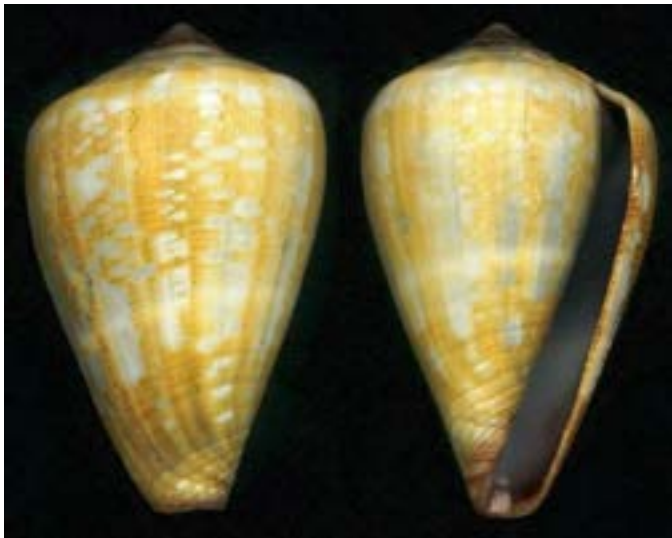


**Figure 14**



**Figure 15**

9. Boa Vista, Ponta do Sol. Here we have reached the northernmost point of the Island, the point at which the coast no longer goes “up” but instead veers towards East. The colour of the shells does not change; it is still in tones of brown, from light to dark. There are always white spots, but a bit smaller and more numerous, with sometimes a tendency to form a band at mid-body. The brown spiral lines are somewhat interrupted and, at least in my specimens, disappear towards the basal third of the shell. The inside of the aperture varies from white to light bluish white, always with a brown thread on the internal side of the outer lip. The spire profile is sometimes clearly convex but varies from one specimen to another (figs. 14, 15).



**Figure 16**

10. Boa Vista, Derrubado. A word of warning is needed here, because sometimes Beirona Bay is erroneously labelled as Derrubado Bay, which in fact does not exist. Derrubado should refer only to the area on the tip of the island, facing an islet that is in fact called Derrubado Islet. However, the area in question is the one from Derrubado to Espingueira. In this zone, *A. irregularis* occurs in some of its most beautiful variations; the illustrated specimens can only give

a slight idea of what can actually be found, because patterns get more and more varied and complex.

The first variation (fig. 16) shown corresponds to a shell whose background colour tends to a golden yellow, with large blue blotches arranged axially. There is also a narrow whitish band at mid-body. The subtle brown spiral lines become rows of dots and are often interrupted by whitish blotches. The interior of the aperture mixes bluish white with a fleshy tone; the inner lip is always brown.



**Figure 17**

Another variation (fig. 17) is one of the best known ones and I will define it as “classical”. The shell is sort of more or less light pea green, with a narrow light brown band at mid-body. Over it there are small white spots that are repeated sparsely and irregularly over the entire shell; usually there are no such spots. The subtle interrupted brown spiral lines are always present and become darker in correspondence with the brown band at mid-body; on the other hand, they widen and thin out towards the basal third of the shell. The interior of the aperture is uniformly bluish white, with a brown thread inside the outer lip.



**Figure 18**



**Figure 19**

Then, there are other specimens (figs. 18, 19) that I like to define as “abstract”. Here Nature is truly having fun: the brown colour tends towards a hazelnut shade, the green becomes darker, the basal third of the shell can become of an extremely, almost blackish green, the irregular white blotches become very large and are always present, and the subtle brown spiral lines change in width and intensity. The only constant feature consists in the colour of the aperture, which is always uniformly bluish white, with a brown thread

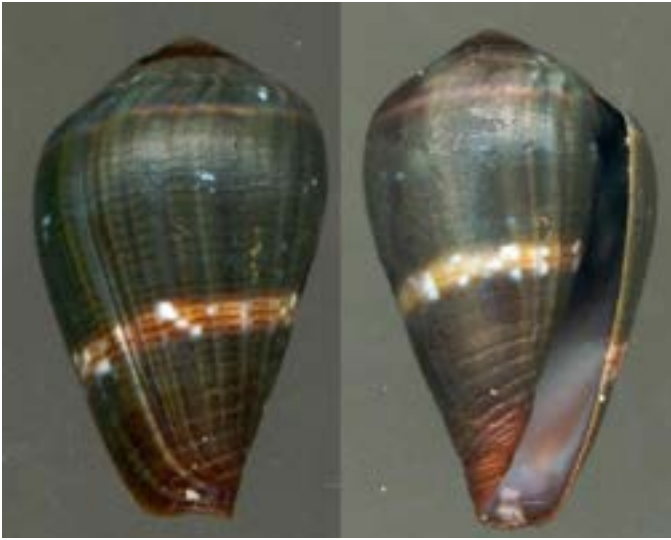
along the inside of the outer lip. Perhaps my artistic nature explains the fact that this is in fact my favourite variety!

The profile in all these variations does not change all that much: we find the usual rounded shoulder, a concave to convex spire and slightly concave sides. The sole difference that can be mentioned is that in this area the shells are sometimes a bit more slender than in the previous ones.



**Figure 20**

11. Boa Vista, Praia Grande. Not far from Derrubado we find this small bay, where I have been told that sharks are often found; usually small ones only, but even so... Here, *A. irregularis* becomes of a more intense dark green colour, with the basal third of the shell tending to dark brown, and the pattern becomes more confused. The central band is composed of white blotches and spots, together with interrupted dark brown lines; the rest of the body whorl is covered with white, brown or dark brown lines and dashes. On the shoulder appear white dots, whereas the spire is almost patternless. The first whorls of the teleoconch are brown. The interior of the aperture is of light blue hue, with purple flesh-coloured spots. The brown thread along the inner lip is always present (fig. 20).



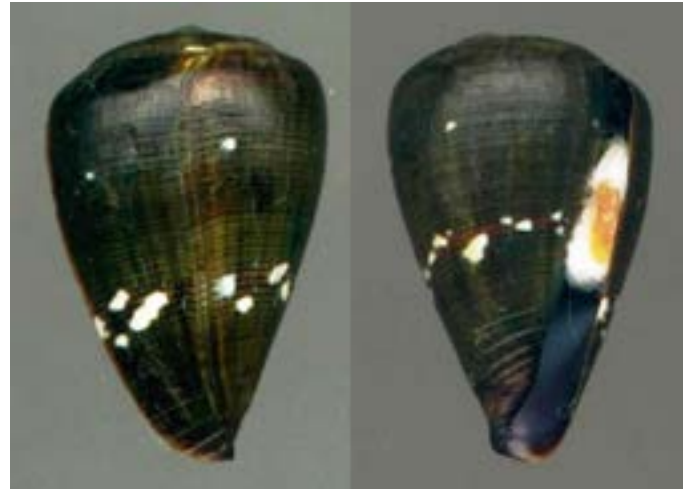
**Figure 21**



**Figure 22**

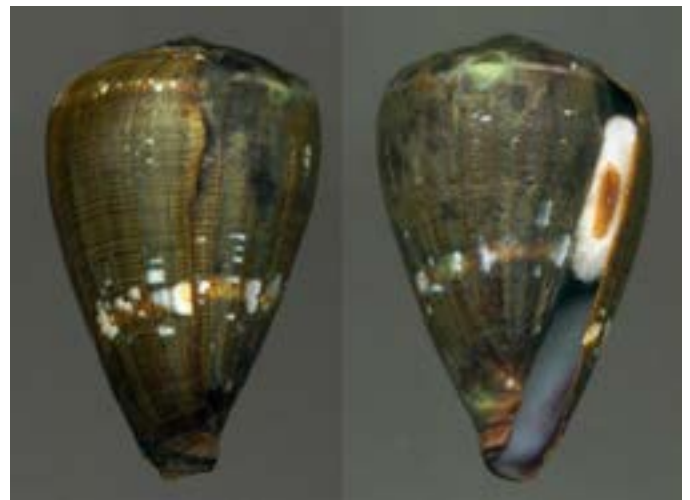
12. Boa Vista, Antónia Beach. Near the preceding beach we suddenly find this other one and our *A. irregularis* sort of “tidies up its dress”. The pattern is clearly legible: quite dark uniform green, with the basal third tending towards brown. Central line or band of a light hazelnut or light brown colour. Few white specks almost always arranged along the middle section of the shell, but also present elsewhere on the body whorl. Interrupted brown spiral lines. The spire almost shows no spots, the first whorls of the teleoconch are brown. The interior of

the aperture always tends to a light grayish blue, with flesh-coloured spots; the usual brown edge is present (figs. 21, 22).



**Figure 23**

13. Boa Vista, Zebraca Beach. The background colour is always green, the central band is always brown, and the white spots are always grouped in the centre. A few white dots can be seen sparsely here and there. The brown spiral lines disappear towards the basal third of the shell. Nothing new about the interior of the aperture, which is light grayish blue, with the flesh-coloured spots and the thread along the outer lip (fig. 23).



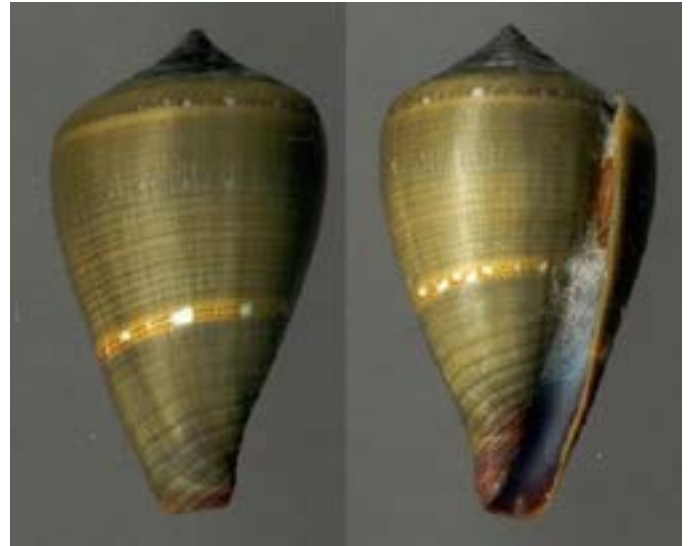
**Figure 24**



**Figure 25**

14. Boa Vista, Jorita Bay. Situated in the northern part of the better known Gatas Bay, this consists in a small natural pool left behind by the receding water during low tide. A cordon of rocks rising from the sea floor isolates a part of the marine territory; about 3 metres deep, with sand, rocks, corals and algae, it is a corner of paradise indeed! Here I have found the largest specimen in my collection, which is shown in fig. 24. The typology of the shell is similar to what has been described above and it is not a particularly pretty specimen, but at 39 mm it is certainly a desirable piece for a collection entirely focused on Cape Verde Cones.

15. Boa Vista, Gatas Bay. My trip along the coast of Boa Vista Island ends here and I intend to finish by showing two specimens with rather opposite characteristics, which in my opinion synthetize the extreme differences within the species that is the subject of this work. The first one (fig. 25) is of a light greenish yellow colour, with a slight brown shade on the columellar area. The brown spiral lines are restricted to the central part of the body whorl and become thicker only in correspondence with a central band highlighted by irregular white blotches. The spire is quite low, with a convex profile, and the shoulder is broad and rounded. This is one of the most tapering specimens in my collection. The interior of



**Figure 26**

the aperture is of the usual gray-bluish white colour, with a brown border. The second shell (fig. 26) is quite the opposite of the previous one, with an elongated profile, and a high convex spire. The colour is dark green and the brown spiral lines can be hardly seen. The central band is reduced to a very light brown line, with a few white markings. A second band, narrower and less evident, but with the same characteristics, can be found immediately below the shoulder. The interior of the aperture is uniformly dark coloured, except for a narrow lighter central band.

*Africonus iberogermanicus* (Röckel, Rolán & Monteiro, 1980)

The taxon *iberogermanicus* deserves a separate comment. It was initially described as a valid species, but afterwards recognized as a synonym of *irregularis* by the same authors. À propos, we may underline that Sowerby II must have already noticed this variation, since his fig. 419 shows a totally patternless specimen, presenting only the light central band. I am including a few photos of this form (figs. 27-31), presented, as before, in an East to West sequence; the specimens are from Sal Rei, Derrubado, Praia Antónia and Praia do Canto.



**Figure 27**



**Figure 29**



**Figure 28**



**Figure 30**

*Africonus cabraloi* Cossignani, 2014  
*Africonus docensis* Cossignani & Fiadeiro, 2014

## TAXA RELATED WITH IRREGULARIS

In recent years, a couple of new taxa have been described that can be related to *Africonus irregularis* (Sowerby II, 1858). They were proposed as valid species, but the whole thing was published in a rather approximated way, without a careful study of the animals and indeed limited to a morphological comparison with other species. The taxa in question are the following:

Because of the lack of a proper study of the animals, it is not easy to accept everything the authors state without clear scientific proof, and I believe that much more thorough study will be necessary, in order to clarify the true status of these taxa, from a malacological point of view. Cape Verde has already proved to be much more than just a “difficult puzzle” (cf. *Cone Shells from Cape Verde Islands. A difficult puzzle* – D. Röckel, E.



**Figure 31**

Rolán, A. Monteiro 1980). From a certain point of view, those ten islands are a veritable mine, able to satisfy anyone who goes there looking for Cones only – something I try to do as often as I can – but at the same time it teems with doubts, contradictions and difficulties for whoever tries to classify them.

This is why the work of a biologist, of a malacologist, is not an easy one and cannot be carried out properly by amateurs, even if advanced ones. One thing we certainly do not need is to increase the confusion in taxonomy. To do so constitutes, in my opinion, an unforgivable levity, especially when it hides (and not very well at that) other purposes that have nothing to do with Science.

## CONCLUSION

My voyage through the “irregularis world” ends here. It has perforce been a brief one, because my collection is not a very big one. There will probably be other localities where the species occurs; and there will be other patterns and forms worth mentioning.

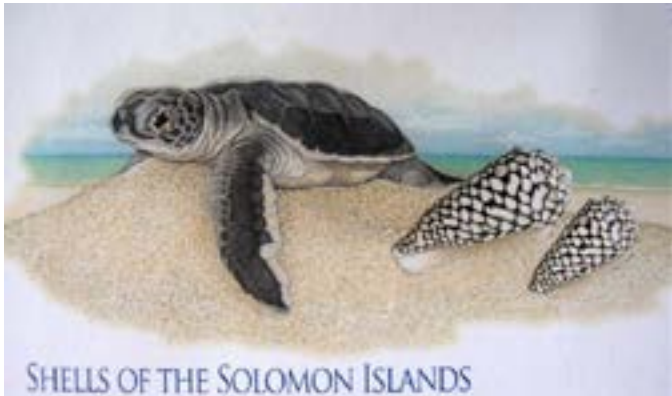
My aim in the present paper has been mainly to illustrate how variable a Cape Verdean species can actually be. And the differences found often are not limited to patterns and colours, but also encompass the shell profile, making us wonder whether we should talk of subspecies and forms, not to mention distinct species (albeit in a correct way).

Can we be absolutely sure that *Africonus irregularis* (Sowerby II, 1858) is a single highly polymorphic species? Would it not be preferable to think in terms of a complex of species? Moreover, will this species not deserve a most in depth study, especially in the light of modern developments?

Finally, would the same treatment not be appropriate also for *Africonus delanoyae* (Trovão, 1979) and *Africonus borgesii* (Trovão, 1979)?

# Conidae of the Solomon Islands - Some Taxonomic Problems

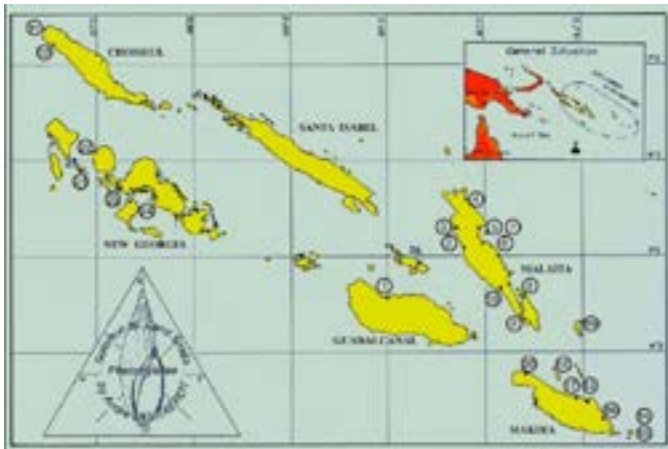
André Delsaerdt



*The present article is an adapted version of the talk presented by the author at the 4th International Cone Meeting.*

I gratefully mention Mr. Edward Wils who was my teacher since 1973.

During the last ten years the land snails of the Solomon Islands have taken most of my freetime, which resulted in 3 books. This is my return to Conidae. Between 1987 and 2012 I travelled 7 times to the Solomon Islands. The localities where I collected molluscs are indicated on the map by (encircled) numbers.



My collection of Conidae from the Solomon Islands contains 115 species, stored in 4 drawers like this; big specimens in a larger drawer.

The late Ann Kengalu, a great lady and well known by



shell collectors all over the world, invited me and that changed my life. Uncommon species I found in her shop or were collected by the Kengalu's diversteam.



Kengalu's diversteam: Johnson Kengalu, Elijah Moku, Ataban Tango and Colin Munday. They dived mostly at night. A dive took one hour.

The ethnical tensions (1999-2001) with roadblocks near Honiara was the end of shell collecting in the Solomons by the diversteam, Brian Bailey and Ron Moylan. During my stay in 2005 I was informed that C. Munday was passed away some time before.

As a reference book I use Röckel, Korn & Kohn, 1995, as well as Filmer, 2001, which is basic for taxonomy (but you need also the "Corrections and Ammendments" to his original text of 2001).





