



*THE
CONE
COLLECTOR*

#6 - April 2008



THE CONE COLLECTOR

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On the Cover:

Conus purpurascens Sowerby, 1833 found hunched in a rocky crevas off the Pacific coast of Costa Rica. Photo courtesy of Afonso Jório, Guarapari, Brazil.

Note From the Editor

The Swedish naturalist Carl Linnaeus – also known as Carl von Linné after his ennoblement – was, as we all know, the founder of the scheme of nomenclature still in use today for the animal kingdom and is sometimes referred to as the "father of modern taxonomy"; by the way, he is also considered as one of the fathers of modern ecology.

Linnaeus, a botanist, physician and zoologist, was born in southern Sweden on the 13th May, 1707 and lived to be almost seventy one years old, having died in Uppsala on the 10th January 1778, having been buried in the local cathedral. At the time of his death his name was known throughout Europe, where he was acclaimed as one of the greatest scientists of his time.

From 1735 to 1738 he lived away from his native Sweden, in Netherlands and in England, having met many important naturalists such as Albertus Seba, Jan Frederik Gronovius, Hans Sloane, etc. It was precisely in the Netherlands, in 1735, that the first edition of *Systema Naturae* was printed, a mere eleven pages long. Successive editions enlarged it progressively and by the time it reached its 10th edition, *Systema Naturae* classified no less than 4,400 species of animals and 7,700 species of plants, consistently using the now familiar binomial nomenclature.

In the current year of 2008, the 10th edition of *Systema Naturae* celebrates its 250th anniversary and it can be said that it is just as actual and important today as it was then.

It seems only fit that in celebration we dedicate issue number 6 of *The Cone Collector* do the memory of Carl Linnaeus and of his unsurpassed work.

António Monteiro

Who's Who in Cones: Fernando Serafim

Among shell collectors you will find all kinds of professional occupations, and that includes teachers, engineers, doctors, biologists, businessmen, even doormen! But an opera singer must be a rarity if not an isolated case. Well, that's me!

I was born in Alcobaça, Portugal, slightly longer ago than I would actually like to be reminded of and have soon fallen in love with music, which I studied heartily, steadily building a career encompassing opera and concerts, with countless performances both in Portugal and abroad. My professional occupation as a singer – I belonged to the Portuguese National Opera company at S. Carlos Theatre for almost twenty years and also to the resident opera company at the Trindade Theatre – and as a music and singing teacher, took me to many places, in four continents, from China to America and Africa, besides Europe; my travels included Goa, India (the old Portuguese India), where the accompanying photo was taken.

At the same time, I have also been in love with the sea from childhood. As a young boy, I used to spend every summer with my parents in the seaside village of Nazaré.

Much as it attracted me, I must confess to always having a bit intimidated by the sea and that can perhaps explain why I developed a wish to know more about the deep – even though I was never able to ride a submarine...

Like so many beach goers, I started collecting shells in my youth, albeit knowing nothing of families and species. One day, however, while travelling in Italy, I saw a small collection of shells in a shop window and was instantly fascinated by the variety of shapes and colours and for the glowing beauty of several of the specimens. I

bought a few and upon returning to Portugal I began to make some diligences that would lead me to meet other collectors and to obtain more shells. I ended up in the Centro Português de Actividades Subaquáticas (CPAS), where I found divers and important Portuguese shell collectors, such as Luís Ambar, Luís Burnay, Amarílio Ramalho, Herculano Trovão, Guilherme Soares and Ilídio Félix Alves; later on I met many others who became good friends, including António Monteiro, a fine collector of Cones, who has helped me along, and also Paulo Granja, co-owner of Deep'n Reef Shells, who also has contributed decisively to the growth of my collection.



At first – as is so often the case with most collectors – I aimed to put together a general collection, but I soon realized that it would be a cyclopean task, one that I would hardly be able to see through. So, I decided to concentrate on Cones, of which I currently have a vast collection that includes many wonderful specimens.

António Monteiro's idea of creating a newsletter entirely dedicated to Cones could not fail to appeal to me, as it is an instructive, educational, informative and pleasant publication. I am sure that all Cone collectors are thankful to him for the initiative.

Letters to the Editor

From Bill Fenzen:

Another splendid issue! The layout by André Poremski is excellent. I have attached some information and questions on a few of the articles as follows:

- a) About the *Conus kohni* McLean & Nybakken, 1979 article:
- Is this really a threatened species? The listing by IUCN on the web does not provide the reason their assessor (Dr. Y. Finet) listed the species. It could be that Dr. Finet has been able to dredge in areas where the Velero III found specimens of this species in the 1930s, and this recent dredging was unsuccessful in finding new material. If known areas where *C. kohni* was found were sampled again later, is there enough data to demonstrate that the species is threatened? Is this data published?
 - The reference to Filmer on the first page should be 2001, not 2000. It is correct in the references section at the end of the paper.
 - The only uncertainty in the literature now seems to be in distinguishing *C. xanthicus* from *C. kohni*. Why include *C. fergusonii* in this analysis at all? McLean & Nybakken did a splendid job in 1979 of separating *C. fergusonii* from both *C. kohni* and *C. xanthicus*.
 - The statistical analysis confirms the difference between *C. fergusonii* and both *C. xanthicus* and *C. kohni*. It does not help differentiate *C. xanthicus* from *C. kohni*. Why include it if the only confusion in literature is between *C. xanthicus* and *C. kohni*?
 - The shell in figure 6 (labeled in the caption as *C. xanthicus*) seems to have the same type spire

whorls as *C. kohni* specimens illustrated (scalariform and slightly concave whorl tops). Early spire whorls in my five specimens of *C. xanthicus* vary in outline. Could this be a variable pair of characteristics?

- Sizes of opercula vary in other species. How many opercula were measured to conclude *C. xanthicus* and *C. kohni* always have differently sized opercula?
 - Figures in the article do not show the fringing of the *C. xanthicus* periostracum.
 - Figure references in the discussion of radula differences appear to be wrong. It looks like *C. emarginatus* figures are (7, 8, D), not (1, 2, D). *C. arcuatus* figures appear to be (9-11, E) not (3-5, E).
 - Differences in barbs and serration are given as radula differences that indicate *C. xanthicus* and *C. kohni* are different species. How many radular teeth of each species were studied to confirm this? Radula figures B and C are both supposed to be radula teeth of *C. xanthicus*. Figure B does not appear to have any barbs, yet figure C appears to have one barb. Could this be a variable characteristic?
- b) Comment on “*Conus queketti* E. A. Smith, 1906 What is it?”

At the Conchologists of America Convention a few years ago, I first met Mike Hart. This is that same Mike Hart who has written on finding *Conus adamsonii* in Hawaiian Shell News. He had for sale about four specimens of *Conus queketti* he had collected himself diving off South Africa. Each shell was in excellent condition and had its operculum mounted on cotton in the aperture. I was only able to afford one specimen. Mike

said he had about four more specimens at home (which was New Zealand at the time). I have lost touch with Mike, but if someone else knows how to contact him, he may be able to remember details about the habitat and animal.

It will be interesting to see how the Iconography (due out this year) on the South African Conidae will treat this species name.