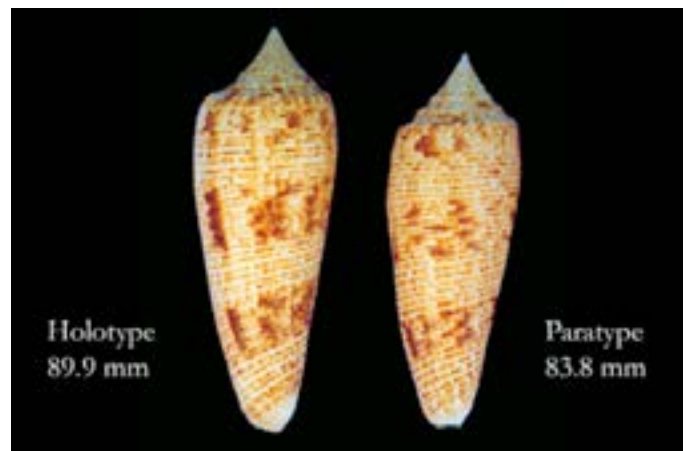
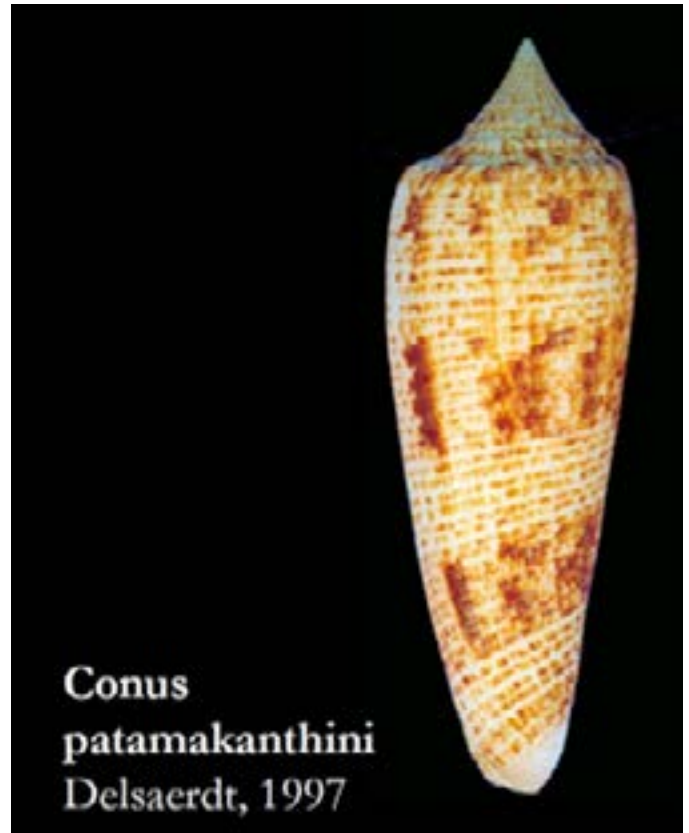
Colin Munday surprised me by some very rare species

Should one be a lumpner or splitter? I say: as long as synonymy is not proved, respect the author! See the next example.

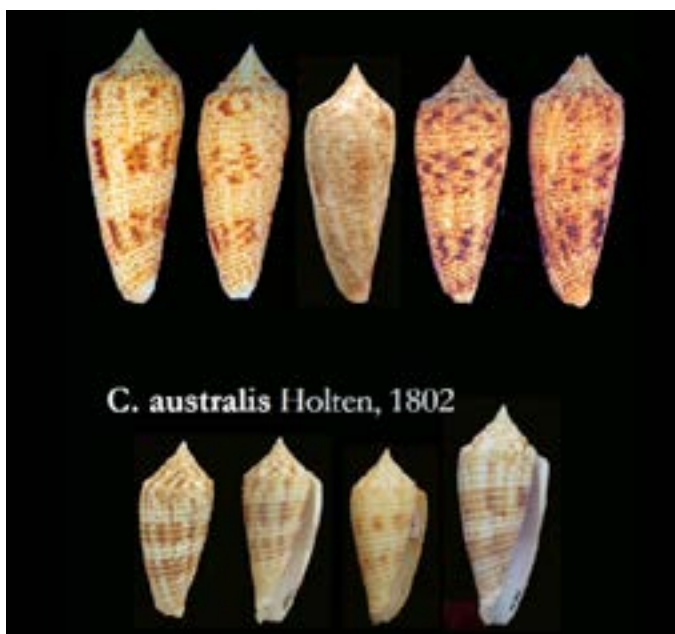
In July 1994 Somnuk Patamakanthin showed me this unique specimen in his exceptional collection. After a comparative study I was convinced that it was a new species.

In 1997 we travelled again to Thailand and Phuket. S. Patamakanthin showed me a second specimen, trawled at the same locality. I described *Conus patamakanthin*. In the discussion it was compared with *C. australis*, *C. duplicatus*, *C. armadillo* and *C. ranonganus*.

On the end of 1998 a fourth and fifth specimen was trawled. The fourth was a present for my collection, length 75 mm. Here: holotype, paratype, the fourth specimen.



Filmer (2001) says: “a valid species or possibly a subspecies of *C. australis*”.



Row 1 & 2: *C. patamakanthini* — holotype, paratype, my specimen, and two more from Coll. Patamakanthin.

Row 3: *C. australis* “Phuket form” (!) the specimen on the right from the type locality of *C. patamakanthini*.

This image makes it clear that *C. patamakanthini* can not be a subspecies of *C. australis*. Filmer, in his corrections and ammendments, considered *C. patamakanthini* a valid species.

On several websites *C. patamakanthini* was degraded to

a synonym of *C. australis*; it seems to be based on the World Register of Marine Species:

Status: unaccepted / Accepted name: *C. australis* / Source of synonymy: Tucker & Tenorio, 2013!



On the left *C. australis* from Racha Noi. In the middle: *C. patamakanthini* from Racha Noi (the type locality). On the right *C. australis* the well known form of the Philippines, but here from Vietnam.

On the www. an opinion by Christophe Roux who criticized WoRMS: *C. patamakanthini* is a valid species; and he added “C’est visiblement le grand frère de *C. nimbosus*” (right !).



Now a species from the Solomon Islands, one of the eight specimens in my collection, dredged by Brian Bailey.



Figs. 1 - 2: *C. bullatus*. Fig. 3: *C. dormitor* Solander in Brander, 1788 — a fossil from England. Below right fig. 4: *C. australis*. Below on the left, fig. 5: *C. duplicatus* n. sp.



Sowerby's fig. of *C. duplicatus* and a specimen from the Solomons.

Sowerby's type must be considered lost — Coomans, Moolenbeek & Wils, 1985 considered Sowerby's figure as the representative of the holotype. They considered *C. duplicatus* a valid species, distinct from *C. australis*, *C. armadillo* and *C. kuroharai*; the Solomon Islands were designated the type locality of *C. duplicatus*.

Sowerby I, 1823. The Genera of Recent and Fossil Shells. 2, pt. 16, pl. 267

Description of *C. duplicatus*:

4. ——— *australis*.  
 5. ——— an hitherto undescribed species, it is very elegantly shaped and beautifully marked; it is now in the cabinet of the Rev. Dr. Goodall. We have named it *C. duplicatus*, the following are its characters: *C. gracilis*, subventriposus, spirâ breviusculâ acutâ; anfracta ultimâ superne rotundato, lineis transversis duplicatis impressis: testa alba, maculis, strigisque fulvis ornata.

Most important (translated): “transverse paired spiral grooves” and “shell white, decorated with reddish spots and streaks”



*C. australis*, *C. duplicatus* and *C. armadillo*.

Röckel, 1987 in Hawaiian Shell News: one specimen from Cebu was identified as *C. duplicatus* Sowerby and he noted: “Maybe an ecological subspecies of *C. australis* or a valid species”.

In 1992 Korn & Röckel described *C. gabryae*, the species from the Solomons.

Röckel, Korn & Kohn, 1995 considered *C. duplicatus* just an ecological form and synonym of *C. australis*: “*C. duplicatus* matches deep subtidal shells from the Philippines in shape and sculpture”. *C. gabryae* was accepted as a subspecies of *C. australis*, restricted to the Solomons.



[below: a handwritten label by Wils]

Which opinion is right ?

Coomans, Moolenbeek & Wils, 1985: *C. duplicatus* valid species from the Solomons.

Röckel, Korn & Kohn, 1995: *C. australis gabryae* from the Solomons and *C. duplicatus* from Philippines form and synonym of *C. australis*.

Until his last years my teacher E. Wils was convinced that *C. duplicatus* Sowerby was the species from the Solomons.

My opinion: Coomans, Moolenbeek & Wils were right! But now WoRMS, incredible:

*C. gabryae* — unaccepted / accepted name: *C. australis*.  
*C. duplicatus* — unaccepted / accepted name: *C. australis*.



*C. duplicatus* from Russell Islands (Solomons): a rare dark colour form.



*C. duplicatus* from Russell Islands: a ventricose form and an unusual colour, but the paired spiral grooves are a good distinguishing mark.



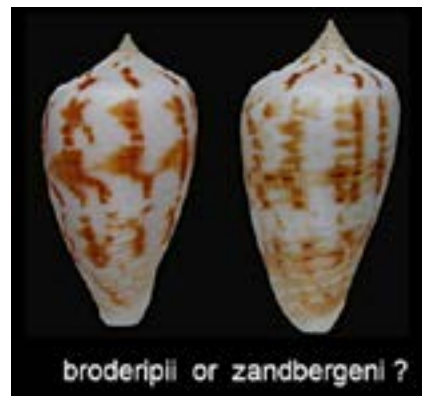
3 subadults of *C. duplicatus*.



Now one of the two First Day Covers on Conidae, 14 stamps copied from the colour plates of my alphabetical review of the Conidae from the Solomon Islands:



*C. auratinus* on the stamp and the specimen in my collection. Length 103.9 mm. Leg. Johnson Kengalu in Ontong Java (atoll in the nord of the Solomons)



For many years these specimens were identified as *C. broderipii* but are in fact *C. zandbergeni* Filmer & Moolenbeek, 2010.

Above, two specimens from the Solomons, given and identified as *broderipii* by J. Singleton. Length 32.2 and 34.8 mm. Below 3 specimens from the Sulu Sea, Philippines.



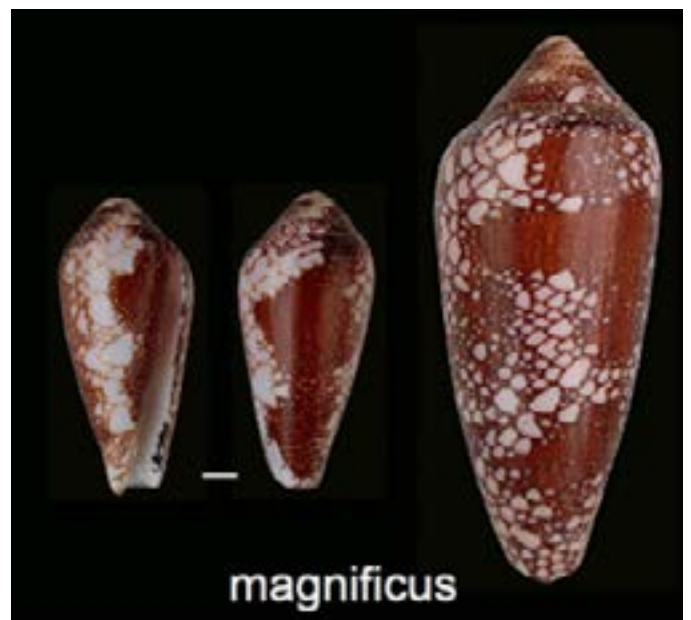
They all belong to *C. zandbergeni*.

Above on the right a specimen ex Coll. Thora Whitehead, 25.6 mm, from Marau Sound (SE Guadalcanal), identified by Whitehead as "*C. broderipii*". Gabriella Raybaudy (1992) provisionally: "*Conus cfr. sculptus*".

Identification?



*C. lynceus* collected alive by C. Munday, dived near Kakambona (W of Honiara) in 1992.



*C. magnificus* 35 mm and 65 mm, from Marau Sound

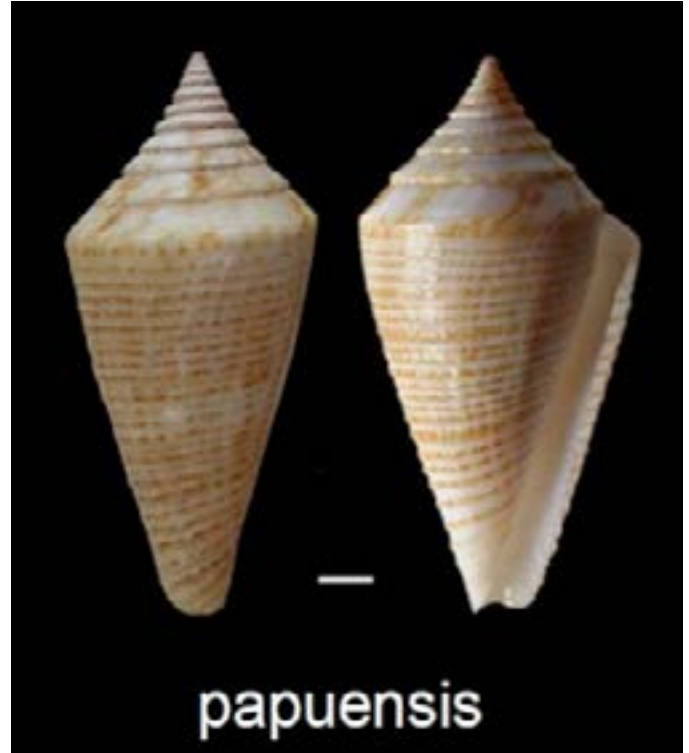


*C. magnificus* 70 mm, collected by myself in Uru (E Malaita)

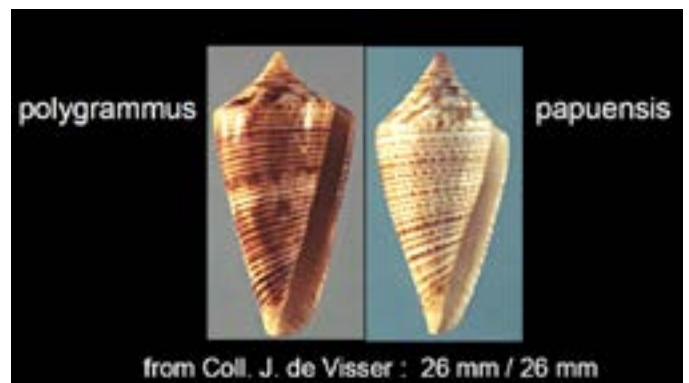
Before 1995 this uncommon species from the Solomons was known as *C. polygrammus* Tomlin, 1937 a new name for *C. multilineatus* Sowerby, 1875 (non Pecchioli, 1864). The name *polygrammus* was also used by E. Wils.



Coomans & Moolenbeek (1982) described *C. papuensis*. Type loc.: Hansa Bay, New Guinea. [here on the slide a locotype].



They discussed: *C. filicinctus* Schepman, 1913 from Indonesia / *C. polygrammus* from the Solomons / *C. furvus* forma *aegrotus* from Philipines. *C. papuensis* described with a stepped spire and the last whorl with pustulated spiral cords.

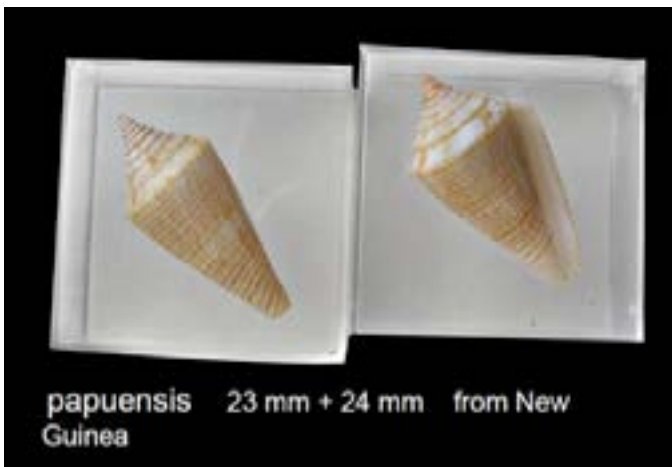


So I published in my alphabetical review (1991), side by side, 2 exceptional specimens ex Coll. J. de Visser : *C. polygrammus* and *C. papuensis*.

Röckel, Korn & Kohn (1995) synonymized *C.*

*filicinctus* with *C. voluminalis* and *C. polygrammus* with *C. furvus*. They accepted *C. papuensis* as a valid species and they remarked: "Specimens from Solomon Islands and Papua New Guinea, with largely smooth last whorls are provisionally assigned to *C. papuensis*, because they may be subadult specimens of *C. voluminalis*".

But in WoRMS: *C. moylani* unaccepted / synonym of *C. papuensis*.



*C. proximus* on the First Day Cover

Some Advanced Conus-collectors suggested me to describe these smooth specimens from the Solomons because they lacked a name. Ron Moylan has given the holotype: he mentioned that he usually could find one or two specimens per year during his dives in Marau Sound.

Filmer in his corrections and ammendments (after 2008) accepted *C. moylani* Delsaerd, 2000 as a valid species.



4 specimens from N. Guadalcanal, all from the area W of Honiara







*C. proximus cebuensis* Wils, 1990 paratype 5 in my collection



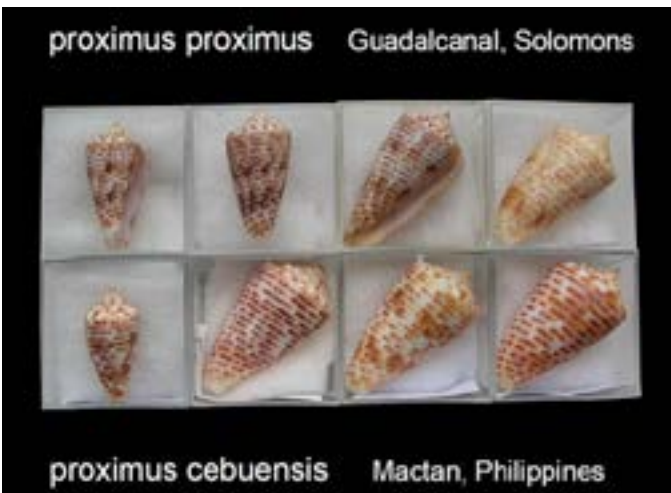
We recognize *C. proximus cebuensis* in the two specimens of the left, indeed from the Philippines, and *C. proximus proximus* in the others from Solomons, the last one from Fiji.

Now in Röckel, Korn & Kohn:

-The first on the left, completely resembling the types of *cebuensis* Wils, 1990, was identified "*C. proximus*" only. The second rightly as "*C. proximus f. cebuensis*". The specimen in the middle, from Solomons, was identified as "*C. proximus f. cebuensis*". Summarized: localities and names mixed and then *cebuensis* was declared just a form and thus synonym.

WoRMS — surprise:

*C. cebuensis* accepted and it seems to be accepted as a full species.



Above *C. proximus proximus* from the Solomons.  
Below *C. proximus cebuensis* from Cebu, Philippines

Röckel, Korn & Kohn, 1995, a detail of plate 48.