- c) With respect to the differences between *Conus nobilis* Linnaeus, 1758 and *Conus cordigera* Sowerby, 1866

The following information may help separate them:

C. nobilis: Localized to off Sumatra or Java in Indonesia. Apex is pink. Protoconch differs from *C. cordigera* in sculpture and size. See Finet and Cailliez (1993). Shoulder is angular, not rounded. White heart-shaped markings on body whorl have a dark-brown "border" on the front side.

C. cordigera: Localized to the Philippines (mainly Palawan) and North Borneo. I have seen specimens alleged to come from further south in Indonesia, but this needs confirmation. Apex is white (never pink). Protoconch differs from *C. nobilis* in sculpture and size. See Finet and Cailliez (1993). Shoulder is rounded. White heart-shaped markings on body whorl do not have a dark-brown "border" on the front side.

The following references pertain:

Finet, Y. & Cailliez, J. C.. 1993.

The type of *Conus nobilis* Linnaeus, 1758: a specimen from Java. *La Conchiglia*, Year XXV (January/March 1993), N. 266, pp. 18-28.

Van Benthem Jutting, W. S. S. & Van Regteren Altena, C. O. 1965

I believe the specimens illustrating *C. nobilis* in the TCC #5 article are *C. cordigera*, not *C. nobilis*. Images of the *C. nobilis* primary type (both dorsal and ventral views) are available on Alan Kohn's Conus Biodiversity Website.

Mike Filmer replies to some of Bill's questions:

Dear Bill,

Thanks for the copy of your message.

- a) I agree the Tucker article is not enough to recognise *C. kobni* as a distinct species but still I do not know how to separate *kobni* from *xanthicus* and as I do not have (I think) specimens of the former cone but only three specimens of *C. xanthicus*, I am quite uncertain about this matter.
- c) I have 21 specimens of *C. nobilis* from India, the Andamans and Indonesia. Apart from the well known forms – *victor* & *skinneri* (are they the same form or two forms?) – I have from Java two quite different colour forms, one very pale form with few largish white tent marks from Pulau Seribu (the Thousand Islands) off Jakarta and another very dark form with numerous tiny white tent marks from Flores.

Then I have 13 specimens of *C. cordigera* all from the Philippines of which one is subspecies (or forma?) *bitleri*. I also have two *cordigera bitleri* from Tawau, Sabah, Malaysia. I believe that the real *nobilis* does not occur in the Philippines and note that there is a gap between the Southern Philippines/Sabah and the occurrence of *nobilis* in Flores – I do not know of any specimens of either species occurring in the Celebes or the Moluccas Islands groups.

Thus it may be that *C. cordigera* is a geographic subspecies of *C. nobilis*? Incidentally I cannot accept the status of *C. renatae* (I have specimens from the Andaman which are identical to those from Indonesia) or *C. friedae* (I have specimens from South India which are also identical to those from Indonesia). But I agree more research is needed into this complex. In António's article the two left hand lower specimens are very like my *nobilis* from Palua Seribu off Jakarta but the others look like *C. cordigera*!

Bill Fenzan replies Mike:

a) I received a copy of John Tucker's paper from Hank Cheney when out in Santa Barbara photographing the holotype of *C. kohni* (and virtually every other specimen of *C. kohni* known in LACM) last month. I have also had the McLean & Nybakken paper describing this species since 1979 (got another copy from Jim McLean last month, too) and I still do not feel confident that I could separate this species from *C. xanthicus*. To make matters worse, I have a couple of *C. poormani* from Panama (West side) that have a lot of dark coloring that makes them look very close to some specimens of *C. xanthicus*. I wonder if Yves Finet has sampled the collecting areas where *C. kohni* was originally found? He may have some insight that would help clear up the picture. By the way, I have ordered (but not yet received) the general account of the Velero III voyages for the Allan Hancock Foundation. I scanned the books briefly at LACM and they promise to be very interesting accounts of the adventures encountered dredging for molluscs in out-of-the-way places. I was surprised at how inexpensive the books are given they were published during World War II

c) I am not aware of a follow-up study to the Finet & Cailleux paper cited in my e-mail attach-

ment. There may be more to say on the matter, but the few people who have lots of specimens also have other work in progress. For now, it seems like RKK is the identification standard for all Indo-Pacific cones. They seem to be following Finet & Cailleux in separating *C. n. renatae* and *C. n. friedae* as subspecies. Note that Cailleux described *C. n. renatae* in the following issue of *La Conchiglia*, not the article I cited. I suspect it was a continuation of the same effort, though. I do not have *C. n. renatae*, nor do I have a specimen of *C. n. friedae*, even though I have tried hard to get them. What puzzles me are specimens that fit the description of *C. cordigera* that show up with data specifying a collection locality in Southern Indonesia. It may be that this is just evidence of dealers exchanging materials and not any kind of 'biological' range extension.

At the Conchologists of America convention this summer, I got a specimen of *C. nobilis victor* with no articulated bands of dark brown spots around the body whorl. I had never seen a shell like this, but Carl Erlich (who has collected many *C. n. victor*) says they are rare, but 'findable' if you hunt enough. He may have enough specimens with accurate locality data to support a credible statistical analysis.

The Editor replies:

Thanks to both Bill and Mike! This is exactly the kind of discussion that will help everybody and I am glad to welcome it into our pages.

Concerning *C. queketti*, Manuel Jimenez and myself plan to treat it as a form of *C. imperialis* in the forthcoming section of the Iconography on South African Cones.

To complete his information on the *nobilis/cordigera* problem, Bill Fenzan also sent the follow-

ing photo and note:

This photo illustrates my understanding of the different taxa that collectors are likely to encounter when classifying shells in the *Conus nobilis* complex.

I am referring to the complex using the name *nobilis* because it is the oldest. The most commonly encountered shell in the whole group is *C. cordigera*. The *C. nobilis* illustrated in the photo is the only specimen I have been able to acquire in almost 40 years of collecting.

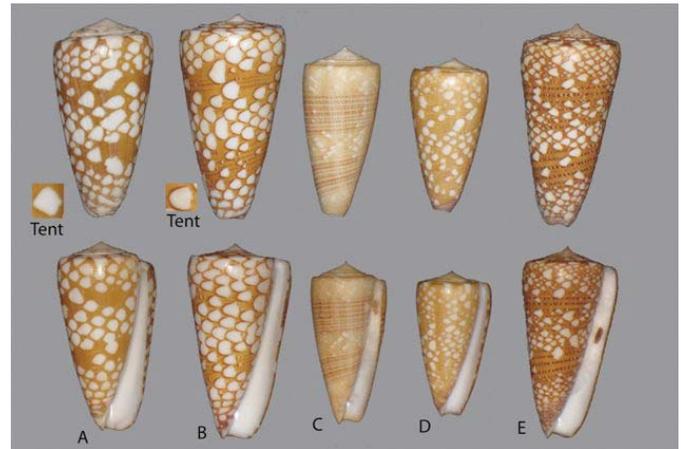
I have not illustrated *C. nobilis renateae* Cailliez, 1993 (from the Andaman Is.), nor *C. nobilis friedae* da Motta, 1991 for several reasons. First, I do not have a specimen of either one. Second, these taxa are much rarer than the ones illustrated, so less likely to be encountered. Third, reports of typical shells of *C. nobilis* noted by Mike Filmer in India suggests these named subspecies need more study to confirm their status.