I summarize:

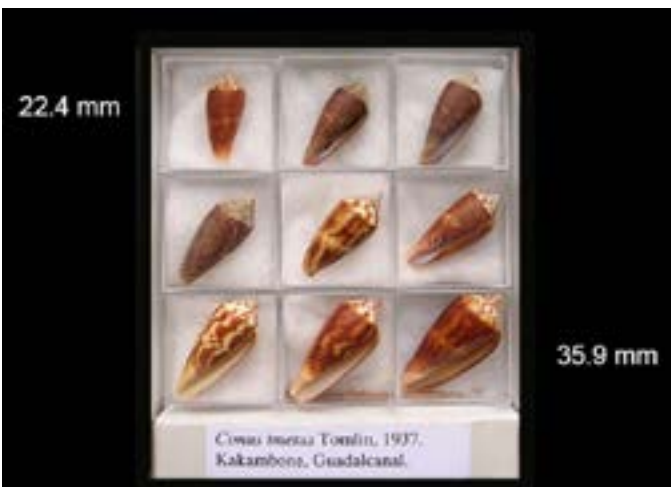


On the left *C. cebuensis* from Cebu — in the middle *C. proximus* from Guadalcanal — on the right *C. proximus*, a strongly granulated specimen from Papua New Guinea.



From subadult to adult. Adults were known as “*C. pilkey* Petuch, 1974”.

In Röckel, Korn & Kohn (1995): *C. tmetus* is a subspecies of *C. ochroleucus*, (the latter well know from the Philippines). Here a selection from the 25 specimens of *C. ochroleucus* in my Conidae Collection, the largest 65 mm.



*C. tmetus* Tomlin, 1937 a new name for *C. sulciferus* A. Adams, 1834 (non Deshayes, 1835). Here a growthseries of subadults, dived in the reefs of Kakambona

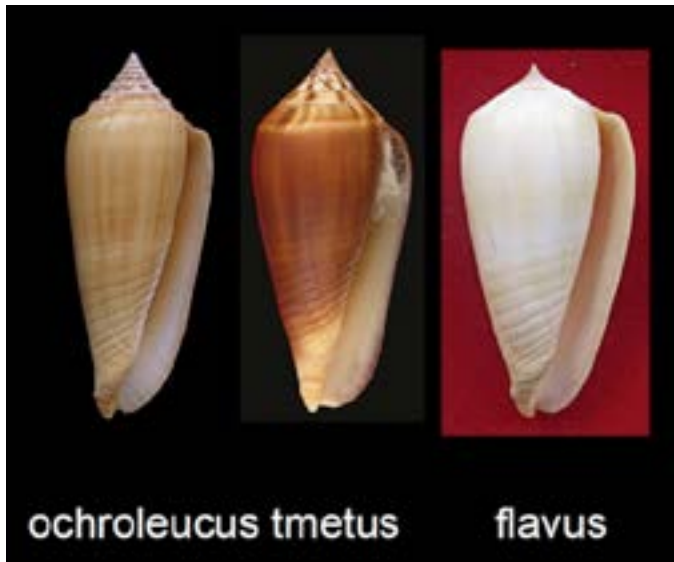


Filmer (2001) accepted *C. tmetus* as subspecies of *C. ochroleucus*.



*C. tmetus* from the Solomons .  
*C. ochroleucus* from Philippines.

The 15 specimens of *C. tmetus* could be obtained from the Kengalu's diversteam in 1987, 1992 and 1995.



*C. ochroleucus ochroleucus* from Philippines / *C. ochroleucus tmetus* a generally accepted subspecies / *C. flavus* Röckel, 1985, type locality "Luzon", but ranged from Philippines to Fiji. Rarely found on the Solomons: the single specimen in my Solomons Collection.

The questionable identity of *C. spiculum* Reeve, 1849.



Two specimens in my collection, leg. C. Munday, 1992, in Kakambona. They resemble completely the two syntypes in NHMUK.

Two opinions are found:

- a. *C. spiculum* is just a juvenile form of *C. generalis*.
- b. *C. spiculum* is a valid species.



On the left the 2 specimens of *C. spiculum* on the right 2 specimens of juvenile *C. generalis*, photographed together (no trick of photoshop).

According to Röckel, Korn & Kohn (1995): "*C. spiculum* was based on 2 juvenile specimens". That's all!

This opinion was followed by Filmer (2001), but in his corrections and amendments he stated: “a juvenile of *C. generalis* or possibly a valid species”.

Singleton (2010, in *The Cone Collector* part 14) changed his mind; he also became convinced that *C. spiculum* was just a juvenile of *C. generalis*. I keep my 2 specimens as “*C. spiculum* Reeve” as they are a precious souvenir to remember a friend, the late Colin Munday. Yes, here I am a splitter!

*C. nahoniaraensis* da Motta, 1986 and *C. sertacinctus* Röckel, 1986.



In my alphabetical review of the Conidae from the Solomon Islands (part 2, plate 5, explanation) I considered *C. nahoniarensis* a form and thus synonym of *C. zebra*. That was also the opinion of Röckel, Korn & Kohn (1995) and Filmer (2001). But we all made a mistake.



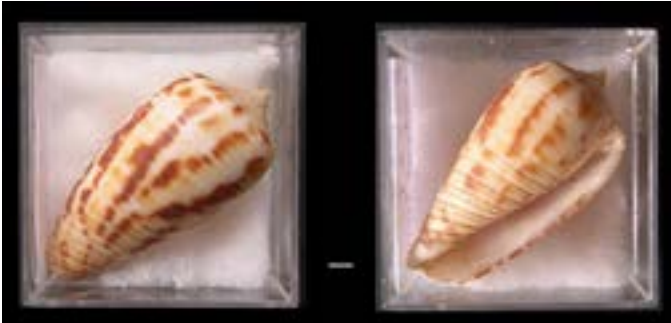
After my second stay on the Solomons and with some 50 specimens I could clear the complex and I described *C. solomonensis*. Specimens of the new species were confused by Röckel with *C. mulderi* which is a form of *C. stramineus*.

I am convinced that *C. nahoniarensis*, *C. sertacinctus* and *C. solomonensis* are three valid species.

*C. sertacinctus* and *C. solomonensis* have a distinct protoconch, a distinct ground colour, a distinct pattern on the last whorl, a distinct colour in the aperture, a distinct colour of the periostracum, a distinct colour of the animals and there are minor differences in the radular darts.

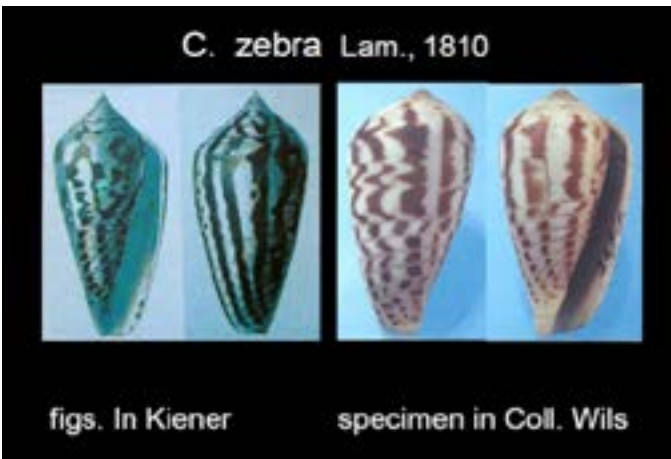


Paratypes of *C. solomonensis*. The colour in their aperture is violet, in stead of white or yellow in *C. sertacinctus* (an easy distinguishing mark).



A beautiful specimen of *C. solomonensis* from Ontong Java.

*C. zebra* Lamarck, 1810.



On the left the figures in Kiener (the protoconch repaired). The holotype in MNHN is an eroded, beached specimen. On the right a specimen collected in Ata'a (E Malaita) by the late Rev. Jan vander Riet and donated to Edward Wils (his collection is in RBINSc). Also an eroded and beached specimen but its pattern matches very well the pattern of the holotype.



Above left the other specimen in Coll. vander Riet as "*C. zebra*", but kept in Coll. Delsaerdt. Above right and below left 2 specimens leg. Delsaerdt in Mbuma (W Malaita) in 95. Below right a specimen from the Ndoma Reef (W of Honiara) collected by the Kengalu's diversteam in 87.

Still a taxonomic problem, but *C. zebra* is probably a fourth species in the complex.



*C. gloriamaris*. The bluish colour is said to be the result of the wrecks of World War 2 in the "Iron Bottom Sea".

# The 4th International Cone Meeting

Brussels, Belgium: September 30th – October 2nd, 2016



## 4<sup>th</sup> International CONE MEETING

As had been abundantly announced, the 4th International Cone Meeting took place from the 30th September to the 2nd October, 2016, in the prestigious Royal Belgian Institute of Natural Sciences (RBINS), in Brussels. It should be underline that this meeting also commemorated the 10th anniversary of the project The Cone Collector, initiated in October 2006.

Participants started to gather at the museum shortly after lunch time, registration began around 15:00 h. A welcome pack was provided for each participant, containing the program for the meeting, as well as abstracts, directory of attendees, information about Brussels and the RBINS, and, most important, a badge that would give registrants free access to the museum during the weekend! Registrants also received complimentary copies of the magazines Novapex (kindly offered by the Société Belge de Malacologie (SBM), the French speaking Belgian malacological association) and Gloria Maris (kindly offered by the Koninklijke Belgische Vereniging voor Conchyliologie (KonBVC), the Flemish speaking Belgian malacological association).

At the same time, guided tours of the museum's amazing collections, obviously with an emphasis on Cones, were organized for small groups.

As is well known, the RBINS collections are vast and important, especially Dautzenberg's colossal personal collection of about 3.5 million specimens (40,000 taxa)! According to information supplied by Yves Samyn & Thierry Backeljau for participants in our meeting, the Cones in the Museum are partitioned over several sub-collections, namely:

- The general reference collection of the RBINS, partim dry shells: 75 drawers with shells; some 450 different taxa.
- The general reference collection of the RBINS, partim ethanol samples: 24 shelves with some 750 jars); at least 100 different taxa.
- The Dautzenberg collection: 33 drawers with dry shells; some 400-500 different taxa.
- The Poppe collection: some 350 different taxa represented by some 1300 shells.
- The Saesen-Debeuckelaire collection: some 500 different taxa represented by a still unknown number of shells.
- The Wils collection: some 530 different taxa represented by nearly 7000 shells.
- The Buyle-Junior collection: 3 drawers, with a yet non-inventoried number of taxa and shells
- The Marquet collection: some 85 different taxa, represented by several hundreds of shells.



- The collection Van Mol: collection partly incorporated in the general reference collection, but some vouchers awaiting treatment

- The collection Van der Riet–Rigaux: holds important material from the Solomon Islands collected in the 1960's; other material not always accurately labeled

- Several other smaller collections: e.g. collection Finet from Galapagos, collection Wils from Red Sea, collection of H.H. Léopold III, collection Kreps,...

Moreover, the Museum houses type specimens for about 40 Cone species. Fortunately for researchers and collectors alike, the Museum holdings can nowadays be accessed through the DarWIN website (with the

electronic address <http://darwin.naturalsciences.be/>) that allows for a virtual visit to the collections (not only of Cones, of course, it includes Vertebrates, Invertebrates, Entomology, Paleontology, Geology and Mineralogy). At present, information about almost 3 million specimens can be found there.

We should underline that on the occasion of the 4th International Conidae Meeting, digitizing the Conidae types has been given priority, so these can be partially viewed on Virtual Collections, although the photography of the types is still in progress.

At 18:00 h on Friday the 30th September, the Meeting officially opened with a Reception and aperitif at the Museum, kindly offered by the RBINS and the KonBVC.

There were no dinner arrangements for Friday, each making their own, so we disbanded after the Reception. A small group of us went to the centre, to the famous Grand Place, where we had dinner – inevitably, mussels were enjoyed!



On Saturday, 1st October, the sessions proper began, including Michaël Rabiller's workshop "Explaining Cones to the visitors of the RBINS", which was open to the general public throughout the day, in two sessions, morning and afternoon. This was roughly the same



kind of initiative we had had in Madrid two years ago, and one that is of great importance to draw the attention of the public – especially of the young public – to the study of Mollusks in general and of Cone shells in particular.

The morning session of the Meeting was opened by Prof. Thierry Backeljau, with a few words of welcome to the participants, followed by a few opening remarks by representatives of the KonBVC and the SBM, who explained the activity of the two well-known clubs.

Thierry Backeljau presented a very interested lecture in which, instead of speaking of the collections of the RBINS, as previously advertised, we preferred to talk about a number of problems that taxonomists should bear in mind in their works to avoid giving non-specialists any wrong ideas, especially in cases where the Theory of Evolution can be misunderstood, if not even actively fought! The examples presented to the audience came as a surprise to many of us and in some instances even elicited a few laughs!

As per previous information, the Organizing Committee had decided to invite the Editor of *The Cone Collector* to be the Guest of Honour in this meeting. Manuel Tenorio kindly introduced me as such, honouring me with a few flattering words. Moreover, I was offered a commemorative plaque with the equally flattering words “To António Monteiro on the occasion of the 4th International Cone Meeting, acknowledging his outstanding work on cone shells as an author, editor, and founder of “*The Cone Collector*” newsletter for disseminating knowledge about cones to both the collector community and public. Brussels, October 2016”; not satisfied with this, the Committee also offered me a copy of Philippe Dautzenberg’s posthumously published *Gastéropodes Marins. 3 – Famille Conidae*, a gift that deeply touched me, especially because this particular copy came from the library of my late lamented friend Michael R. (Mike) Filmer.



I then had the honour of addressing the audience with a lecture titled “Cone shell collecting – a lifetime passion”, the text of which will be found elsewhere in this number of TCC.

During the morning period, there was still time for André Delsaerd’s lecture “Conidae from the Solomon Islands”, in which the well-known Belgian Cone expert was able to display his vast knowledge and extended experience concerning the region in question, and also for Manuel Tenorio’s lecture “The genus *Profundiconus*: Cone snails from the Deep Sea”, of which an abridged version will also be found on these pages.

Lunch, kindly offered by the RBINS, was had in the Museum’s facilities, and apart from the shorter coffee breaks during the morning and afternoon sessions, it provided an excellent opportunity for everybody to mingle and discuss diverse aspects relating to Conidae collection and research.



After lunch we gathered in front of the Museum's building for the traditional group photo.

The afternoon session included four further lectures: Nicolas Puillandre (of the Muséum Nationale d'Histoire Naturelle, Paris, France) talked about "Conoidea and cone snail systematics: lessons from Next-Generation Sequencing"; Sebastien Dutertre (of the Institut des Biomolécules Max Mousseron, Université de Montpellier, Montpellier, France) presented "Venomology relationships in cone snails"; Aude Violette (of the Alphabiotoxine Laboratory, Montroeuil-aubois, Belgium), talked about "*Conus* venoms and their pharmacological potential"; and finally Loïc Limpalaër (of the Association Française de Conchylologie, Paris, France), introduced the audience to the book project he is currently working on with Éric Monnier and Alain Robin, in his talk "Summary of the current Systematic of the Conidae: Presentation of a book (in preparation)".



Afterwards there was still time for Michaël Rabiller (from the MHN-La Rochelle, France) to present a short summary of the results of his workshop and even to talk a bit about his recent participation in an expedition to the Caribbean organized by the MNHN Paris.

At about 17:30 h, I closed the session myself, with a few words as Chairman, underlining the high quality of this Meeting and thanking the RBINS and especially Dr. Thierry Backeljau for having and welcoming us, all the speakers for the high level and interest of their presentations, and the members of the Organizing Committee, Yves Terryn, Manuel Tenorio, Lucy Muehleisen and Marc Keppens, for all their work.

The 4th International Cone Meeting was a great success, even if the number of participants was slightly inferior to what we had in previous occasions – but still approaching 40 participants from a dozen different countries! Besides many familiar faces, we also had a few who were with us for the first time, and I am sure that a very pleasant and instructive time was had by all. This means, of course, that we shall soon start working on the next meeting!

On Saturday evening we had the official dinner. It had been organized at the Renaissance Hotel, where participants were staying – a very convenient hotel indeed, as it is only five minutes away from the Museum, on foot, and it is in fact a very comfortable and well-kept establishment. The dinner took the form of a buffet, which comprising a few Belgian specialties. Everybody was in an excellent mood and the meal was enjoyed by all.







dubious specimens – including a large number of them from Angola, brought along by our good friend Chris Schönherr.



As had been explained in due time, we did not have the mini-bourse, like we had in previous occasions, to which shell dealers brought specimens of Cones for sale to participants. There were a number of technical reasons for this. On the one hand, internal regulations prevented us from having the bourse in the museum's premises, and hiring a room elsewhere – at the hotel, for instance – would actually be rather too expensive for our budget; on the other hand, the number of shell dealers who expressed any wish of attending the meeting was not high at all.

So, the Organizing Committee decided to do without the mini-bourse and instead participants in the meeting were invited and actually encouraged to bring along specimens of cones to show around, to identify, to trade or to sell in an informal gathering to be held on Sunday morning at the cafeteria of the hotel.

Several in fact did so and we had a pleasant time “talking Cones”, discussing identifications of some

Departing times varied greatly among us and while some had to leave at about mid-morning, either on their way back home or aimed at other points of Belgium for a brief holiday, others stayed back until afternoon.

At about 3:00 p.m. I finally left the hotel, in the company of my good friend Günther Herndl, both taking a bus to the airport.

I feel sure that all those who could attend this meeting will have happy memories from our reunion and I will look forward to seeing everybody again next time!

# *Africonus borgesii* (Trovão, 1979) and Related Species

Marco Bettocchi

As I indicated in a previous article on *Africonus irregularis* (Sowerby II, 1858), I feel that there are two other species from Boa Vista Island, in the Cape Verde Archipelago, which need an in-depth revision. One of them is *Africonus borgesii* (Trovão, 1979).

The recent description of new taxa that are in fact close to it, demands some clarifying before we can decide whether we are in the presence of a certain number of valid species within a certain complex, or dealing with a single polymorphic species.

The recent trips I have undertaken to the Cape Verde Islands and the dives I had the opportunity of doing, especially in Boa Vista, brought me some doubts concerning a kind of “dogma” referring to endemic Cape Verde Cones that can be summed up as “one bay, one species.”

We are all aware of the fact that the shells of species in the genus *Africonus* possess a paucispiral protoconch, and that therefore they do not have a veliger stage. When the eggs hatch, a multitude of tiny shells fall to the bottom and stay there, beginning their active lives. But do they really stay in that one place?