Conus marchionatus Hinds, 1843 from the central Pacific is also excluded. It is not commonly confused with the shells illustrated and it is well covered in the Manuel of the Living Conidae.

All of these shells are in my collection.

From Paul Callomon:

The name *Conus kawamurai* Habe, 1962 (not 1961; see Callomon & Petit, 2004, Venus supplement 3: 37 for the history of the name) continues to be used by many dealers and collectors. However, in a short paper in 2000 (Venus 59 (1): 59-60) I showed reasonable evidence that *Conus aratispira* Pilsbry, 1905 is an earlier name for this species. Yoshiba and Nobuhara (note



Figures A-E (Dorsal and ventral views of the same shell)

- A. *Conus cordigera* Sowerby ii, 1866. Balbac, Palawan I., Philippine Is. Dimensions: 47.5mm x 25.0mm (Inset shows detail of body whorl tent without dark brown border).
- B. *Conus nobilis* Linnaeus, 1758. Palau Bais I. Sumatra, Indonesia. Dimensions: 49.0mm x 26.2mm (Inset shows detail of body whorl tent with dark brown border).
- C. *Conus nobilis victor* Broderip, 1842. Flores Strait, Indonesia. Leg. Renate Wittig Skinner. Dimensions: 40.8mm x 19.1mm.
- D. *Conus nobilis victor* Broderip, 1842. Flores I., Indonesia. Variant form without articulated brown bands around body whorl. Dimensions: 36.8mm x 19.3mm.
- E. *Conus nobilis skinneri* da Motta, 1982. Bali I., Indonesia. Typical specimen. Dimensions: 48.8mm x 24.5mm.

that you cite their names the wrong way round) published a 1997 paper in the Chiribotan:

Yoshiba, S. & Nobuhara, T. 1997.
Flourish and decline of populations of *Leptoconus kawamurai* Habe (Gastropoda: Conidae). *Chiribotan* 28 (1): 1-7, pls. 1-2.

They had originally intended to cite '*C. kawamurai*' (= *C. aratispira*) as extinct, but Dr Yoshiba

asked me about this at the Malacological Society of Japan meeting in 1996. As it happened, the preceding summer I had been shown a live-taken specimen by a collector on Amami Island. I put the owner in touch with Dr Yoshiba, and the specimen was sent up to him for analysis. My pictures of it appeared in the *Chiribotan* paper as figure 5, and Dr Yoshiba demonstrated via various techniques (ibid. figs. 6, 7) that it was indeed live-taken. In 1996 I also dredged some fragments from the same bay on Amami Island whence the live specimen had come. These fragments were fresh, with traces of periostracum in the suture, and I thus believe the species to still be alive in that bay.

In summary, therefore: *C. aratispira* is an earlier name for *C. kawamurai*, and yes, it is still alive. Its range nowadays is apparently much smaller than it once was. Fossil and sand-pumped specimens have been taken from Kikai Island and south off Uken Island in the Amami Group, and from Itoman Bay on Okinawa Island, some 200 km to the south.

The Editor replies:

Thanks to Paul Callomon (Collections Manager Malacology, Invertebrate Paleontology and General Invertebrates Department of Malacology Academy of Natural Sciences, Philadelphia) for his explanations, which I had solicited upon advice from Bill Fenzan, following the article on *C. kawamurai* in TCC # 5.

From Paul Kersten:

The picture of the living *Conus darkini* specimen [in the last issue of TCC] makes me wonder why it did not explode after the dredge. The internal pressure to cope with the water pressure at these great depths would lead one to expect the snail to die fast in the lower water levels or on board.

The Editor replies:

Does anybody have an explanation for that?

From Frits Fontein:

Thank you very much for the beautiful TCC # 5. Please allow me some remarks. My draft states: «This must be the most praised "*dominicanus*"». The word "*dominicanus*" has been used by me on purpose. It refers to the situation in early 1964. Apart from the AMNH who did not believe, even after having seen some specimens, people like Phillip Clover, Al Deynzer, Helen Boswell, Fernando Dayrit and many others all confirmed that I had hit the jackpot with this "*dominicanus*".

One of the reasons why I neglected the shell-world people for a long period of time may be that with the proof on the *aurantius* (until then *dominicanus*) in my hands in May 1964, it took until 1968 before same had been confirmed by the reprint of Marsh & Rippingale, as follows: «the type location of *aurantius* is an obvious error as it is now established that this is an Atlantic species with a restricted range adjacent to the Netherlands Antilles». As far as I know there was one earlier good article about *aurantius* on the cover page of HSN Vol. XV No. 12, dated December 1967.

Finally, in the penultimate paragraph of my article, the word "annum" has been changed into "autumn."

The Editor replies:

Dear Frits, I am sorry for the mistakes in the transcription of your paper. Everything is now corrected. Thanks!

Scarce Conidae of South East Queensland

Allan Limpus

Conus minnamurra Garrard, 1961

As stated by Jon Singleton in his article in Australian Corner in TCC #4, this species has always been considered very scarce and most of the early specimens were dead trawled. Since their discovery in the early 1960's until the 1970's live taken specimens were quite rare and few were taken off Cape Moreton in S/E Queensland.

However during the trawling operations off the S/E Swain Reefs during the 1990's a new colony was discovered which yielded a new variation, but still in limited numbers. These specimens have a more domed spire and are larger, with the largest in my collection being 42.1mm but dead taken. Only one albino specimen has been taken to my knowledge. The specimens featured here from the Swain Reefs were taken in the 1994-1999 operations but no fresh specimens have been found since.

Recently there have been limited trawlings done north of Cape Moreton and a very limited number of specimens have been found of which I obtained two live specimens.

Conus wallangra Garrard, 1961

Since their description by Garrard, this species has been very scarce, with live-taken specimens being rare. The majority of specimens taken during the 1960-1970 period appear in collections as dead taken. However recent trawling operations have brought up a very limited number, amongst which were several live specimens with most unusual colourations.

The specimens featured were taken from north of Cape Moreton between 2004 and 2006.

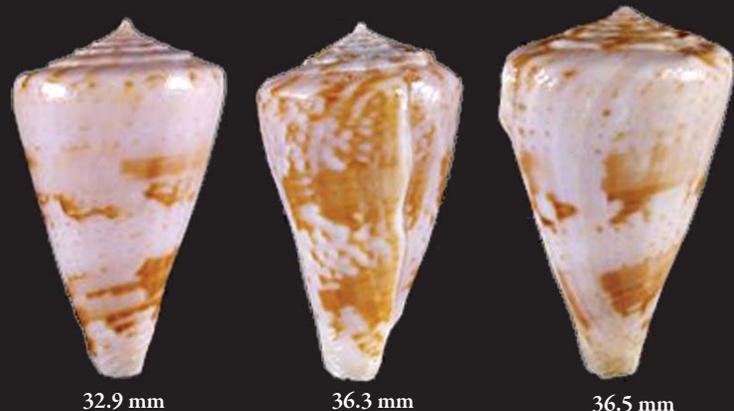
Conus advertex Garrard, 1961

Of the three species shown here, this was always the most commonly collected one during the trawling operations of the 1960's and 1970's. However live taken specimens were always rather scarce. Again recent trawling operations off Cape Moreton have yielded a limited number of specimens but mostly dead. Here are two of the live-taken specimens which I was able to obtain amongst the many dead specimens.