Sea waves are notably strong in the Cape Verde Islands and will slam one against the rocks in the shore; the surf will drag one back several metres. Without the protection of a coral barrier, for instance, the action of the water finds no obstacles, even when the sea is calm, let alone when it is agitated or downright rough!

In such a habitat, can we be sure that the newly born shells actually manage to remain in the point where they fell? Is there much difference in weight between a veliger and a minuscule shell? I believe there are grounds for a reasonable doubt about the possibility of very young specimens being transported by the strength of sea currents to other bays, separated from the one where they were born. We found such a situation already with the *Ervatão* form of *borgesii*, which means that the same

may have occurred in other cases.

So, in this new article I intend to draw the attention of biologists and malacologists to the need of take steps towards clarifying the whole problem. Leaving taxonomic intervention, with description of new (“new”) species, to poorly qualified or even totally unqualified persons can only cause damage, first of all to Malacology, but also to collectors.

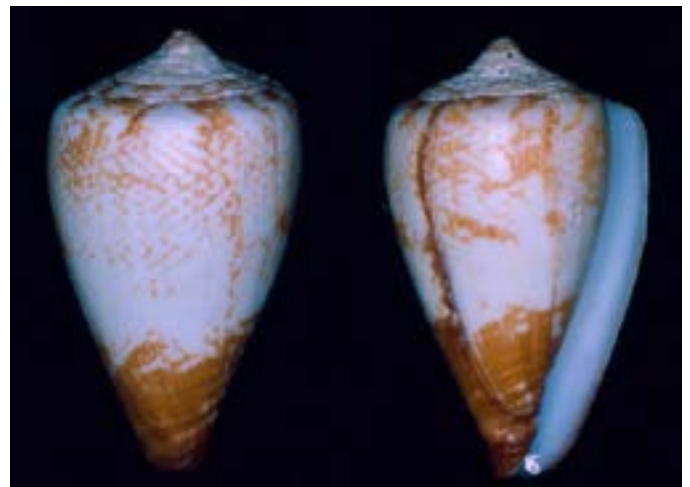
## TAXONOMIC METHODOLOGY

As before, I will follow in this article the taxonomic classification proposed by John K. Tucker and Manuel J. Tenorio in 2009 (*Taxonomy of the Conoidea*).

## HISTORY

In July 1979, Herculano F. M. Trovão published in *Amphitrite* Vol. 1, n. 1, the description of four new species of *Conus* from the Cape Verde Islands; *Amphitrite* is a magazine published by the Department of Marine Biology of the Centro Português de Actividades Subaquáticas (CPAS), which is based in Lisbon. Among them, we find there the description of *Conus borgesii* sp. n.; the type locality is indicated as Gatas Bay, in Boa Vista Island, and the holotype was deposited in the NHMUK, in London (figs. A,B,C). The description, which I transcribe from page 6, reads as follows:

“Conical, thick shell, with a slightly pyriform profile, smooth, with a slightly silky shine; a few grooves in the anterior end. Wide, angulous shoulder. The background colour of the shell is ivory white, with a superimposed brownish pattern of varied hues, from light brown to very dark brown, almost black. The pattern consists of small irregular spots that sometimes form lines, which are less dense at about mid-body; on the anterior part they coalesce, forming a transversal band that occupies roughly the anterior third of the last whorl. Through that pattern, the background colour of the shell can

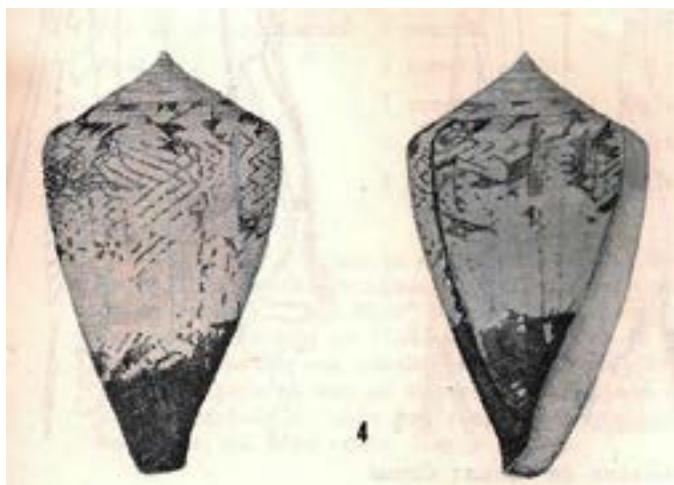


Low spire with a straight or slightly convex profile. The spire whorls present 2 or 3 strong spiral grooves. The apex is elevated. The suture line is shallow, clearly defined and slightly irregular. The background colour of the spire is the same as on the body whorl; irregular spots of variable size are superimposed on the background, and are of the same brown shade as seen on the body whorl; such spots alternate with small areas in which the background colour is visible.

Aperture: thin sharp lip, slightly curved, parallel to the columella, a bit wider at the anterior end. The lip is white inside, and a brown line is visible by transparency. The periostracum is thin, transparent, and yellowish. The living animal is brick-red.”

One thing that amazed me was reading, about the geographical distribution, that this species was also collected in the islands of Maio and Santa Luzia, besides Boa Vista, whereas the specimens in my collection all came from the latter island. Furthermore, I have never heard of this species having been found in either of those two other islands, nor have I seen any specimens from there to support such claims.

Röckel, Rolán & Monteiro (Cone shells from Cape Verde Islands. A difficult puzzle. 1980), when referring to *Conus borgesii*, write, on page 59, that “the species was found in Gatas Bay (Boavista island) and also,



often be seen as zigzagging bands. Immediately behind the anterior brown band, the pattern tends to be less marked and the lines and points less numerous, giving the shell a lighter aspect in that zone.

according to the original description, in the islands of Maio, Brava and Santa Luzia”, and in fig. 25 they indicate Pau Seco as a locality in Maio Island where it is found. However, they have not published any photos of specimens collected outside Boa Vista Island, so apparently just relied on Trovão’s statements. And thus we get back to our starting point.

## CURRENT SITUATION

When showing specimens, I intend to begin in the type location indicated by the author and then see how the species changes or maintains its pattern, both in a north-westward and in a southward direction.



**Figure 1**

1. Boa Vista, Gatas Bay. To get a description of the specimens found here, we simply have to re-read the original description. There are no variations in this area and the specimens show fairly constant patterns: a white background with a more or less reticulated brown pattern, the anterior third of a compact brown colour, the aperture whitish; conical spire, slightly angulous shoulder, slightly convex profile (figs. 1,2). An exceptional specimen is shown in fig. 3, presenting a



**Figure 2**



**Figure 3**

beautiful yellow background colour (the periostracum has been fully removed).

2. Boa Vista, Derrubado. In this area, the pattern tends to thicken, mainly because of the presence of numerous axial waving brown lines, more or less packed together. Sometimes there are even compact blotches of the same colour, the whole shell getting a darker general look. The basal third is still uniformly brown and the aperture is always whitish (figs. 4,5,6).





**Figure 4**



**Figure 6**



**Figure 5**



**Figure 7**

We then move decidedly towards west and we find the Ervatão form, mentioned by Tenorio, Afonso, Cunha & Rolán (*Xenophora Taxonomy* N. 2: 5-21, pl.1 figs. 1-6).

3. Boa Vista, Ervatão Bay. The specimens belonging to this form are readily separated from the nominal one in view of a clearly different pattern. The background colour is still white, but the pattern consists of large irregular brown blotches. The interior of the aperture is always whitish and the morphometric parameters almost do not vary (figs. 7,8).

Another population in the same area includes specimens that are still white, but with darker blotches and a more distinct, more decisively drawn pattern. The aperture is white, but two slightly shadowy areas appear, corresponding to the external dark pattern. I must confess that I am not entirely sure that this population should be assigned to *Africonus borgesii* (Trovão, 1979), but the morphometric parameters that I have measured in my seven specimens made me



**Figure 8**



**Figure 9**

decide so. Briefly summarized, they are as follows: RD = 0,59 – 0,63 ; RSH = 0,14 – 0,18 ; PMD = 0,81 – 0,85. When compared to those of typical borgesii (*Xenophora Taxonomy* N. 2 p. 8), they are not too dissimilar (fig. 9).



**Figure 10**

4. Boa Vista. Praia da Cruz. Approaching Sal Rei, no variation appears, as shown by the specimen on fig. 10.



**Figure 11**

5. Boa Vista, Sal Rei. The same can be said for the specimens found in the most important locality in the island, which appears to mark the limit of this species towards the west (fig. 11).

Now we go back and depart again from Gatas Bay, this time towards south.



**Figure 12**

6. Boa Vista, Praia do Canto. As soon as we get around the Ponta do Canto, we arrive at this bay and the specimens from the species under examination are entirely similar to those described in the first place: white background, brown pattern, more or less reticulate, basal third densely brown, aperture whitish, conical spire, shoulder slightly angulous and a slightly convex profile (fig. 12).



**Figure 13**

7. Boa Vista, Porto Ferreira. Here we are faced with at least two populations. The first one includes shells in which the brown colour of the pattern predominates over a white background. The basal third is always of a compact brown colour and on the rest of the body whorl there are large blotches and zigzagging stripes of the same colour. At first glance it would seem that the background is brown and the pattern white: exactly the opposite. The aperture is still whitish. In my specimen the spire is especially elevated, but always retaining a conical profile (fig. 13).



**Figure 14**

The second population presents something new that brings it very close to the specimens from the first population listed for Ervatão Bay: the pattern no longer includes axial lines, only the brown blotches of different sizes. The basal third is always brown and the aperture white (fig. 14).

In my collection I also have other specimens, three of which I believe will deserve some attention. I do not have precise locality data for these specimens, only "Boavista Is."

The first one (fig. 15) has a mostly white shell, with the brown area restricted to the base and a few sparse



**Figure 15**

hints of a pattern. A little web search led me to similar specimens collected at Ponta do Roque, Boa Vista, and bearing the enticing mention “new species?”. I deliberately abstain from making any comments, preferring that readers make their own minds.



**Figure 16**

The second specimen (fig. 16) boasts a shell with a beautiful “mixed” pattern: a white background and a brown pattern that includes a compact basal third,



**Figure 17**

subtle axial lines and sparse blotches, leaving a kind of central band formed by large irregular white blotches. Finally, the third specimen (fig. 17) has a shell covered by a fine reticulate of small undulating axial lines, with a non-compact basal third, but also formed by thicker axial lines. In this case, the small spots present on the shoulder predominate, alternating with the white background.

The “official” *borgesii* trip ends here. Nevertheless, in my humble opinion as a collector, it goes on under different names.

As a matter of fact, in recent years many new taxa have been described, which, according to their authors, would correspond to as many new Cone species from the Cape Verde Islands. Unfortunately, what we find is that the so called new species have been described hastily and without the necessary study of the living animals. Therefore, it becomes impossible to believe blindly in what the authors state and the nowadays mandatory in-depth studies would be needed to establish whether we are dealing with valid species or mere forms of previously known ones – in the present case, forms of *Africonus borgesii* (Trovão, 1979). For these reasons, I will simply mention the species in question, and will

make only short comments to try to underline my own thoughts.

*Africonus wandae* Cossignani, 2014



**Figure 18**



**Figure 19**

This was described for Baía Grande, Boa Vista, which is located in the south-eastern part of the island. When I look at these specimens (and not only at the two in my collection), I am immediately reminded of the form of *borgesii* from Ervatão (the one appearing in the north-west). Fig. 18 shows my specimen from Ervatão

and fig. 19 a specimen from Baía Grande. For me, these two forms show that *borgesii* is actually spreading all around the island, in accordance with what I wrote in the Introduction above.

*Africonus damioi* Cossignani & Fiadeiro, 2015



**Figure 20**



**Figure 21**

From Derrubado, Baía Antónia and Baía de Água Doce (within the area of distribution of *borgesii*). The authors

have compared this “new” species with *derrubado* only. Why not with *borgesi*? I honestly do not understand their decision.

In this case too I have two specimens to show. Unfortunately, the one in fig. 20 does not have precise locality data, the label indicating only “*Conus (Africonus)* sp. Boa Vista”. Nevertheless, I would think that it may be identified as *damioi*. Contrariwise, no such doubts apply to the specimen in fig. 21, since it was collected at Praia Antónia by a friend of mine, who gave it to me personally.

Both show the characteristics that are typical in the holotype of *damioi*, even though one point is not clear to me at all. In the original description of the species (*Malacologia* 86 Anno XXVII), on page 20, it is specifically said “L’apertura è ampia con colorazione bianco-sporco uniforme”; but looking at the two figures on the same page, I see that the uniform white colour is present only in paratype 2 (a juvenile), whereas the holotype the aperture has a noticeable dark shade in the distal portion and shows some colour also in the basal area. The same “coloured” aperture is also seen in paratype 1 (a juvenile), illustrated on page 21.

Are those photos wrong? Or is there a speck of dust in my eyeglasses?...

*Africonus pedrofiadeiroi* Cossignani & Fiadeiro, 2015

It was described from Cural Velho, Boa Vista. I have three specimens of this species, all from Cural Velho. In these specimens, just as in others that I occasionally see offered for sale in the Internet, I find many of the characteristics of the dark form of the *borgesi* form from Ervatão. Generally speaking, the profile shows the same low spire, and the clearly angulous – albeit rounded – shoulder; the pattern is quite similar, except for the subtle undulating axial lines that are present in this species over the whitish background (figs. 22,23). In my opinion, this is but the nth proof that *Africonus*

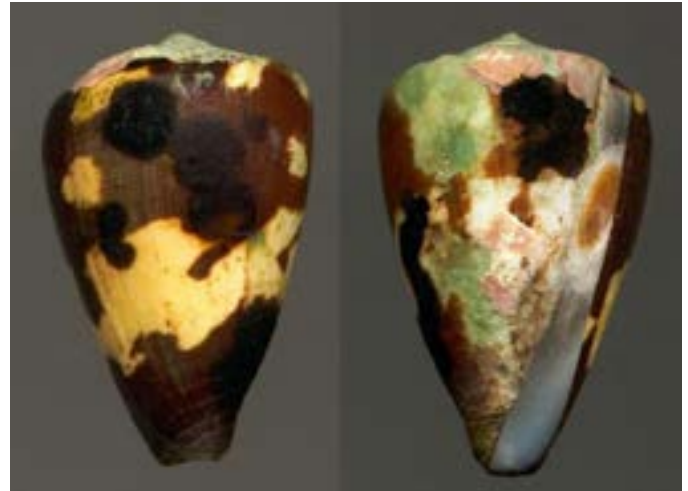


Figure 22



Figure 23

*borgesi* (Trovão, 1979) has taken another step forward in the colonization of Bos Vista Island.

Here my work as a collector comes to an end. It is now for biologists and malacologists to establish whether *Africonus borgesi* (Trovão, 1979) is a single polymorphic species or else we are facing a complex of species stemming from a common clade.

*I thank my friend António Monteiro, well-known Portuguese collector and author, who has kindly provided me with a copy of the Amphitrite paper, which enabled me to present the historical part of this work.*

# Errata

Dear friends,

A few typos crept into the last issue of TCC.

On page 21, for instance, on a small green label, the name of Loïc Limpalaër appears as "Loin" instead of "Loïc".

On the other hand, both on page 20 and in the Table of Contents, Bill Fenzan's name appears as "Fenzen" instead of "Fenzan".

We also received the following note from Bill Fenzan, about the contents of TCC # 28:

1) The name "*Leptoconus ammiralis* f. *princeps*" is used to identify the shell pictured on page 34. If this is based on the name introduced by Roeding in 1798, why is it not a homonym of *C. princeps* Linnaeus, 1758 and therefore invalid? See Filmer (2001). I have seen this name combination used on a couple of dealer sites to identify a dark variety of *C. ammiralis* L., 1758 from the southern Philippines, so it may be that use of this name in *The Cone Collector* with reinforce use of an invalid name. Was this an oversight?

2) The classification "*Conus* (s.l.) sp. (cf. *Vituliconus planorbis* (Born, 1778) and *V. vitulinus* (Hwass in Bruguière, 1798))" is used on page 42 to describe a shell without an "amethyst blotch" at the anterior end of the aperture. Dieter Roeckel discussed the importance of this characteristic in September 1980 (*Hawaiian Shell News*, p. 5) and a follow-up article in November 1981 (*Hawaiian Shell News*, p. 3). Why is this shell, without any color in its aperture identified with either *planorbis* or *vitulinus*?

Also, the images in Bill's article are presented together on a single page and they are not numbered, although in the text there are references to Figures 1, 2 and 3. As a matter of fact, the figures are ordered from top to bottom.

So, Fig. 1 is

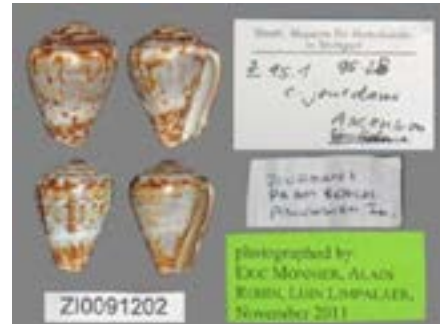


Fig. 2 is



and Fig. 3 is



My sincere apologies to our readers for any confusion this may have caused, and of course special apologies to both Loïc and Bill for messing up their names!

All the best,  
António M.

# *Africonus delanoyi* (Trovão, 1979) [corrected from *delanoyae*] Another Complex of Species or a Single Highly Polymorphic Species?

Marco Bettocchi

I finally arrive at the top of all my searching along the coasts of Boa Vista Island, in the Cape Verde archipelago.

I say that it is the top because I believe that here we are indeed confronted with the most complicated puzzle in Boa Vista Island, if not of the whole Cape Verde Islands, comparable only to the situation faced in the 1980s with *Africonus cuneolus* (Reeve, 1843). At the time, Röckel, Rolán & Monteiro (Cone shells from Cape Verde Islands – a difficult puzzle) had to make do with a long list of forms (labeled from A to M!!); afterwards, Dr. Emilio Rolán tried to clarify things by determining a whole series of new taxa, which helped us to better understand all those variations generated within the cuneolus clade [Descripción de nuevas especies y subespecies del género *Conus* (Mollusca, Neogastropoda) para el archipiélago de Cabo Verde – *Iberus*, Sup. 2: 5-70, 1990].

When I open the drawer where I keep all specimens I obtained labelled as *delanoyae*, or that I have collected myself and identified as such, I get quite puzzled. I see light specimens as well as dark ones, some almost black, some with simple patterns, other with very complicated ones, some with high spires, other with moderately high spires... I try to do my best, but the question marks remain and beg for answers.