Conus minnamurra Garrard 1961



Conus wallangra Garrard 1961



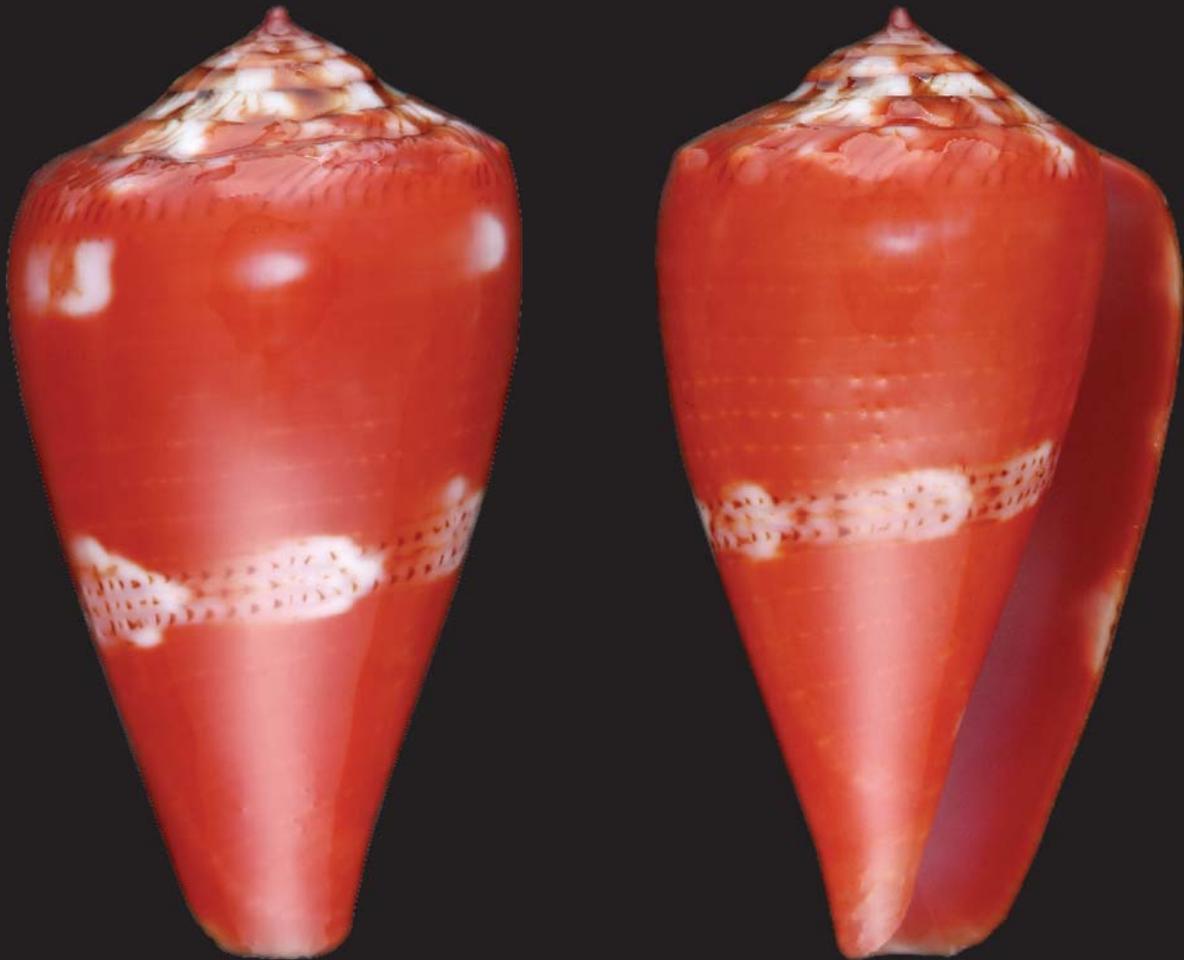
Conus advertex Garrard 1961



An Exceptional Specimen

Coll. André Poremski

Undoubtably one of the most beautiful and elusive of the reef-dwelling cones that live throughout the Caribbean as well as offshore Brazil are the members of the *Conus cardinalis* Hwass, 1792 complex. One species (or race) that is found in many *Conus* collections is *Conus kulkulcan* Petuch, 1980. *C. kulkulcan* is highly variable in color, ranging from dark brown to bright yellow, but the classic "*cardinalis*" color is...scarlet red! I recently obtained a wonderful fresh-collected specimen from the north coast of Roatan Island, Honduras. This beauty was collected at 18 metres by night dive and measures 27.7 mm in height. The quality is perfect!



Australian Corner

Jon F. Singleton

Cone News from Australia - 14

There are several species of *Conus* which are generally considered to be New Caledonian species, but which are occasionally found in Australian waters. One such species is *Conus swainsoni*, named by Estival & von Cosel, 1986.

The first record of this cone from Australia was from off Heron Island, Queensland, some 15 years ago. A museum research diver collected a live specimen in 20 metres depth. This was a slightly sub-adult specimen 32 mm in length, a brown dorsum but the ventral still all white except for the lavender anterior.

A second live specimen was collected a few years later off an intertidal sand bar at Cello Reef, on the N. E. corner of the Swain Reefs complex. This was a larger 43 mm specimen and fully mature.

Some years ago I was privileged to view the cone collection held within the Australian Museum at Sydney. A draw of mixed cones from the Kenn Reef, one of the outer Coral Sea Territories, contained several specimens of *C. swainsoni*. These were dead and slightly faded cones. They were found on the reef top but were likely thrown up by storm activity.

The illustrations show the Heron Island specimen at fig. 1, Cello Reef at fig. 2, and a dead specimen from the Frederick Reef.



Cone News from Australia - 15

I expect most collectors have more than a few specimens of *C. voluminalis* in their cabinets. The straight-sided, sharp shoulder and acute spire make it an elegant looking shell, and there are a multitude of colour and pattern variations. Most of the specimens on the market are from the Philippines, Indonesia and Thailand, areas which produce the colourful specimens.

A much lesser known population occurs along the coast of Western Australia. However, it is a seldom collected species from this location, and the shells lack the colourful patterns of their northern W. Pacific colonies.

This species extends as far south as the Abrolhos Islands: the two larger uniform brown and pale pink specimens were live collected by a diver from the islands. The two smaller specimens are from the N. W. coast, Port Hedland and Cassini Island. These four range from 28 to 42 mm in length.



As yet, there are no records of *C. voluminalis* from the Northern Territories or off the Queensland coast.

Cone News from Australia - 16

Most of the *Conus lynceus* now offered on the collectors' market are from the Philippines. The standard form is well known, a beige body with dark brown spotting and two broken bands. The Philippines also produces the odd variations such as unicoloured white and greyish yellows.

Many years ago, *C. lynceus* was also available from Australian waters, but sadly it has not surfaced for several years since fishing boats moved to new areas. The range of *lynceus* seemed to be limited to a region off the Queensland coast, between Townsville and Bowen. Although a few odd specimens have been hand collected in coastal shallow water, the main source has always been from fishing trawlers operating around the 40 metres depth, from Townsville and to the south.



The Australian *C. lynceus* are usually smaller in size than from other countries, and paler in colour. Most are a golden brown and have varied patterns, and the standard dark brown form is rarely seen amongst the local form.

The specimens illustrated range in length from 53 to 59 mm and all were trawled south-east of Townsville.

Cone News from Australia - 17

Within the 1995 Cone Manual, the stated range of *Conus comatosus* includes N. W. Australia. This was a surprise to me, as having resided in the N. W. for some 20 years I had not heard of this species from Australian waters.

I now know this was incorrect, but likely no fault of the authors. In the mid 1980s the West Australia Museum sent a parcel of deep water cones which had been dredged north of Port Hedland to an overseas museum for identification. This material was finally returned to the W. A. M. some ten years later, and I was privileged

to view this material. Amongst the cones was one fine specimen of *C. comatosus* and likely the source for the stated locality given in the Cone Manual. However, on checking the location information with each specimen, one odd fact was noticeable. Whereas all the other cones had a data slip stating depth, and a distance and compass bearing from Port Hedland, the *comatosus* was the exception, having just a nautical grid reference, which when plotted was within the Aru Island Group, Indonesia. So it seems certain to me that the *comatosus* was accidentally mixed in with the N. W. material, and was not an Australian specimen.

However, there is a record of a *C. comatosus* from Australian waters which was unknown to me at that time. A fresh dead 48 mm × 20 mm specimen was trawled from 150 metres depth east of Mooloolaba, which is 90 kilometres north of Brisbane, Queensland. The trawler skipper had this specimen in his collection for many years and kindly gave it to me some ten years ago.

Reference:

1995. Röckel, D., Korn, W. & Kohn, A. J.
Manual of the Living Conidae



New Publications

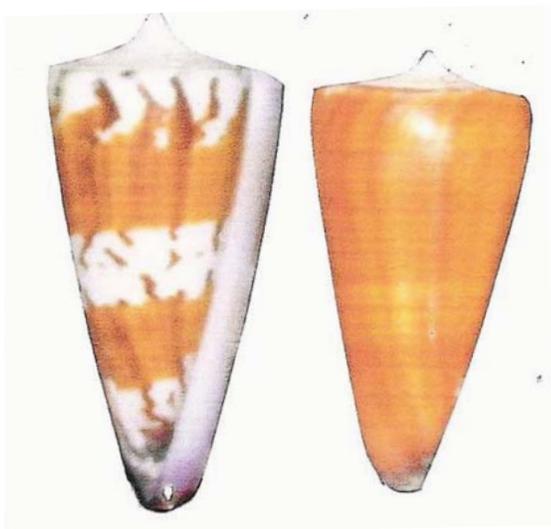
Cone News from Australia - 16

For 200 years, *Conus generalis* and *maldivus* were considered one and the same species, and it has only been in more recent years that collectors have been keeping them separate, with *C. generalis* inhabiting the Western Pacific and *maldivus* the Indian Ocean.

In Australian waters, *C. generalis* is common within Queensland waters as far south as the Swain Reefs. It is ultra rare along the Northern Territories, most likely due to the difficulty of coastal access, and I have only sighted two specimens from off Melville Island, off Darwin.

In Western Australian waters, *C. maldivus* occurs over a 900 kilometre stretch of coast from Carnarvon to Onslow. These specimens are a uniform dark orange with the violet anterior and sometimes with a few lighter orange thin mid-body bands.

Conus generalis remained unknown in West Australia waters until a living specimen was collected in 2005. It was collected by a diver from 20 metres depth off an unnamed shoal situated 300 kilometres to the N. W. of Darwin, which places it just inside Western Australian waters. This specimen is illustrated below, size 57 mm × 27 mm, alongside the typical N. W. *C. maldivus*.



Kohn, Alan J. & Vinl, Danker L.N.

Conus jaspideus Gmelin, 1791 (Mollusca, Gastropoda): proposed conservation of the specific name by designation of a neotype, Case 3396, *Bulletin of Zoological Nomenclature* 64(3), September 2007, 144-148.

In this paper, the authors propose to define and conserve the usage of the specific name *C. jaspideus* Gmelin, 1791 by designating a neotype. Their argument is based on the fact that the name is in common usage but is a sort of confusion, for nomenclatural and biological reasons. Since the name in question is indeed commonly used, it is to be hoped that the International Commission on Zoological Nomenclature will approve the proposal.

Cunha, Regina L., Tenorio, Manuel J., Afonso, Carlos, Castilho, Rita & Zardoya, Rafael.

Replaying the tape: recurring biogeographical patterns in Cape Verde *Conus* after 12 million years, *Molecular Ecology* (2008) 17, 883-901.

The authors reconstructed phylogenetic relationships within large Cape Verde endemics (*C. ateralbus*, *pseudonivifer*, *trochulus* and *venulatus*) to reveal three well-supported and relatively divergent clades that do not correspond to current species classification based on shell colour and banding patterns.

Geometric morphometric analysis also shows significant differences between the radular teeth shape of *C. pseudonivifer/trochulus* and *C. venulatus/ateralbus*. Selective forces (such as nonplanktonic lecithotrophy with limited larval dispersal and allopatric diversification) help to explain the observed recurring biogeographical patterns.

This is undoubtedly an important work that helps to get a better understanding of the complicated Cape Verde Cones. Let us expect that the authors carry on with this line of work to encompass a larger number of confusing taxa.

Variability in *Conus ebraeus* Linné, 1758

In a previous issue we showed a few photos of *C. ebraeus* Linnaeus, 1758, showing different patterns occurring in this striking species. Following that piece, our friend Lyle Therriault sent us two further photos of specimens in his collection. Here is what Lyle tells us about these specimens:

The first photo of the large dark specimen is 41.6mm and is from Marquesas; the second photo of the smaller specimen with sparse dorsal patterning and widely spaced band is from Kenya and is 24mm.



Caribbean Corner

André Poremski

In Search of the Real *Conus iansa* Petuch, 1979

In 1979, Edward Petuch published the article *New Gastropods from the Abrolhos Archipelago and Reef Complex, Brazil* and within it he described *Conus iansa*. I have always been fascinated with this species because of its rather unique combination of morphological characteristics. In this article, Petuch makes the suggestion that *C. iansa* “may be allied to *C. magellanicus* Hwass, 1792.” In 2004, José Coltro published an article in *Strombus* describing 8 new *Conus* species with 3 of them being compared to their closest link, *C. iansa*. Coltro also presented *C. iansa* as a member of the *C. mindanus* species complex. Based on morphological evidence only, I agree with Coltro that *C. iansa* is closely related to *C. mindanus*, and not *C. magellanicus*.

The *C. mindanus* complex is by far the largest, most diverse—and arguably the most confusing—group of *Conus* from the Caribbean and Western Atlantic. For this reason, I have organized my collection of *mindanus*-like *Conus* into 4 subgroups: *C. mindanus* group, *C. jaspideus* group, *C. pusio* group, and the *C. iansa* group. Again, these groups are based on morphological observations alone and the separation may not be significant by other methods. I will revisit the other groups in upcoming TCC issues.