In recent years, a few authors have described new taxa, but have done so quite fast and without the support of a study of the living animals, for which reason their work will require confirmation or otherwise on solid scientific grounds. For the good of Malacology – and at a more modest level, of shell collecting – we would urgently need that some marine biologist or malacologist would undertake the charge of studying this complex, someone with the proper qualifications to do it, in a revision that would encompass the specimens from each variation and also of the recently proposed taxa.

## TAXONOMIC METHODOLOGY

Just like in my two previous articles, I will follow here the taxonomic classification proposed by John K. Tucker e Manuel J. Tenorio in 2009 (*Taxonomy of the Conoidea*).

## HISTORY

In July 1979, Herculano F. M. Trovão published, in *Amphitrite* Vol. 1, n.1, the descriptions of four new species of *Conus* from the Cape Verde Islands; *Amphitrite* is a magazine published by the Department of Marine Biology of the Centro Português de Actividades Subaquáticas (CPAS), which is based in Lisbon. Among others, we find there the description of *Conus delanoyi* sp. n. The type locality was given as Gatas Bay, in Boa Vista Island, and the holotype was deposited in the NHMUK in London (figs. A,B,C)

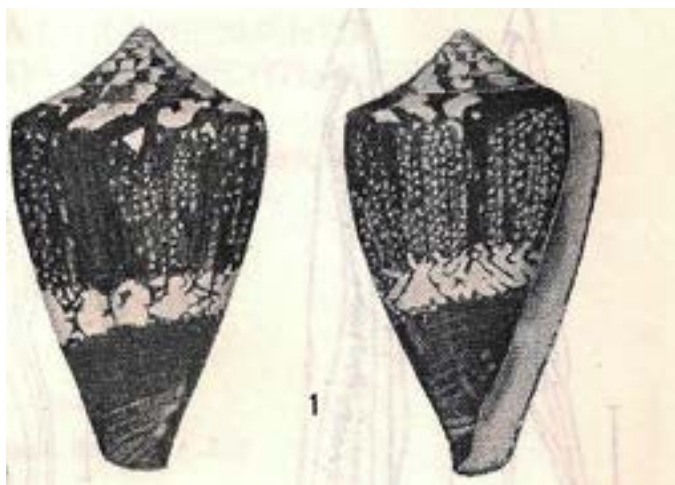
The description says the following:

“Shell conical, with a slightly pyriform profile, smooth, with only a few grooves on the anterior end. Brown colouration with a pattern formed by small white dots, sometimes with larger irregular blotches, irregularly arranged. Below mid-body, those white blotches coalesce, forming a kind of band with irregular contours. Sometimes the white blotches also occur near the spire, as in the anterior end of the shell.

The spire is conical, moderately high, and slightly concave, with a clearly marked suture. The spire whorls present four or five well defined spiral grooves. The spire is brown like the body whorl, with a few white blotches, which are irregular both in shape and number.

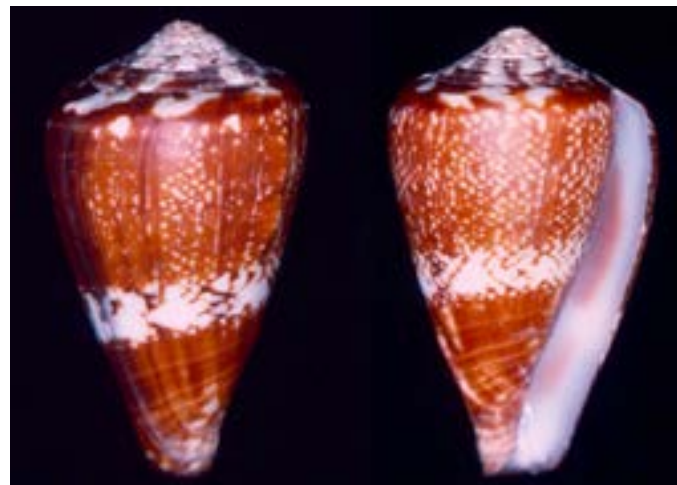
Aperture: the lip is curved, thin, parallel to the columella, slightly wider on the anterior part. The lip is white inside, bordered by a brown thread that can be seen by transparency. Sometimes the inside of the aperture may present light brown shades.





The periostracum is thin, transparent, yellowish and persistent.

Living animal: although all studied specimens of this



species were live collected, the external aspect of the animal was not recorded.”

In 1995, Monteiro, Fernandes & Rolán (*World Shells* (12): p.11) corrected the original name *delanyoi* to *delanoyae*, since the species had been named after Marie Wilhelmine de Lanoy Meijer, and should hence would justify the use of the feminine termination.

## PRESENT SITUATION

As on previous occasions, for the presentation of this species I intend to begin with the specimens from the type location indicated by its author and then see how its pattern is changed or preserved, both in the northwestern and in the southern direction.

1. Boa Vista, Gatas Bay. In the type locality, together with specimens with a pattern similar to that of the holotype, we find also many with quite different patterns, but always referable to the nominal species.

Let us take a look at some of them.

The first one presents a shell with a slightly more ventricose profile, with a relatively low spire with only slightly concave sides, and with the white background colour a little more visible in the shape of triangles of variable sizes that form a band at about mid-body.



**Figure 1**

Larger white triangles are found on the shoulder, alternating with irregular blotches of the same colour as the general pattern, which goes from brown to reddish brown. The interior of the aperture is bluish white, with two light reddish brown areas separated by a whitish band (fig. 1).



**Figure 2**

In the second example, the central white band becomes much more evident and the pattern is almost entirely

relegated to the basal third and the adapical area of the body whorl (fig. 2). Otherwise it is similar to the former one.



**Figure 3**

On the third specimen, the basal third of the shell is similar to that of the holotype, which means that it is compact brown, whereas the central band almost disappears and blends with the overall pattern, which gives the shell a much darker look (fig. 3).



**Figure 4**

There is no real need of describing the fourth example in great detail, as the image is self-explanatory. This specimen pleased me from the moment I saw it, because I had never seen one with that yellow band, nor have I seen another one since. On the other hand, the pattern acquires a peculiarity that we shall find again in another location: the white triangles disappear and are replaced by subtle curved axial lines. The central band is also gone and even the spire becomes of an almost uniform brown colour. The interior of the aperture however, remains the same and hence the connection to *delanoyae* is straightforward (fig. 4).



**Figure 5**

2. Boa Vista, Jorita Bay. I have already mentioned this small bays, which closes the large and more widely known Gatas Bay to the north, in my previous article on *A. irregularis*, so there is no need to repeat it here.

However, in that small natural pool we can find all kinds of things, including *delanoyae*. Here the species begins to show some slight variation. First of all, every specimen that I collected there has the very same pattern, only differing in the colourway, which goes from brown to brick red and to dark brown, always on a white background that however is scarcely seen.



**Figure 6**

One constant feature of the specimens I have found is that the shoulder is always wide or relatively wide and the profile of the shell is always conical. The inside of the aperture accompanies the general colouration of the shell (fig. 5) and in the dark brown specimens it becomes of a grayish blue colour, with even the two internal blotches turning to a more violet hue (fig. 6).

3. Boa Vista, Zebraca Beach. Going around a promontory we get to this bay. Here, our species does not change much and the illustrated shells show the constant feature of irregular axial lines going from the base to the shoulder. Sometimes they get a bit thinner, thus forming almost a sort of bands in between which the background colour can be better seen (figs. 7,8).

The shell illustrated in fig. 9 deserves a particular attention. This specimen also shows spiral lines of the same colour as the remaining pattern, grouped into two small bands placed on the upper half of the body whorl, while a narrower third band is found between the lighter central area and the almost compactly tainted basal zone. This appears to be the most consistent variation of all those examined so far, also because the feature of presenting spiral lines is typical of other species, such as *A. fadeiroi* and *A. condei*. For



**Figure 7**



**Figure 9**



**Figure 8**



**Figure 10**

the moment, I have identified these specimens as “*cf. delanoyae*”.

4. Boa Vista, Praia Antónia. This is a beautiful sandy bay, limited on two lateral cliffs and rocks. I have been there at the northern part and there, among others, I have found six fresh dead specimens of *delanoyae*, left there by a sea storm on the previous day. The population from this locality is remindful of the one shown in fig. 2 and similarly diverges from the holotype of the

species. The central white band is quite evident and the triangular blotches on the rest of the body whorl can also be seen (figs. 10,11).

5. Boa Vista, Derrubado, or should I say, Derrubado area. Just as we have already seen for *Africonus irregularis* (Sowerby II, 1858), this area offers a wide range of colour variations, and also, as we shall see, even a few rather puzzling specimens.



**Figure 11**



**Figure 13**



**Figure 12**



**Figure 14**

Let us begin with the first pattern, which greatly resembles that of the holotype: fairly compact brown base, a white band with brown markings at mid-body and, as a main characteristic, the distal part is covered in very curvy axial lines that often cross the white triangles on the background. The sole “quirk”, at least in this specimen, consists in a narrow hazelnut coloured strip over the central white band. The spire presents alternating white and brown blotches. The interior of the aperture is bluish white (fig. 12).

The next pattern refers to a variety already found in Gatas Bay and Praia Antónia, since here also the central white band is quite conspicuous, as are the white triangles over the rest of the body whorl. On the other hand, the shoulder is also characterized by large white blotches. In the whole complex, this appears more as a white shell than a coloured one (fig. 13).

Another pattern of similar chromatic intensity must be referred next, but here the pattern is more fragmented,



**Figure 15**



**Figure 17**



**Figure 16**



**Figure 18**

because the white triangles are almost always diagonally connected with each other and the entire pattern looks as if formed by brown signs. The central band is almost devoid of markings. The aperture is always bluish white. On the illustrated specimen I have left the periostracum, which can be seen to be subtle, transparent and yellowish (fig. 14).

Moving along following the colour gradations, we reach a pattern where the central band is formed by

large white axial blotches detached from one another, with the remaining two thirds of the body whorl with the same chromatic intensity and the white triangles, large and small, randomly arranged. The interior of the aperture is slightly darker and tends to be more bluish (fig. 15).

On we go: the shell is more and more covered with pattern, because the central band is replaced by ever smaller white dots and even the small white triangles

are less numerous and smaller (fig. 16).

Another pattern is related to one already described from Jorita Bay, because, save from the basal third of the shell that is of an almost compact reddish brown, the whole body whorl is covered with countless white points and dots that are reminiscent of what we find in *Africonus evorai* (Monteiro, Fernandes & Rolán, 1995). Right on the central portion of the shell, such points are a bit larger and form a sort of band (fig. 17).

And so, step by step we arrive at the limits of the variation, reaching the cases that, according to me, explain the need for a profound revision of the taxon *delanoyae*.

A variation that can be found in the market is illustrated in fig. 18. Honestly, I find it hard to find here the *delanoyae* corresponding to the holotype. The shell is more slender, the shoulder is more rounded, the spire has a more concave profile, the colour is constantly blackish to blackish brown, the central band is almost absent and the interior of the aperture is always more bluish, as opposed to bluish white. And this does not apply only to my specimen, but in fact to a whole population! Here, the study of the animal is mandatory, before someone claims that this is a “new” species.

But surprises do not end here, as we find ourselves facing a specimen similar to the one shown in fig. 9 from Zebraca Beach. Here too, we find spiral lines completely covering the pattern in the distal third of the body whorl and lead us to the obvious question: *delanoyae* or not *delanoyae*? (fig. 19)

The last special pattern (although the identification as *delanoyae* should not be doubtful in any way) is that of the specimen shown in fig. 20. This cone was collected below Derrubado Harbour, that small concrete pier little more than ten metres long and at most three metres wide that is pompously called a harbour. In this



**Figure 19**



**Figure 20**

specimen, both the basal and the distal thirds are of an almost uniform brown colour, while the central band is formed of white blotches of variable sizes. A few other white blotches can also be found on the spire.

6. Boa Vista, Espingueira. Just beyond Beirona Bay (which some call Derrubado Bay), we find this rather long beach which afterwards continues to form the better known Costa de Boa Esperança. The specimen in fig. 21 is rather similar to that in fig. 17. Only the



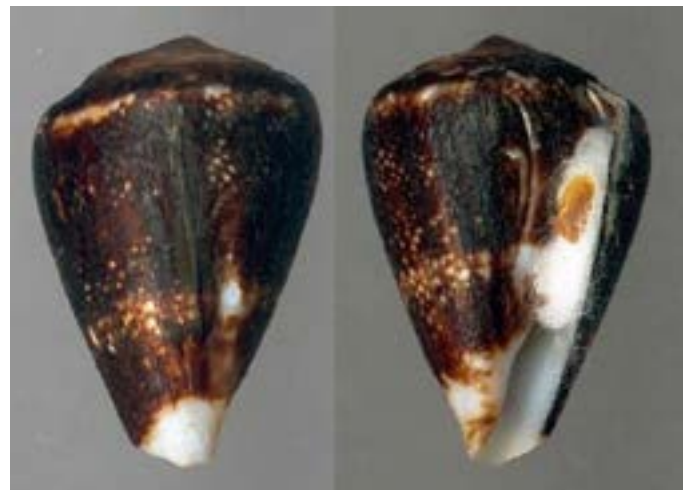
**Figure 21**



**Figure 23**



**Figure 22**



**Figure 24**

two flesh coloured blotches in the aperture are slightly more visible.

For all I knew until two years ago, the colonization of Boa Vista by *delanoyae*, towards the west, ended here. Later however, two things occurred that led me to question everything again.

The first one was quite interesting, as I was able to acquire two specimens from the person who had

personally collected them, someone who in my opinion can be absolutely trusted.

7. Boa Vista, Morro d'Areia. When I read the provenance on the label I could hardly believe what was written there, but confirmation was peremptory! The hand that had written the tag was the same that had collected the two specimens, so what could I say? The "*delanoyae*" characteristics are all there, even though one of the specimens has the distal third of the body whorl entirely covered with spiral lines. The pattern shows a clear central band, an almost compact colour



covering the basal and distal thirds of the body whorl, and the interior of the aperture is in shades of light and dark blue (figs. 22,23). Nevertheless, I believe that this find should be supported by other findings of the same kind, perhaps in other places than Morro d'Areia and even in intermediate locations along the northwestern coast of the island.

The second thing that happened, which was not of lesser importance, was the fact that I collected a specimen myself a specimen that I do not feel like identifying as *delanoyae*, but which certainly contributes to add to our interrogations. Going back a few kilometres, we return to:

8. Boa Vista, Praia de Cabral (north of Sal Rei). I have personally collected this cone about 1 m deep, on sand among rocks, at low tide. It was during the afternoon and the animal wandered peacefully on the sand. I immediately realized that I was not looking at a *cabraloi*, a *salreiensis* or a *diminutus*, and vainly tried to find other specimens. For the moment, I prefer to label it *Africonus sp.*, because its morphological characteristics seem to relate it either to *delanoyae* or to *joserchoi* or even to *miguelfiadeiroi*. The shell is not a beautiful one, but I have to show it (fig. 24). I would very much appreciate anybody's comments on this specimen [privately, if you prefer, for which I hereby indicate my e-mail address: [mbettocchi@libero.it](mailto:mbettocchi@libero.it)].

In any case, I would say that the species named back in 1979 as *delanoyi* has in fact come far and continues to this day the colonization of the island, as a nominal species or through related species (or possible variations). We also see that it is spreading by going from Gatas Bay towards south, even though in this direction there is a shorter way to go, at least according to the specimens in my collection.

9. Boa Vista, Praia do Canto. Here we find two pattern variations. The first one is similar to the specimens already found in Derrubado and Jorita. The white



**Figure 25**



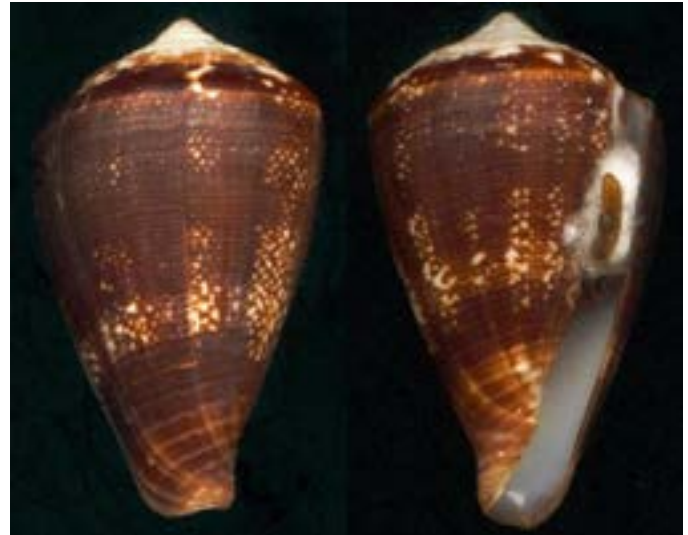
**Figure 26**

background colour is clearly minority when compared to the dark brick colour of the pattern and the general aspect is that of a dark shell. What's more, on the spire we find dark brown blotches alternating with white ones (fig. 25).

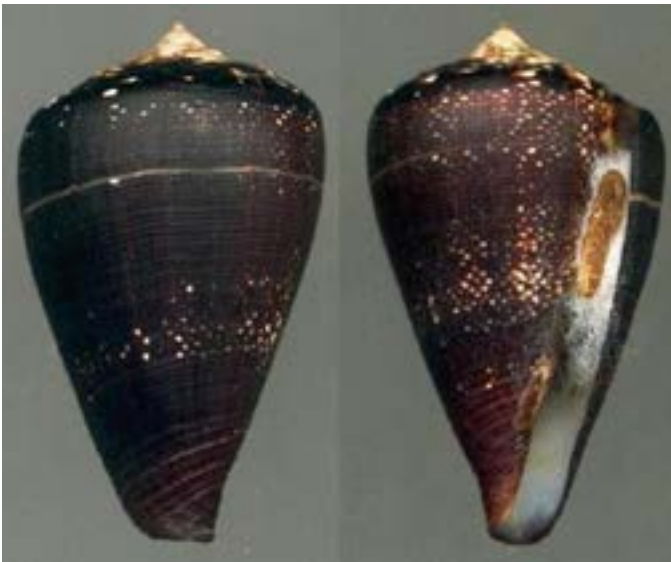
The second variant is more interesting, since it presents the special feature that the axial lines, which in this case completely cover the pattern and the ground below. The basal third is darker and the same intensity is found



**Figure 27**



**Figure 29**



**Figure 28**



**Figure 30**

on a band that lies above mid-body and separates two lighter areas in which the background colour is more visible at last. Here too I would tend to refer to this as *cf. delanoyae* rather than the nominal species (fig. 26). The presentation of some of the specimens of *Africonus delanoyae* (Trovão, 1979) in my collection ends here and I think that it should now be abundantly clear that we are faced with a fine mess, since only a few of them clearly correspond to the holotype of the species. Moreover, all species related to the present one must be

checked, in order to be confirmed or invalidated.