My *C. iansa* group currently consists of four species: *C. iansa*, *C. delucai*, *C. bodarti*, and *C. schirrmeisteri* which all share within their range of variability the following set of characteristics: small, wide, heavily coronated shoulder, mamillate protoconch and deflection of body near the siphonal canal. After examining at least 10 examples within a population of each species, I have noted that shoulder shape varies significantly from smooth to strong coronation whereas the protoconch and aperture outline are very consistent.

Although there are currently only four species that I place in this group, there are other *iansa*-like cones being col-

lected from the Arbolhos reef system and further north that are unique enough to beg the question: should they be called something different? Right now, most of these shells are labeled by dealers *C. iansa*, *C. cf. iansa* and *C. cf. mindanus*. With so many different looking “*C. iansa*,” I’ve wondered what in my collection represents the true *iansa* as originally described by Petuch?

In October 2005, I was fortunate to have the opportunity to dive near the paratype locality of *C. iansa* – Lixa Reef, Bahia State, Brazil. During this trip, we found 3 live *Conus* that exactly match Petuch’s description of *iansa*’s color pattern: “composed of series of dots and dashes in close-packed spiral rows overlaid with large amorphous patches of darker color.” I now think that the specimens my group collected near Lixa Reef are indeed examples of the true *C. iansa*.

Petuch also mentioned that *C. iansa* can be “greyish-white with bright white color pattern.” My 2005 trip produced no such color form of *iansa*, however, a white *iansa* did turn up on two occasions since that trip. The first was a specimen that I purchased in 2006 labeled “*C. abrolhosensis* Petuch, 1987” from the Abrolhos Archipelago (nothing more specific). I think the ID is incorrect since the shell matches neither the figure of the *abrolhosensis* holotype nor the description. Rather, the shell matches Petuch’s white *iansa* description perfectly. Another six “white *iansa*” came into my hands between 2007-2008 that were collected further north on a patch reef system between the Abrolhos area and Salvador. These shells look very close to the “*abrolhosensis*” specimen but instead of grey-white, they are yellow-white and slightly broader and squatter in shape. These white *iansa* appear as different to the Lixa Reef *iansa* as the Lixa Reef *iansa* differ from, for instance, *C. schirrmeisteri*!

During the same October trip, I traveled to a small coastal village near Porto Seguro where our dive group collected another *iansa*-like *Conus* buried in fine coralline sand pockets in the pits of coral rock. These cones are bright orange in color and many of them display light

zigzag patterning exactly like the white *iansa* specimens. The shells differ in shape – being more slender and having higher spires on average. Are these also *C. iansa*, or something new?

I have received other *iansa*-like shells with different colors, patterns and shapes that have no particular name but appear very closely-related. Some of these shells are figured on the following page. I hope to return to Bahia, Brazil to explore other offshore reefs in hope of finding new “*iansa*” cones!

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Figures 1-3 The “true” *C. iansa*, Lixa Reef, Bahia, Brazil, left-right: 13.9 mm, 11.5 mm, 12.7 mm

Fig. 4 The “white *iansa*” color form as described by Petuch, “Abrolhos Archipelago,” 11.2 mm

Fig. 5 “white *iansa*,” 150 km north of the Abrolhos reef system, Bahia, Brazil, 12.0 mm

Fig. 6 *cf. iansa*, near Porto Seguro, 14.1 mm

Fig. 7, 8 *C. bodarti*, left: offshore reef near Prado, Bahia, Brazil, 16.0 mm, right: different reef, 16.6 mm

Fig. 9 *C. schirrmeisteri*, offshore reef near Prado, Bahia, Brazil, 9.9 mm

Fig. 10 *cf. iansa*, near Salvador, Bahia, Brazil, 15.8 mm

Fig. 11 *cf. iansa* collected on offshore reef near Prado, Bahia, Brazil, 17.3 mm



1a



2a



3a



4a



5a



6a



7a



8a



9a



10a



11a



1b



2b



3b



4b



5b



6b



7b



8b



9b



10b



11b

Mimicry - Nature's Way of Telling a Lie and Not Getting Caught

Alfred Spoo

I have been interested in nature and have pursued, studied and collected just about anything that can be collected, but my primary interest has been in entomology and I have always been intrigued in the various poisonous and dangerous models that have been mimicked by other harmless species. This is true worldwide especially in butterflies; here in the United States of America we have many examples where totally unrelated species look much like other harmful species.

Some species of butterfly larvae feed on poisonous plants, which contain cardenolides, a poison that stops the heart, and this poison is retained even after the caterpillar becomes a butterfly. The common monarch is such an example, its larvae feed on milkweeds and this makes the adult unpalatable for life. When a bird attacks and captures a monarch it will receive a very bitter taste and if it ignores the flavor there may also be an occasional fatality. Birds seem to have a good memory - this has been proven in their return to the same area year after year after migration, and this is also true of the bad taste or sickness after capturing a monarch.

Now an amazing case of mimicry comes into play; the viceroy, a butterfly which is a Nymphalid and is a good tasting species is colored and marked very similar to the monarch. Because of this it is avoided by birds and it flies about in plain view without being attacked. In southern Georgia and Florida, the monarch is scarce and is replaced by the queen, a similar species of the monarch family that possesses the same protection, but is brown instead of the bright orange color. In this area the viceroy butterfly is not colored with the typical orange colors, but it has the same brown colors like the queen.

More examples of mimicry protection; all members of the birdwing family of butterflies feed on *Aristolochia* plants in their larval stage and the poison in these vines is absorbed by the caterpillars and retained in the adult butterflies. In our area the only member of this group is the Pipevine Swallowtail, *Battus philenor*; it is black and has iridescent bright blue on the rear third of its hind-

wings. Birds soon learn to avoid any black butterfly that is so marked and several species that live in the same area are colored in much the same way - among these are both males and females of the Spicebush Swallowtail and the Red-spotted Purple. However females need more protection than what males do because it's up to them to carry and lay the eggs for the next generation. The female of the Diana Fritillary and many of our common Tiger Swallowtail females are not colored like their mates, but are adorned in the protective black and blue colors.

Where the Red Spotted Purple and the Pipevine Swallowtail fly in the same area, they are colored much the same, but in the northern states where there are no Pipevines, the Red Spotted Purple looks like other members of its family; it is called the White Admiral or Banded Purple and has the typical broad white bands on its wings just like other species in this genus. Is this just a coincidence? No and I believe that the same rule holds true in shells.

Most Scientists would teach you that through the process of evolution these butterflies learned that their cousins were poisonous and assumed their protective colors. If this were true they would be more intelligent than man. How would an animal perceive which of his relatives was poisonous and what would give them the ability to change their color and pattern to match theirs? I am not an evolutionist and believe that God chose to color certain species in this way to protect them.

It's interesting to note that today creationism is opposed in schools, but in the past it was not so. When Moses Harris, the great Lepidopterist, wrote a butterfly book called the Aurelian in 1766, he inscribed these words on the flyleaf - The works of the Lord are great sought out of all them that have pleasure in them quoted from Psalm 111:2.

In an area where poisonous models are common, the mimic is not nearly as common as the model. The reason for this is that if the mimics were abundant and birds

would find them to be tasty and many of the poisonous species would also be killed before birds would detect their effect. This mimicry is named after the pioneer lepidopterist, Henry Walter Bates and is known as Batesian mimicry. This event is worldwide and the monarchs and crow butterflies are models for lots of nonpoisonous species.

Many of the swallowtail butterflies of the world are poisonous, but many are not - numerous species, which are not poisonous, are patterned after species of monarchs and other lepidoptera, that are poisonous. One of the most outstanding examples is the mocker swallowtail it is found on the continent of Africa; the males are not remotely colored nor shaped like the females except in the region of Ethiopia. In most parts of Africa the female is modeled to look like the various species of *Danaidae* (monarchs), which are found throughout the continent. Many of these forms are not remotely looking like their counterparts from other areas. The males are tailed and look like typical swallowtails and are cream white with black borders and have a few black spots. The females are tailless, have typical monarch shapes and come in various shades of orange, yellow or black and white. The real McCoy in Africa, is the Regal Swallowtail, *Papilio rex*, it is a perfect mimic of the *Danaidae*, *Melinda formosa*, so much so that they are virtually alike when flying or at rest.

The Crows, a family closely related to the true monarchs, which live in southeastern Asia, are also distasteful and

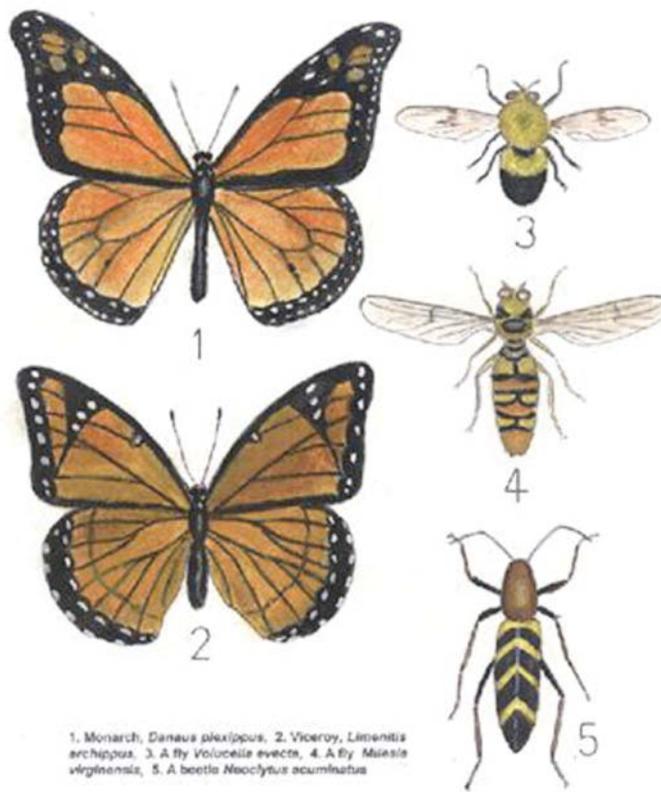
several species of Swallowtails mimic the crows. Among these are the Swallowtail, *Chilasa paradoxa*, it is shaped and colored almost exactly like the crow, *Euploea mulciber*. This is only one example of the many mimics from this part of the world.

The continent of South America seems to be the most confusing area for predators and students of lepidoptera in the world; here species of the genus *Parides* (new world birdwings, which are poisonous) have counter parts of the swallowtail group *Graphium* (which are non poisonous), which look as if they had to be members of the *Parides* group.

An example of Mullerian mimicry, a study named for Muller, another early lepidopterist, in this type of mimicry many species of poisonous butterflies, which are in the same area are colored alike even though they are all poisonous. In this type of setting the predators learn to recognize on type of pattern and one set of colors.

On the island of New Guinea there are two similar species; a beautiful poisonous swallowtail, *Papilio laglaizei* and its perfect image *Alcidis agarthyrsus*, a day-flying moth; these two are almost exactly alike except for the antennae. The butterfly has the typical knobbed antennae, while the moth's antennae have a pointed end. Both of these insects are adorned in various shades of grays and blues with a hint of orange.

Mimicry - Nature's Way of Telling a Lie and Not Being Caught



1. Monarch, *Danaus plexippus*. 2. Viceroy, *Limenitis archippus*. 3. A fly *Volucella eveceta*. 4. A fly *Milesia virginensis*. 5. A beetle *Neoclytus acuminatus*

SHELLS THAT MIMIC THE CONE SHELLS



1. *Strombus decorus*, 2. *Strombus luhuanus*, 3. *Harpulina lapponica*, 4. *Amoria undulata*

SHELLS THAT MIMIC THE CONE SHELLS



1. *Parametaria dupontii*, 2. *Marginella desjardinsii*, 3. *Pyrene epantella*, 4. *Ballata ballata*, 5. *Oliva porphyria*

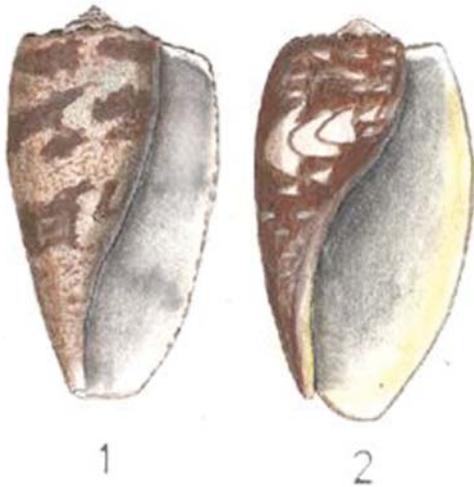
In South America are some of the greatest examples of the Mullerian mimicry. The *Heliconidae* and *Pseudacrea* are excellent examples of this type of mimicry - several different species in the same genus are colored almost identical.

Many species of the *Pieridae* of the genus *Dismorphia* are patterned after various species of poisonous *Heliconidae*, *Ithomiidae* and *Danaidae*; so much so that you wonder if birds in these parts ever eat any butterfly. Many people who would not normally fear a fly will cringe and back away from a fly that may be on a flower or on the leaves of a plant if it is colored like a bee. And there are numerous flies that are adorned in bright colors of black and yellow and look very much like yellow jackets, but these are harmless flies. One might wonder - how do you tell if they are bees or flies? These creatures buzz loudly and often nectar on flowers, but on close examination it will be noted that among many other characteristics, they only have two wings - all bees and wasps have four wings. Wasps are excellent models for protection; few birds, mammals or man will mess with them and even some beetles closely resemble these insects. Most of these beetles are members of the subfamily *Lepturinae* and they feed on flowers in plain view and are not attacked by birds. However some birds such as flycatchers and bee-eaters feast on bees with seemingly no ill effect.

In the reptile species of North America, we have similar situations, several species of milksnakes and kingsnakes are colored very similar to the poisonous coral snake. And species such as the watersnakes are banded very similar to the poisonous copperhead; animals learn to recognize this pattern and leave them alone.

It's possible that the same rules hold true in the mollusk world; we all know that all cones are poisonous to some degree. Is it possible that fish and other creatures learn to recognize these shapes and color patterns and leave them alone?

When you look at various shell from other families,



1. *Conus geographus*, 2. *Melo miltonis*

which are not *Conidae*, you will notice that many are shaped and colored like various species of cones and once again it's only a chosen few from various families. I can't possibly list or illustrate all of them, but I've illustrated eleven species of shells and five insects in this study along with the following comments.