### **TAXA RELATED TO DELANOYAE**

In recent years a few new taxa have been described, which in my opinion can be related to *Africonus delanoyae* (Trovão, 1979). I have already made clear what I think of their descriptions, so there is no need to repeat myself here. The species in question are:

*Africonus joserchoi* Cossignani, 2014 (fig. 27)  
*Africonus miguelfiadeiroi* Cossignani & Fiadeiro, 2015  
(fig. 28)

I do not wish to go into the discussion of whether these are valid species or mere variants of *delanoyae* (or of *Africonus vulcanus* (Tenorio & Afonso, 2004)). but the fact subsists that several points of similarity exist and this should be quite enough to raise some doubts.

On the other hand, there are other species that, to me, could well belong to an eventual “*delanoyae* complex”, namely:

*Africonus vulcanus* (Tenorio & Afonso, 2004) (fig. 29)  
*Africonus fiadeiroi* Tenorio, Afonso, Cunha & Rolán, 2014 (fig. 30)

So, I believe that the “*delanoyae* world” presents different faces that sorely need clarification, hopefully in the near future.

## ACKNOWLEDGEMENTS

Once again I thank my friend António Monteiro, well-known Portuguese collector and author, who has kindly provided me with a copy of the *Amphitrite* paper, which enabled me to present the historical part of this work.

## FINAL CONCLUSIONS

Probably some of my readers will ask why an obscure collector like myself (I do not have a website, I do not frequent international exhibitions, I have never attended the Meetings organized by TCC, mainly because of my trouble with the English language) has decided to write these three articles on as many species that are in fact not easy to understand.

The reason, however, is quite simple: a magazine with title *The Cone Collector* can and should be the proper place to give voice to those who, like me, cannot speak of Malacology and/or Biology in a strict sense, but only of shells. And as a matter of fact the editor has always inspired and encouraged us to present our contributions!

So, this has seemed to be a good opportunity to make my thoughts public, thoughts that a few collector friends that are close to me were already aware of. Besides having shown the high variability of three species of *Africonus*, there was also implicit an invitation to scholars to stop the Cape Verde Islands transform from a “difficult puzzle” into bad trouble.

# Cone Shell Collecting - A Lifetime Passion

António Monteiro

*This presentation – presented at the 4th International cone Meeting – includes a number of autobiographical notes and a brief survey of shell collecting in the last half-century, with especial emphasis on the Portuguese case. Also included are a number of personal thoughts and notes about collecting Cones throughout the years, with a special reference to research on West African species.*

I am currently 65 years old and have been fascinated by Nature and its many living creatures since early childhood. And I have been a shell collector for as long as I can remember.

As a child I used to roam the beaches near home, at low tide, hunting for shells, often washed ashore by the waves. The specimens I collected were of course already dead and bivalves were usually represented by a single

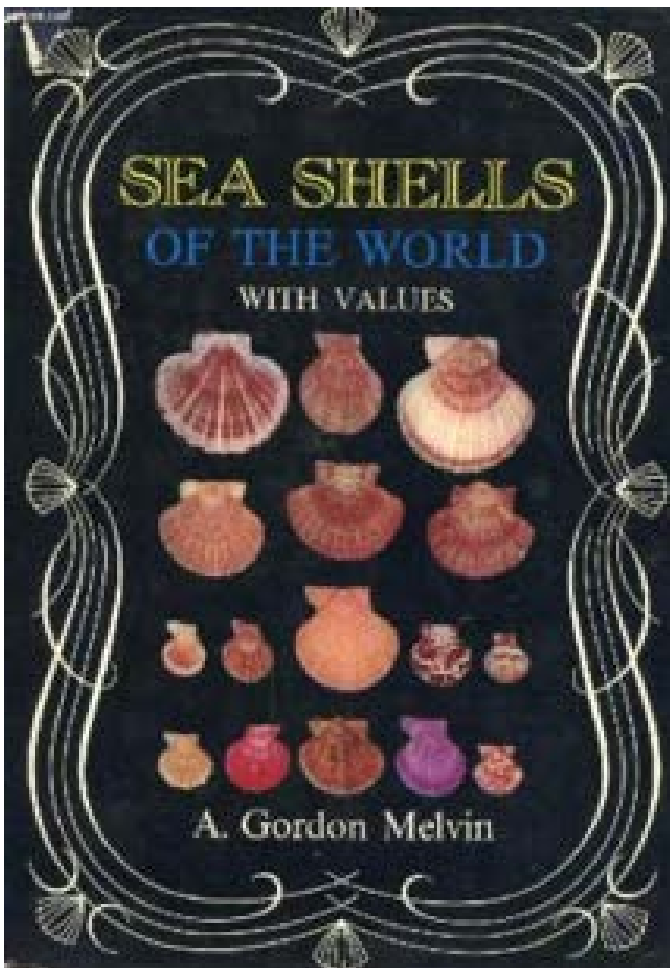


valve. Even so, I treasured those finds and would go more or less regularly to Lisbon's aquarium, where a small collection of Portuguese shells was on permanent display, to try to identify my finds.

I was about fifteen years old – that was of course half a century ago – when I started collecting shells more seriously, having found a shop in Lisbon who sold specimens for collectors. Its owner was Mr. Joaquim Torres, a very friendly person, quite helpful in those early days. I spent there most of the money I could gather...

Mr. Torres also had a selection of books available for sale and my first shell book was none other than Gordon Melvin's Seashells of the World with values.

What a joy to contemplate so many beautiful shells! In





Anne G. Wilson, South Africa

those days, we had no easy access to information, so everything was surrounded by an aura of mystery and wonder.

My collection progressed at a good pace, albeit limited by whichever species Mr. Torres had on offer, many of them from Mozambique and Taiwan. Having bought other books, I learned of the existence of clubs like the Hawaiian Malacological Society and the Keppel Bay Shell Club, which I immediately joined. Beginning to receive their newsletters, I found publicity of many shell dealers worldwide and also the addresses of other collectors who were willing to exchange specimens. I

was absolutely hooked and on the starting line for the development of a lifetime passion.

I fondly remember my first ever shell correspondent, Mrs. Anne Wilson, from South Africa, a charming elder lady with whom I exchanged many specimens. She was able to supply many different South African shells, but, as expected in those days, most of them beached.

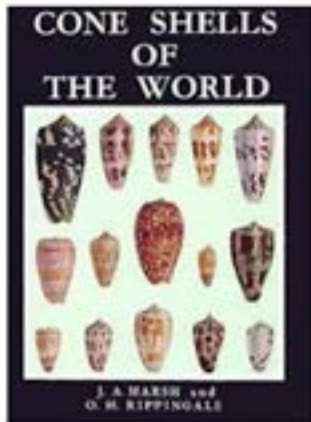
Along the years, I corresponded with literally hundreds of shell collectors worldwide. Should I have been able to afford travelling, I would find friends everywhere. That is of course one of the beauties and pleasures of shell collecting!

In those days, I collected all families of shelled molluscs, from gastropods – both marine and terrestrial – and bivalves to scaphopods. My collection grew to tens of thousands of specimens and I was soon faced with a few problems. For one thing, living in a relatively small apartment, I was running out of space to house my ever expanding collection; on the other hand, things were getting out of control and it came to a point when I had not the faintest idea of which *Cerithium* species I already had or what they looked like, despite a careful filing system... So, I decided to specialize!

My decision was carried out in steps. I began by getting rid of the families and groups I actually did not care much for, as well as Cypraeidae, a group that was too expensive to contemplate exhaustive collecting. I kept a few of my favourite ones, such as Olividae, Strombidae and all land snails. I always loved land snails, and still do.

Later on, I realized that my efforts would give greater satisfaction if I concentrated in just a single family and my choice fell on Cones, which had been my favourite group all along! I sold and exchanged everything else.

Bibliography was still quite scarce, the main title



available on the subject being the rather poor *Cone Shells of the World*, by Marsh & Rippingale, published in 1964. We would have to wait until 1979 for the publication of the, to me rather disappointing, *Cone Shells – a synopsis of the living Conidae*, by Jerry G. Walls.

I should add that at a much later date I decided to begin collecting Scallops also, as they make such beautiful displays! And since most species are relatively inexpensive, one can build large series of different colours and patterns, something that has always pleased me very much.

I should point out that many shell collectors in Portugal at the time – I am referring to mid-60s to early 70s – had started their collections in the ancient Portuguese colonies in Africa, mainly Angola and Mozambique, as well as in Timor. Not only many families had lived there for generations but in particular after the outbreak of violence from pro-independence political movements around 1961, large contingents of the Portuguese armed forces were dispatched to such places, which meant that those inclined towards collecting found themselves in contact with all kinds of tropical habitats, teeming with life, from butterflies to seashells. Actually, that whole political situation caused Portugal to have more shell collectors that could eventually be expected.

After the revolution of 1974, which put an end to a 48 years old authoritarian regime, many of those collectors returned to Portugal, bringing their collections with them and around 1975 a group of them, who lived in or around Lisbon, began getting together weekly at the Centro Português de Actividades Subaquáticas (CPAS).



*Varioconus cepasi* (Trovão, 1975)

The CPAS – after which *Varioconus cepasi* (Trovão, 1975) was named, “cepasi” being a kind of phonetic transcription of the club’s acronym – was mainly a divers’ club, founded in 1953, but it so happened that back in the 60s its president, Jorge Albuquerque, was a keen shell collector, and probably for that reason, during diving and spearfishing expeditions to Angola – and later to Cape Verde, in the 1970s – part of the activity consisted in gathering samples of seashells.



Expedition to Angola, 1990s

Once brought to Lisbon, such samples included a vast number of Cones that captured the interest of Herculano Trovão, who had not really been into shells at all before.



Herculano Trovão  
(1923-2001)

Taking advantage of the facilities offered by the CPAS, and after studying a few papers on Cones, focusing in the use of radular morphology for the characterization and separation of species, Trovão began a thorough study of the specimens brought from Angola and soon recognized that several of them were actually undescribed, so he proceeded to publish his well-known papers with the descriptions of several new species, including *Varioconus cepasi*, *V. naranjus*, *V. nobrei*, *V. albuquerquei*, etc. From 1975 to 1990, Trovão described or co-described no less than 18 new taxa, from Angola, the Cape Verde Islands and Senegal, only a couple of which have been later proved to be synonyms of previously named ones.

Part of the study material from Cape Verde was obtained by Luís Pisani Burnay and others, who travelled to the islands in the mid-1970s, bringing along samples



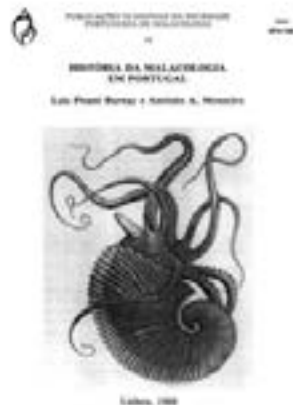
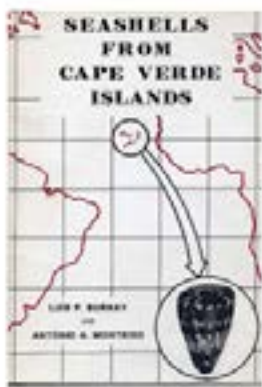
Some species  
described by Trovão  
Angola and Cape Verde

of hitherto unknown populations and recuperating some that had been almost lost since their original description, the best case in point being *Trovaconus ateralbus* (Kiener, 1845), until then often considered as a synonym of *T. venulatus* (Hwass in Bruguière, 1792).



Luís Pisani Burnay

Luís Burnay played a very important role as a collector and researcher, both in CPAS and later as a founding member of the Portuguese Malacological Society. He has published several papers, mainly on West African molluscs. I had the pleasure of being his co-author in two important works, namely *Seashells from Cape Verde Islands*, in 1977, and *História da Malacologia em Portugal*, in 1988.



Left to right: António Monteiro, Luís Ambar, Ilídio Félix-Alves, Luís Burnay, Dieter Röckel, Henrique Lichtenstein

My interest in Cones never abated and I multiplied and diversified my contacts with other interested specialist collectors. Sincere friendships were born of such contacts and I had the pleasure of welcoming in Lisbon several such friends and well-known Cone-heads, including Dieter Röckel, A. J. da Motta and Mike Filmer.



Left to right: António Monteiro, Michael Filmer, Herculano Trovão (April, 1990)





Left to right: César Fernandes, João Amaral de Lemos, A. J. da Motta, Guilherme Macedo, António Monteiro (June, 1994)

But I digress slightly! To try to stick to a more or less chronologically ordered narrative, let me now turn to the year 1980.

Despite the relatively intense activity developed within the frame of the CPAS by the collectors assembled there, which included shell exhibitions, discussions, sessions of specimens swapping, raffles, etc., the truth is that after a couple of years the model appeared to be exhausted. Weekly meetings proved to be unappealing to most and the size of attendants dwindled to about a handful, until many gave them up entirely.

For some time, Portuguese collectors again lacked an aggregating structure that could stimulate their interest and further their knowledge of shells and shell collecting. So, in 1980, Luís Burnay, Luís Ambar, José Silva and António Monteiro decided to found the Sociedade Portuguesa de Malacologia, inviting a few friends to become founding members of the new institution.

Founding members of the Sociedade Portuguesa de Malacologia (February, 1980)



Left to right:  
 Front row: José Silva, Luís Burnay, António Monteiro  
 Back row: Augusto Molinar, Teresa Dinis, Maria Júlia Gamboa, Fernando Serafim, Joaquim Gamboa, Beça, Luís Ambar, Guilherme Macedo

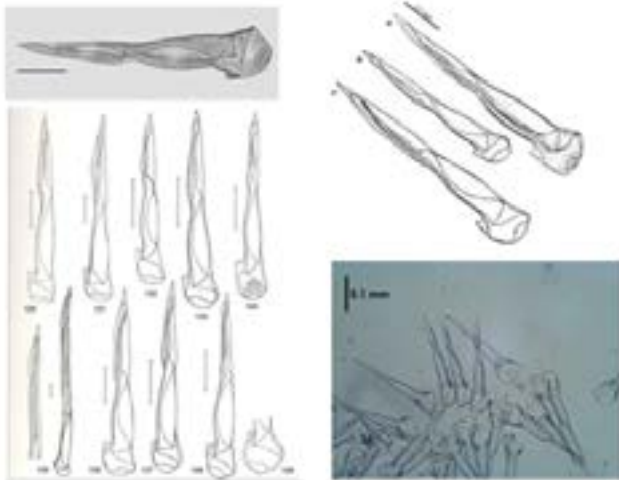
That was the beginning of a very interesting, important and exciting period for Portuguese Malacology. The Society held monthly meetings with talks, auctions, games, etc. and at the same time organize field trips to collect shells, visits to collections in museums throughout the country, and initiated the publication of a series titled “Occasional Publications of the Portuguese Malacological Society”, of which a total of 16 numbers appeared. We also put together the first Lisbon International Shell Show, which was a great success, with many participants and visitors, both national and international.

Knowledge about shells in those days was of course vastly inferior to what it is today. The number of known species was considerably smaller and many of the rarest were totally beyond the possibilities of the average collector. Things like *Textilia dusaveli* (H. Adams, 1872), *Strategoconus thomae* (Gmelin, 1791), *Leptoconus milneedwardsi* (Jousseume, 1894) or *Tenorioconus cedonulli* (Linnaeus, 1767), were scarcely, if ever at all, found on the market, and one had to go to an

important museum to admire a specimen. Examples of *Cylinder gloriamaris* (Chemnitz, 1777) were still almost all numbered when I started collecting!



Naturally, the separation of species was based on morphological aspects of the shell only, if for no other reason than the soft parts of living animals were seldom available for study. As I mentioned before, bibliography was scarce, incomplete and of comparatively poor quality, which did not help.



It was a great advance to be able to base specific diagnostic on features such as radular morphology and to get important information about habitats and

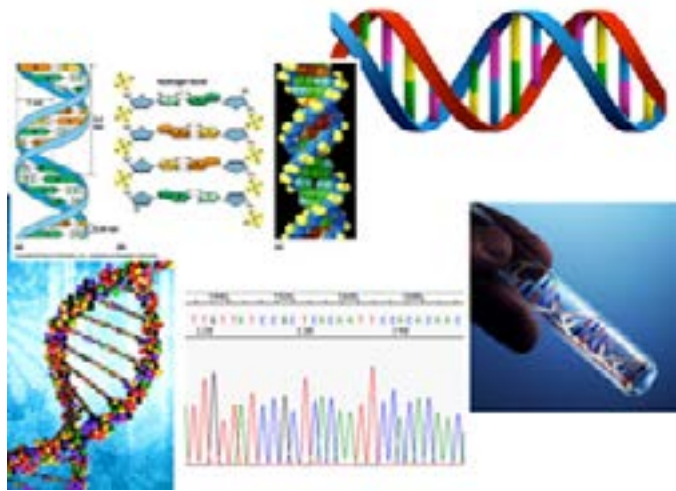
distribution of populations, once collecting methods were perfected, scuba diving became safer and more globally spread and dredging and trawling became rather standard practices in the search for specimens. A growing commercial interest around shells, spurred by an ever increasing number of collectors arising, especially in European countries, also helped to boost the collecting efforts.

Obviously, even such steps forward in the direction of a more accurate classification were not enough to unravel several problems brought along by lookalikes. The relationship between different species, possibly resulting in a higher systematic arrangement, was also rather enigmatic and for many years researchers and collectors alike had resorted to the use of the single genus *Conus* for all the species involved, even though most agreed that it was not a perfect solution. A few attempts at using subgenera or even at splitting the single genus into several, based on morphological characters of the shell, were unsuccessful, mainly because they were not erected on truly solid grounds.



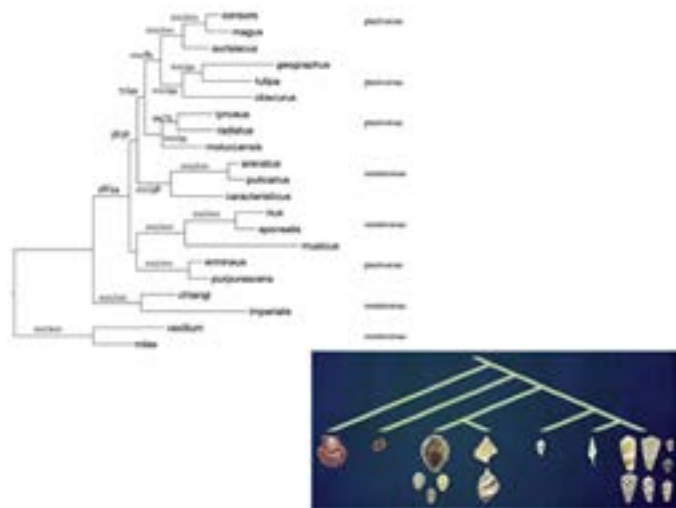
In those days, many of us often commented that if and when we had access to the study of the DNA for

each species, light would at last be shed on the many problems that faced taxonomists.



Such an idea remained in the realm of science-fiction for a few decades, but, lo and behold!, it is now more or less current practice in advanced research!

The point is: did it solve all problems we faced? Well, it certainly solved some problems, especially in the field of phylogenetics, the study of the evolutionary history and relationships among groups of organisms, such as species.



Nevertheless, many problems are still unsolved, mainly having to do with the concept of “species” itself, the existence of cryptic species, etc.

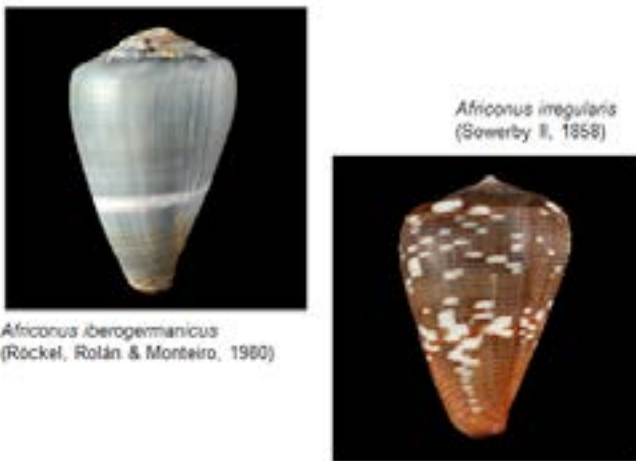


Much remains to learn, and yet we have certainly come far in the study of Cones.

The case of West African species, mainly those from the Cape Verde Islands – a subject that is particularly dear to my heart, as is well known – is indeed exemplary of this situation. Many new species names have been described in the last thirty-odd years, by a relatively large number of authors that include Dieter Röckel, Emilio Rolán, Manuel Tenorio, Carlos Afonso, etc. I also belong in this group, having co-authored a number of them.



Those first species we described were based almost exclusively in shell morphology, which explains why at least one major error crept into our efforts, namely the description of *Africonus iberogermanicus* (Röckel, Rolán & Monteiro, 1980), later recognized to be a colour form of *A. irregularis* (Sowerby II, 1858). And I mention this detail to underline that no one is above erring; I certainly am not.



Shortly afterwards, radular features and such were being taken into account and the more recent descriptions by Tenorio et al use morphometrics, statistics, and molecular analysis in addition to all other criteria previously available.

In face of the many advances achieved in the last couple of decades, it is much to be regretted that some authors still feel free to publish quite poor descriptions of new taxa, at the specific or subspecific level, based solely on morphological details of shells and without availing themselves of the technical means that modern science in fact provides.

The fact that describing a species does not in any way entail any kind of honour to the authors, is something that cannot be overstated. Quite the contrary, it represents a serious responsibility and authors must be prepared to argue in favour of the validity of their

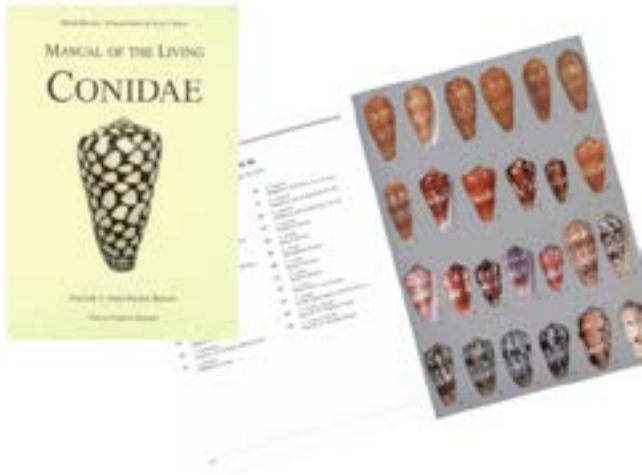
proposed taxa, beginning by presenting sound evidence for their choices. Nowadays, with all the accumulated knowledge on such matters, specific separation has been brought to much finer levels, thus demanding extra care and meticulous investigation before conclusions are reached. West African Cones are still not fully known, especially when it comes to Angolan populations.

In my collection, I have many specimens from that as yet poorly researched coast, that I am unable to positively identify, which means that, should I be inclined to do so, I could sit at my desk one evening and propose at least half a dozen new taxa, based on such specimens. Even if a few turned out to be synonyms, surely one or two would prove to be valid new species. I would simply leave to others the task of proving me wrong, surely a difficult one. But that would not be a scientific approach, it would not be a good method, in a word, it would not be serious.

To conclude this talk, perhaps already too long for your patience, what do Cone collectors still lack, what would I wish to have available in the near future?

Well, first of all, I would like to see a thorough discussion of the concept of “species”. What degree of variability is allowed for radular morphology, DNA sequencing and any other features and parameters, within any given species? How far apart – morphologically, genetically, behaviorally, etc. – must two populations be to warrant specific separation? And by the way, how exactly should we consider subspecies, in the whole picture?

Secondly, I would like to have a book – in one or more volumes, of course – presenting the entire range of variation for each species, something the well-known *Manual of the Living Conidae* planned to do, should the project not be abandoned after only one volume. It does not really matter if we agree or not with the authors’ decisions about which species are valid and which are not, provided all the known variations are illustrated and all information is there.



We do know that Éric Monnier, Loïc Limpalaër, Alain Robin and others are currently working on a comprehensive book on the group and Loïc will tell us about their progress later on. That will undoubtedly be something to look forward to and I, for one, am quite expectant.

Ladies and Gentlemen, I am sure that I have already spoken too much, but let me add just one thing.

I am often described – and often describe myself – as a compulsive collector. I collect shells, stamps, old picture postcards, antique belt buckles, Moorcroft pottery, Bank notes, etc. But there is one collection that I cherish above all others: I collect friends. And looking at the room in front of me, as well as remembering many who cannot be present, I realize that I have in fact a very valuable collection. Shells are just a pretext.

Thank you.

Tucker & Tenorio's wonderful *Illustrated Catalog of the Living Cone Shells* represented a step in the right direction, but being a catalog it fails to illustrate intraspecific variation. Nevertheless, it is full of information, allowing readers to make their own decisions.



Alan Kohn's *Conus of the Southeastern United States and Caribbean* shows a large number of specimens for each taxon discussed, but encompasses a restricted geographical area only.

# The Genus *Profundiconus*: Cone Snails from the Deep Sea

Manuel J. Tenorio

*This article is an adaptation of the talk presented by the author at the 4th International Cone Meeting, Brussels, October 2016.*

In 1956, Kuroda introduced *Profundiconus* as a subgenus of *Chelyconus* Mörch, 1852, a member of the family Conidae Fleming, 1822.(1)

*Chelyconus* (?) (*Profundiconus*) *profundorum* Kuroda, 1956 [sic] was originally designated as the type species.



*Chelyconus* (?) (*Profundiconus*) *profundorum* =  
*Profundiconus profundorum*  
Tosa Bay, Japan

*Profundiconus* included simply coloured, deep-water species of cone snails of a rather large size, but with an extremely thin and elongated shell. The presence of a rather large operculum with serrated outer margin was considered characteristic of the genus.(2) On the same paper, Kuroda also introduced the new species *Asprella* (?) (*Endemoconus*) *teramachii*, described as a “very large but thin shell with loosely coiled whorls, no species to be compared with this splendid shell...”.



*Asprella* (?) (*Endemoconus*) *teramachii* = *Profundiconus teramachii*  
Tosa Bay, Japan

This species was considered as the type for the subgenus *Lizaconus* da Motta, 1991, within the genus *Leptoconus* Swainson, 1849. It is now considered a typical *Profundiconus*, and possibly one of the most common species un the genus.

As of September 2016, WoRMS lists 26 records under *Profundiconus*, including one fossil species, *Profundiconus hennigi* Hendricks, 2015, of doubtful assignment to this genus.(3) To this list, *Profundiconus neotorquatus* (da Motta, 1984) and *Profundiconus tarava* (Rabiller & Richard, 2014) must be added (Table 1).

Species in genus *Profundiconus*, in chronological order

- P. tuberculosus* (Tomlin, 1937)
- P. pacificus* (Moolenbeek & Röckel, 1996)
- P. smirna* (Bartsch & Rehder, 1943)
- P. fraussenii* (Tenorio & Poppe, 2004)
- P. profundorum* (Kuroda, 1956)
- P. cakobau* (Moolenbeek, Röckel & Bouchet, 2008)
- P. teramachii* (Kuroda, 1956)
- P. stahlschmidti* Tenorio & Tucker, 2014
- P. emersoni* (Hanna, 1963)
- P. tarava* (Rabiller & Richard, 2014)
- P. scopulicola* Okutani, 1972
- P. hennigi* Hendricks, 2015 †
- P. lani* (Crandall, 1979)
- P. zardoyai* Tenorio, 2015
- P. dondani* (Kosuge, 1981)
- P. smirnoides* Tenorio, 2015
- P. kanakinus* (Richard, 1983)
- P. maribelae* Tenorio & Castelin, 2016
- P. neotorquatus* (da Motta, 1984)
- P. barazeri* Tenorio & Castelin, 2016
- P. ikedai* (Ninomiya, 1987)
- P. virginiae* Tenorio & Castelin, 2016
- P. jeanmartini* G. Raybaudi Massilia, 1992
- P. puillandrei* Tenorio & Castelin, 2016
- P. loyaltiensis* (Röckel & Moolenbeek, 1995)
- P. neocaledonicus* Tenorio & Castelin, 2016
- P. vaubani* (Röckel & Moolenbeek, 1995)
- P. limpalaeri* Tenorio & Monnier, 2016

Apart from the known extant species, the genus *Profundiconus* has a long fossil record ranging from the Cretaceous (*Profundiconus primitivus* (Collignon, 1949)) to the Pliocene (i.e., *Profundiconus yanuyanuensis* (Ladd, 1945)). None of the extant species of *Profundiconus* have been reported as fossils.(2)

The extant species included in the genus *Profundiconus* occur in the Indo-Pacific region except for the exceedingly rare *P. emersoni* (Hanna, 1963), which occurs in the East Pacific region and whose ascription

to the genus *Profundiconus* must still be considered provisional.

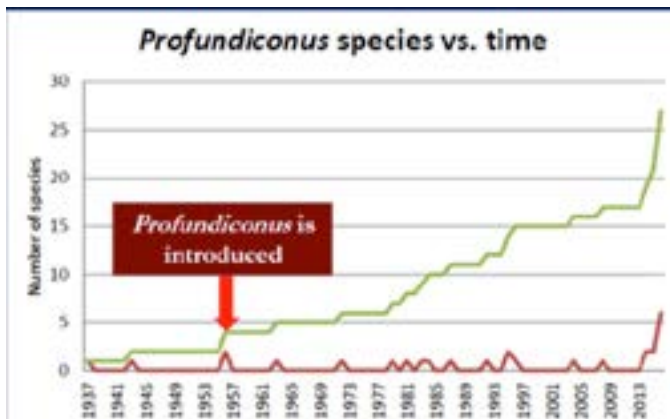
*P. emersoni* (Hanna, 1963)



Holotype  
Cabo San Lucas, Mexico



Off Isla Sta. Maria, Galapagos

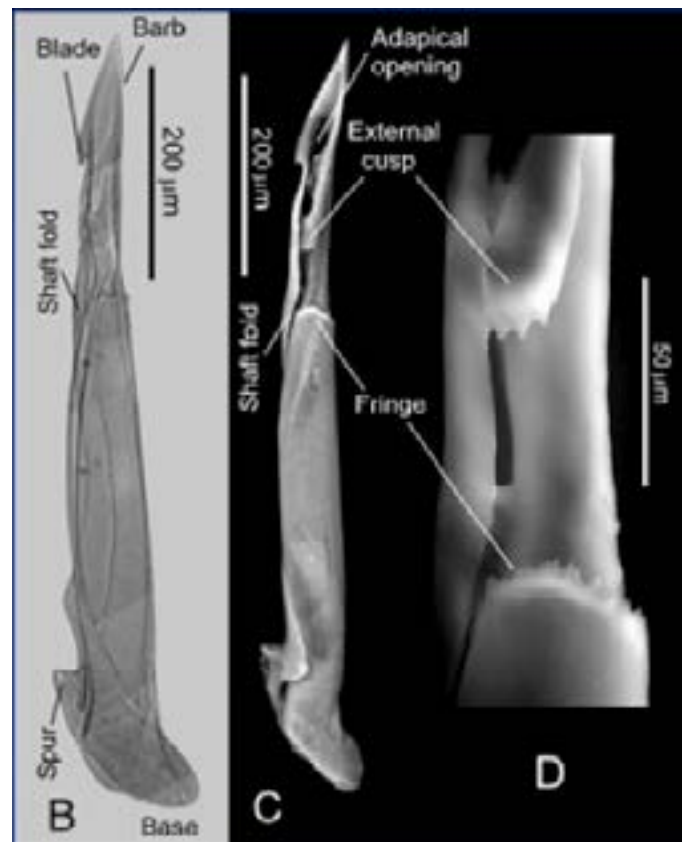


In the last 5 years, the number of known living species of *Profundiconus* has been increased from 16 to 28. This represents an increase of 75% in the total number of taxa existing in the genus and illustrates the potential for discovering new species of cone snails from the deep sea.

As their name indicates, species of *Profundiconus* normally live in deep to very deep water (100-1000 metres). *Profundiconus teramachii* has been found at depths of 1134 m (dead) and 977 m (live). However, not all *Profundiconus* are restricted to deep water.

They have conical to narrowly cylindrical shells, usually thin, very small to very large in size. The shoulder becomes rounded in outer whorls, although a ridge is present in some cases. A few cords are present on early whorls and become numerous and thinner in the outer whorls. Nodules obsolete early, anal notch shallow. The larval shell can be paucispiral or multispiral and the operculum is large and serrate.

The radula has a pointed blade and is moderate in length; serrations absent, external cusp present, often laterally expanded and with several small denticles. Barb, blade and external cusp arranged in three different planes. Fringe composed of closely spaced projections pointing towards apex located below waist. Anterior section of tooth shorter than posterior section. Shaft fold present, slanted base with large basal spur.



Radula of *P. vaubani* (MNHN)  
Norfolk Ridge, New Caledonia

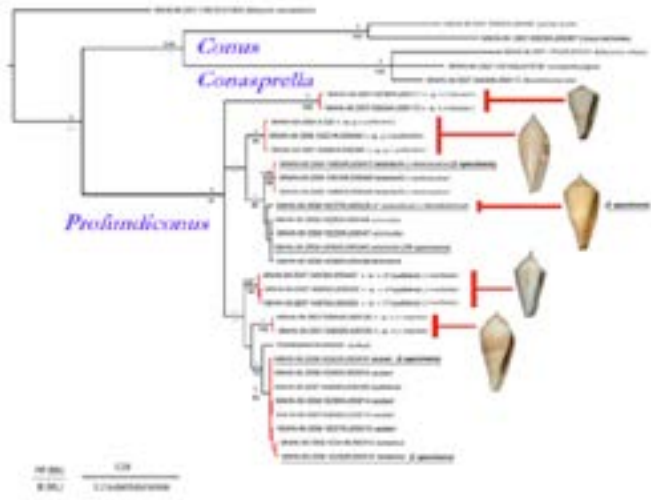
The diet of *Profundiconus* species is presumed vermivorous, with one confirmed record of cephalopod consumption (*P. smirnoides*).

Species in the genus *Profundiconus* form a monophyletic group which is sister to all the other cone snails.(4)

Likelihood phylogenetic tree of *Profundiconus* Kuroda, 1956 based on a subsample of the mitochondrial *cox1* dataset produced by Puillandre et al.(5)

This genus has been placed in the family Conilithidae Tucker & Tenorio, 2009 (type genus: *Conilithes* Swainson, 1840; type species: *C. antidiluvianus* (Bruguière, 1792), a Pliocene fossil species).(2) In order to reconcile taxonomy and phylogeny, the family





As per geographical distribution of *Profundiconus*, most species are Indo-Pacific, as mentioned above:

*Profundiconus* in the Indian Ocean:



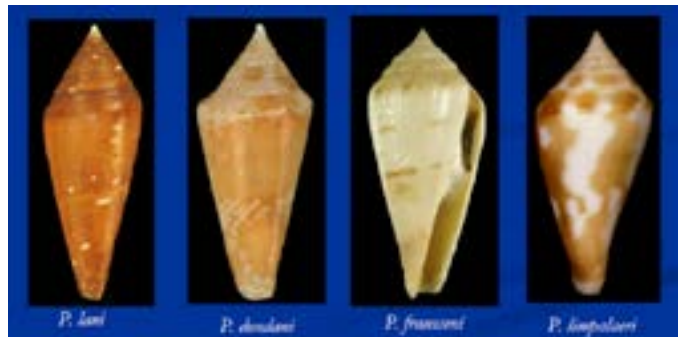
Conilithidae would need to be re-defined, restricted to the fossil genus *Conilithes* and *Profundiconus* if their morphological similarity is due to true synapomorphies, or alternatively *Profundiconus* would deserve its own family.(4)

*Profundiconus* from Japan:



The several species (including the type for the genus) originally described from Japan (Tosa Bay, Sagami Bay, etc.) have recently become extremely rare, due to changes in fishing techniques and damage to environment.

*Profundiconus* from the Philippines:



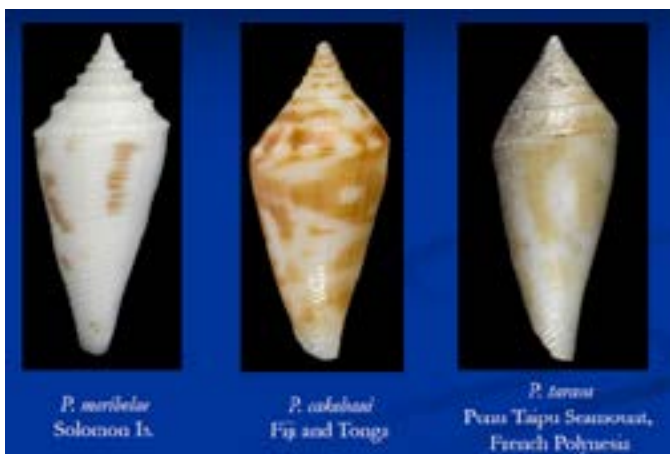
Left: *Conilithes antidiluvianus* (Pliocene), Barcelona, Spain  
 Right: *Profundiconus* cf. *teramachii*, Kermadec Ridge, New Zealand

The fishing techniques commonly used in the Philippines are apparently not suitable for capturing specimens of *Profundiconus*, which would explain why not many are known from the area. Most such specimens come from Balut Island and Aliguay.

Some *Profundiconus* from New Caledonia:



*Profundiconus* from other locations:



The inclusion in the genus *Profundiconus* of *P. pacificus* and *P. stablschmidti* must be considered only provisional. These species are characterized by elongated biconical shells and by the presence of a brown pattern with minute tent markings. They have a paucispiral protoconch, consistent with restricted ranges.

Other samples collected in the Solomon Islands, Papua New Guinea, Philippines, New Caledonia and even the Nazca Ridge (Chile) are currently under study and new *Profundiconus* species are clearly awaiting description.

## References

- (1) Kuroda T. New species of the Conidae (Gastropoda). *Venus* 1956, 9 (1): 1–16.
- (2) Tucker J.K. & Tenorio M.J. *Systematic Classification of Recent and Fossil Conoidean Gastropods, with Keys to the Genera of Cone Shells*. ConchBooks, Hackenheim, Germany, 2009.
- (3) WoRMS Editorial Board. 2016. World Register of Marine Species. Available from <http://www.marinespecies.org> [accessed 11 Sept. 2016]
- (4) Tenorio M.J. & Castelin M. Genus *Profundiconus* Kuroda, 1956 (Gastropoda, Conoidea): Morphological and molecular studies, with the description of five new species from the Solomon Islands and New Caledonia. *European Journal of Taxonomy* 2016, 173: 1–45. <http://dx.doi.org/10.5852/ejt.2016.173>
- (5) Puillandre N., Bouchet P., Duda Jr. T.F., Kaufenstein S., Kohn A.J., Olivera B.M., Watkins M. & Meyer C. Molecular phylogeny and evolution of the cone snails (Gastropoda, Conoidea). *Molecular Phylogenetics and Evolution* 2014, 78: 290–303. <http://dx.doi.org/10.1016/j.ympev.2014.05.023>

# Report from the Cone Conference - A Rare Batch of Cones

Gavin Malcolm

After a stimulating program of talks on Saturday at the Cone Collectors' conference in Brussels, a few participants gathered in the hotel over breakfast and coffee to discuss and exchange some specimens from their collections. The results were quite surprising, thanks to a box of Angolan specimens collected by Chris Schönherr. Chris has spent over twenty years living and working in Angola and collecting shells, mainly cones, in his leisure time.

Most cone collections will have specimens of species from within the Lautoconus group which are found in south and central Angola including species such as *C. africanus*, *C. variegatus*, *C. chytreus*, *C. micropunctatus* etc. The species in the group are well known for the variations in their colour pattern. Skills in art appreciation may be needed by a collector to match the colour pattern of a specimen to a typical design. Not only is the colour pattern variable, the shape can vary considerably.



The six specimens above comprise at least two recognised species. Specimens 1 (the type), 3, 5 all with different shapes are considered *C. micropunctatus*. Specimen 4 is

*C. lineopunctatus* (the type). Specimens 2 and 6 are a matter of judgement.

This variability of shell structure and colour pattern has led many authors to seek other features such as the radula as a means of separating the individual Angolan species.

So far, a limited number of specimens have been DNA tested. The challenge for anyone developing a DNA tree is to get specimens similar to the type and to analyse the radula. Otherwise lots of judgement must be used to allocate the correct species name to a specimen, prior to the DNA sequencing.

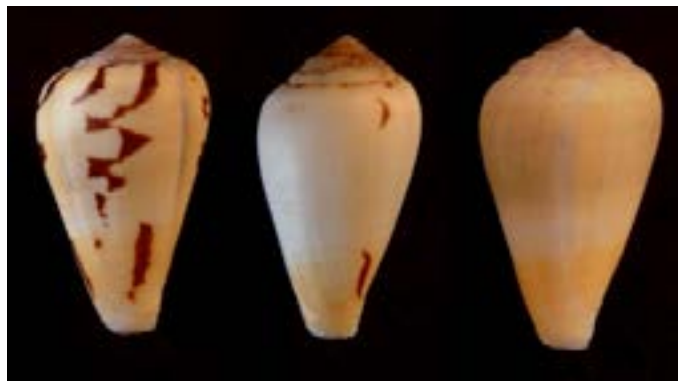


The three specimens, tested in the MNHN DNA set and considered to be *C. micropunctatus* or *C. lineopunctatus* are illustrated together in the middle with the 2 respective types in picture below.

All three specimens fit in the tree within a cluster of Angolan cones but all three were well segregated suggesting three separate species. As to whether their selection represents valid test specimens of *C. micropunctatus* or *C. lineopunctatus* is under review since, as an allocation, we now know it has at least one error.

Among the hundreds of specimens on the table in Brussels, it was a bag of cones, all sized between 30 and 40mm and collected in Equimina Bay, Angola which created most interest. All had been collected together, one specimen was readily identifiable as *C. trouaoi* by the group of six expert collectors round the table but the other specimens were a mystery. Since no one could

suggest what they were, Chris put forward the tentative proposal that perhaps the specimens were all *C. trovaii*. Below, the first cone is a specimen of typical *C. trovaii*, greyish blue with a purple patch in its aperture, white central band and a faint yellow orange wash. Its dark brown wavy axial flammules are found on many specimens of *C. trovaii*. All three specimens have a dark brown ribbon in the suture of the early whorls. The narrow second specimen has a white background with a broad orange band near its base and remnants of the brown axial flammules. The third specimen has the orange grey wash, more strongly coloured by a greyish tint in its upper half but no flammules.



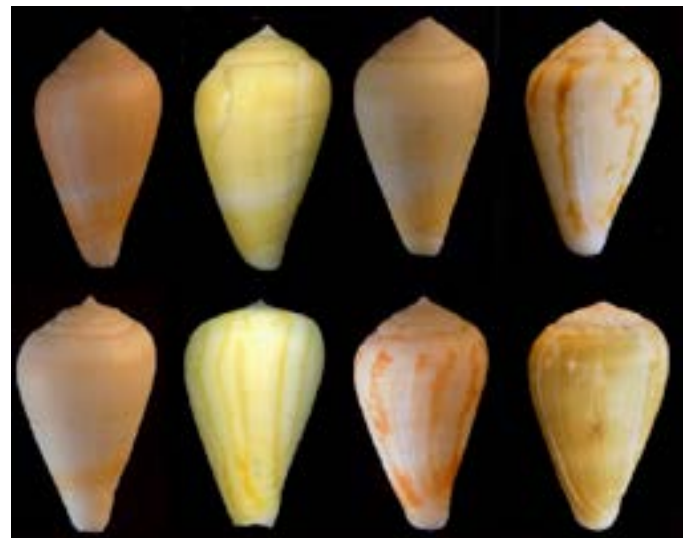
I think only a few collectors would assign the third specimen to *C. trovaii* as their first choice of label name.

However, the scale of mutation in Equimina Bay may be even greater.

The four additional specimens on the right lack the



purple patch in the aperture and the brown ribbon in the suture. The right specimen was briefly considered as an orange specimen of *C. carnalis*. If we accept that *C. trovaii* may have a white background with a yellow wash then specimens 4 & 5 may be related to *C. trovaii*. The type specimen of *C. tabidus* has a pattern of yellow axial flammules; however the shape and rounded shoulder of specimen 6 suggests it is not that species. Other suggestions for identification such as *C. filmeri*, *C. flavusalbus*, seem to have just slightly more merit than *C. trovaii*.



Here is a set of 8 of the unidentifiable specimens. All of the specimens are freshly collected adult specimens >30mm

It is unlikely that we have several new species,

Our hypotheses

1) *C. trovaoi* in Equimina Bay has begun to mutate but not yet reached the point where its new forms reproduce consistently in terms of colour and shape.

2) An undescribed species lives sympatrically with *C. trovaoi*. This species has a white base colour and highly variable orange yellow pattern of bands and axial lines.

We await the results of further planned collecting trips to Equimina Bay. Angolan cones may be difficult for the cone collector to identify but their variety of colour patterns and shapes generates lots of interest.

Thanks to Paul Kersten, Antonio Monteiro, and Manolo Tenorio for pictures of their specimens and to Chris Schönherr for collecting and offering some exciting specimens. The pictures of the MNHN DNA specimens are from the MNHN website.

## Recent Publications

### ***The Festivus* 48(3), August, 2016**

Petuch, Edward, Berschauer, David P. & Poremski, André, “Five New Species of *Jaspidiconus* Petuch, 2004 (Conilithidae: Conilithinae) from the Caribbean Molluscan Province”, pp. 172-178

This paper includes the descriptions of the following species:

*Jaspidiconus boriqua* Petuch, Berschauer & Poremski, 2016 (endemic to Puerto Rico)

Type locality: Off Playa Boqueron, Cabo Rojo, southwestern side of Puerto Rico. The holotype is deposited in the Department of Malacology, Los Angeles County Museum of Natural History, Los Angeles, California.

The new species was named after “the Boriquas, the Arawak-based name to which native Puerto Ricans refer to themselves; in reference to the new species being endemic to Puerto Rico. Named as a noun in apposition.”

*Jaspidiconus culebranus* Petuch, Berschauer & Poremski, 2016 (endemic to Culebra Island)

Type locality: Culebra Island, northern Caribbean Sea. The holotype is deposited in the Department of Malacology, Los Angeles County Museum of Natural History, Los Angeles, California.

The new species was named after the type locality Culebra Island (“Snake Island” in Spanish).

*Jaspidiconus janapatriceae* Petuch, Berschauer & Poremski, 2016 (endemic to Grand Cayman Island)

Type locality: Near George Town, Grand Cayman Island, eastern Caribbean Sea. The holotype is deposited in the Department of Malacology, Los Angeles County

Museum of Natural History, Los Angeles, California. The new species was named after “Jana Patricia Kratzsch of Giessen, Germany, noted underwater photographer and naturalist and life companion of Felix Lorenz.”

*Jaspidiconus marcusii* Petuch, Berschauer & Poremski, 2016 (endemic to southern Eleuthera Island, Bahamas)

Type locality: Off Tarpum Bay, Eleuthera Island, eastern Exuma Sound, Bahamas. The holotype is deposited in the Department of Malacology, Los Angeles County Museum of Natural History, Los Angeles, California.

The new species was named after “the renowned diver, shell collector, and shell dealer, Marcus Coltro, of São Paulo, Brazil and Miami, Florida, who discovered the new species in Tarpum Bay.”

*Jaspidiconus masinoi* Petuch, Berschauer & Poremski, 2016 (endemic to the Utila Cays, Honduras)

Type locality: Off Sanday Cay, Utila Cays, Honduras, Western Caribbean Sea. The holotype is deposited in the Department of Malacology, Los Angeles County Museum of Natural History, Los Angeles, California.

The new species was named after “Robert Masino of Naples, Florida, renowned diver, shell collector, tour guide, and amateur naturalist.”

Tucker, John K. “Some spotted cone shells (subfamily Conilithinae) from the East Pacific region”, pp. 179-182

Petuch, Edward & Berschauer, David P., “A New Species of *Miliariconus* Tucker and Tenorio, 2009 (Conidae: Puncticulinae) from the Northern Red Sea”, pp. 183-187

This paper includes the description of the following species:

*Miliariconus sinaiensis* Petuch and Berschauer, 2016 (endemic to the northern Red Sea, from the southern Gulf of Suez, along the entire Sinai Peninsula, and throughout the entire Gulf of Aqaba (Gulf of Elat))

Type locality: Northernmost Gulf of Aqaba (Gulf of Elat), Red Sea. The holotype is deposited in the Department of Malacology, Los Angeles County Museum of Natural History, Los Angeles, California. The new species was named after “the Sinai Peninsula of Egypt, which is the biogeographical center of distribution for this endemic cone shell.”

### ***The Festivus* 48(4), November, 2016**

Petuch, Edward J. & Berschauer, David P. “Six New Species of Gastropods (Fascioliidae, Conidae, and Conilithidae) from Brazil”, pp. 257-266

This paper includes the descriptions of the following species:

*Lamniconus petestimpsoni* Petuch and Berschauer, 2016

Type locality: East of Santana Island, Rio de Janeiro State, Brazil. The holotype is in the Zoological Museum of the University of São Paulo, São Paulo, Brazil.

The new species is named after “Peter G. Stimpson, M.D., of Tennessee, an avid amateur naturalist and malacologist.”

*Poremskiconus fonsecai* Petuch and Berschauer, 2016

Type locality: Off Rio do Fogo, Rio Grande do Norte State, Brazil. The holotype is in the Zoological Museum of the University of São Paulo, São Paulo, Brazil.

The new species is named after “Dr. Francisco Fonseca da Silva, of Lisbon, Portugal, a specialist in the Conidae, who, together with Dâmaso Monteiro, has conducted extensive research along northeastern Brazil.”

*Poremskiconus smoesi* Petuch and Berschauer, 2016

Type locality: Off Camocim, Ceará State, Brazil. The holotype is in the Zoological Museum of the University of São Paulo, São Paulo, Brazil.

The new species was named after “Dr. Frederic Smoes of Brussels, Belgium, a great admirer of the Conidae and a specialist in conid biodiversity.”

*Jaspidiconus josei* Petuch and Berschauer, 2016

Type locality: Off Itapoan, Bahia State, Brazil. The holotype is in the Zoological Museum of the University of São Paulo, São Paulo, Brazil.

The new species was named after “José Coltro, of São Paulo, Brazil and Miami, Florida, noted authority on the Conidae and Conilithidae of Brazil.”

### ***Malacologia* 92, July, 2016**

This number of the well-known Italian magazine includes the description of the following species:

*Pionoconus quasimagus* Bozzetti, 2016

Pilas Island, Mindanao, Southern Philippines. The holotype (59.5 x 30.7 mm) is in the MNHN, Paris.

The name of the species alludes to the similarity with *P. magus* (Linnaeus, 1758).

In the same number we find this other paper:

Veldsman, Stephan G., “Description of four new *Sciteconus* species (Gastropoda: Conidae): *S. ariejooste* nov. sp., *S. xhosa* nov. sp., *S. velliesi* nov. sp. & *S. naboensis* nov. sp. from the East Coast Province, South Africa”, pp. 26-35

This paper includes the descriptions of the following species:



*Sciteconus ariejooste* Veldsman, 2016

Type locality: Coffee Bay, Northern East Coast Sub-Province, East Coast Province, South Africa. The holotype is in the Natal Museum South Africa (NMSA).

The new species was named after “the late Arie Jooste, shell collector, cone specialist and the author’s mentor for many years.”

*Sciteconus xhosa* Veldsman, 2016

Type locality: Off Fish River Mouth, Southern East Coast Sub-Province, East Coast Province, South Africa. The holotype is in the Natal Museum South Africa (NMSA).

The new species was named after the Xhosa people of the Eastern Cape.

*Sciteconus velliesi* Veldsman, 2016

Type locality: Off East London, Central East Coast Sub-Province, East Coast Province, South Africa. The holotype is in the Natal Museum South Africa (NMSA).

The new species was named after “the author’s father, shell collector and researcher, and the author’s support for many years.”

*Sciteconus nahoonensis* Veldsman, 2016

Type locality: Off East London, Central East Coast Sub-Province, East Coast Province, South Africa. The holotype is in the Natal Museum South Africa (NMSA).

The new species was named after the Nahoon Reef at East London, Eastern Cape.

## ***Malacologia* 93, October, 2016**

This number of the well-known Italian magazine includes the description of the following species:

*Pionoconus vezzaroi* Cossignani, 2016

Aliguay Island, Mindanao, Southern Philippines. The holotype (63.5) is in the MMM, Cupra Marittima. The new species is named after Jean Pierre Vezzaro, who supplied the study material.

## ***Xenophora* Taxonomy 12, July, 2016**

Tenorio, Manuel J. & Monnier, Éric, “A new deep water species from the Philippines: *Profundiconus limpalaeri* sp. nov. (Gastropoda, Conilithidae)”, pp. 44-51

This paper includes the description of the following species:

*Profundiconus limpalaeri* Tenorio & Monnier, 2016

The type locality is Balut Island, Southern Mindanao, Philippines. The holotype is in the MNHN, Paris

## ***Xenophora* Taxonomy 13, October, 2016**

Monnier, Éric & Limpalaër, Loïc, “Revision of the *Dauciconus daucus* complex (Gastropoda: Conidae). Description of two new species: *Dauciconus jacquescolombi* n. sp. from Martinique and *Dauciconus massemini* n. sp. from French Guyana”, pp. 6-37

This paper includes the description of the following species:

*Dauciconus jacquescolombi* Monnier & Limpalaër, 2016  
*Dauciconus massemini* Monnier & Limpalaër, 2016

The holotypes are in the MNHN, Paris

***Vietnamese New Mollusks, Thach, Nguyen Ngoc, 48HrBooks Company, 2016***

In this book, the following species are described:

*Kioconus alrobini* Thach, 2016

Type locality: Off Southeast of Nha Trang area. Khánh Hòa Province (Central Vietnam). The holotype is in the MNHN, Paris.

The new species was named after “Alain Robin of France for his interest in Vietnamese cones.”

*Vituliconus alfi* Thach, 2016

Type locality: Off Phan Rang area, Ninh Thuận Province (Central Vietnam). The holotype is in the Naturalis Center of Biodiversity, Leiden, The Netherlands.

The new species was named after “Dr. Axel Alf of Germany for his interest in Vietnamese shells.”

***Basteria Volume 80 (1-3), October, 2016***

Tenorio, Manuel J., “*Profundiconus robmoolenbeeki* spec. nov.: A new deep water conoidean gastropod from the Solomon Islands (Gastropoda, Conilithidae)”, pp. 89-94

This paper consists in the description of *Profundiconus robmoolenbeeki* Tenorio, 2016

The type locality is N. Malaita, Solomon Islands and the holotype is in the MNHN, Paris.

The new species is named “after Dr. Robert Moolenbeek, well-known Dutch malacologist, in recognition for his many and important contributions of a lifetime devoted to the study of molluscs with emphasis on cone snails, including the description of several species of *Profundiconus*.”

# 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!**