Many beginners get into shell collecting and see shells such as the blood mouthed conch, *Strombus luhanus*, and think that they are cones. Another example of the Strombidae family is *Strombus decorus*. The family *Columbellidae* has examples such as *Parametaria dupontii*, that could be mistaken for *Conus beddomei* and in the family *Marginellidae* there is *Bullata bullata*, which is similar to *Conus cervus* and also *Marginella desjardini* is in this family. The family *Olividae* sports the tent olive, *Oliva porphyria*, which looks much like the various species of tent marked cones.

The family *Volutidae* has numerous examples such as *Harpulina lapponica* and *Amoria undulata* and many others, but the most remarkable representative is *Melo miltonis* from southwestern Australia, which is very much like *Conus geographus*. Both of these shells are relatively thin, are shaped and colored much the same and are from the same basic region.

The problem that I have encountered after much study on this subject, was that a shell that is shaped and colored much like a similar cone species is from a totally different part of the world; therefore it couldn't possibly be a true mimic. A few examples are - family *Mitridae*, *Imbricaria punctata*, from the Indo Pacific, resembles *Conus aplustre* from Australia, *Imbricaria carbonacea*, from SW Africa, resembles *Conus radiatus* from Philippines. The next question is - is just the shape sufficient to deter predators from attacking these cone-like shells?

Wanted!

We have received the following request from our friend Marc Keppens:

It seems to be impossible to find the *Manual of the Living Conidae* (Röckel et al). If you know of someone who still has a copy available, please let me know.

Should anybody be able to help Marc, just send a message to the Editor of TCC and I will gladly pass it along.

Night Dive at Tahiti: A Little Luck Does Not Hurt...

David Tuitou

When I used to live in Moorea, French Polynesia, from 2002 to 2006, every once in a while we scheduled a night dive at the peninsula of Tahiti, thanks to the logistics of my friend Michel Balleton. Michel being a lover of augers and numerous other families of shells (*Mitridae*, *Costellaridae*,...) partial to sandy bottoms, we often dived in the channel on the lagoon side.

As a matter of fact, in Tahiti there is a coral barrier that protects a shallow lagoon and from time to time a channel of some thirty metres linking the different bays is formed. This channel has two slopes: one that begins in the sea shore and another one beginning in the lagoon. The most interesting species are usually found on the lagoon side.

On such a night we anchored our boat very near the slope, in the coral forest in the lagoon. We dived at nightfall and proceeded towards the sandy slope. Once there, we began to descend along the slanting bottom of coral debris.

Numerous species of seashells are to be found in such a habitat. According to depth, in the *Conidae* family alone we can find *Conus pulicarius*, *C. eburneus*, *C. tessellatus* and *C. quercinus*. These are not very exciting species, except if one is looking for outstanding specimens. I, for instance, was looking for very dark or very big *C. tessellatus*. The habitat is certainly more favourable to *Mitridae*, *Costellaridae* or *Terebridae*. In the night I am referring to, we did find a dead *C. arenatus*, which is a rare species in Polynesia, where it never reaches large sizes, I do not know why.

We got to the bottom of the channel (30 metres) and among the coral debris I found several small *C. sugillatus*. This is not a common species locally, so it is always a pleasure to find some.

We carried on over the bottom, following the tracks of sand dwellers and I was particularly alert because in such a habitat one can find the rare *C. acutangulus*. My friend Michel did collect some from time to time in the same environment, so I was keeping my eyes open... This species can easily be mistaken for *Vexillum mirabile* whose tracks and depth of burying are similar, as is the actual colouration of the shell.

After about 45 minutes diving, no interesting cones at all... Every once in a while I saw that Michel put in his bag a few treasures he was finding in the sand.

We began to climb up slowly along the sandy slope. The same species always. We reached the 10 metres zone and I was ahead of Michel. We proceeded towards our boat. Just then, my HID lantern illuminated something shiny at a certain distance. It appeared to be an orangish cowry of a certain size, resting on the sand. Certainly dead.



I drew near slowly, seeing no cause to hurry. A fine layer of parasite algae appears to cover it. I picked the shell up and placed it under my light beam. Total awe! It is not a cowry at all! It is a cone! And what cone! A *Conus bullatus*! It is large, it is in GEM condition, not even drilled! It's amazing! I showed it to Michel, who actually roared under water. What a victory!

Not only was it an extraordinary find, because the species is very rare in Polynesia, except in the Marquesas Islands (where nevertheless the colour of the shells is quite distinct) but I even did not have to bother with extracting the soft parts! So, a double prize!

Size of the thing: 56.3 mm.

Shelling in Florida

Lyle Therriault

I have taken several opportunities to make the trek to Florida in order to try and collect its local species of *Conidae*. Most of these trips have been after the year 2000, and I have been there four times in that time frame. I have abided by local laws governing collecting, and the areas to which collecting can be accomplished is slowly dwindling.

The best spot I have found is a large mud flat right outside of Marco Island, Florida. Most specimens are collected in the Pompano Hump area which is a bit south of Marco and usually only accessible by boat. The area I found is accessible by foot and is within reach of area roads and the highway. This flat begins at the base of the bridge leading into Marco.



Figure 1: Collection area, the tide is almost out! You can see some of the mud flat at the right of the picture by the waters edge. And yes, you CAN find cones in small sandy areas by those big rocks!

When the tide is low, this flat can reach around in an almost crescent shape, part of which is only accessible by dingy or canoe since the swampy land surrounding this area is literally impossible to navigate by foot. At the bridge, there is a small sand flat right next to the mud flat, and in different seasons I have observed large numbers of *Conus floridanus floridensis*.

Usually the best season for this would be winter. The water temperatures are cool, but not cold, and the air temperature is usually near 70. These would seem like optimal collection conditions. The first visit I made to this area I observed several hundred specimens, with one 40 foot area containing half this total number. Sizes of specimens were generally small, most were under 25mm, and I would guess that 50% of these were juvenile. I counted 35 adult specimens with sizes above 34mm. The further I went down the mud flat, which is relatively narrow, the fewer specimens I witnessed. I went to this same area again 6 months later in the early summer, and I witness only approximately 50 specimens total for the whole flat. The flat measures roughly 200 yards by 30 yards and is curved like an elongated "S".

I visited this area several more times in the last 4 years. Some things have changed, like the shape of the area. Now it is shaped like a "C". Storms and boat traffic have helped to accomplish this. The fauna has changed too. There are whelks and other predators in the area, whereas there were none before. I have seen *Melongena* and *Busycon* as well as tulips in the area all co-existing. Several years back I found a beautiful living nerite, which for this area is very rare. And, the Cones are still there granted not in large numbers but they still survive and move about the flat. They may be there in one particular spot one season, and be in a totally different spot the next.

I've made only one collection to this area, for that is all I need. I have seen and collected them in others nearby, but not in prolific numbers. I have been all over this area including Sanibel and the Boca islands, and I can say that through observations, *C. floridanus floridensis* is fairly uncommon in certain areas. The pictures that follow are a sampling of specimens from 4 different seasons over the course of 5 years. Enjoy the different and interesting color/pattern variations. Specimens are from Marco, Sanibel and adjacent areas. Most specimens were collected freshly dead, with controlled collection of live specimens.

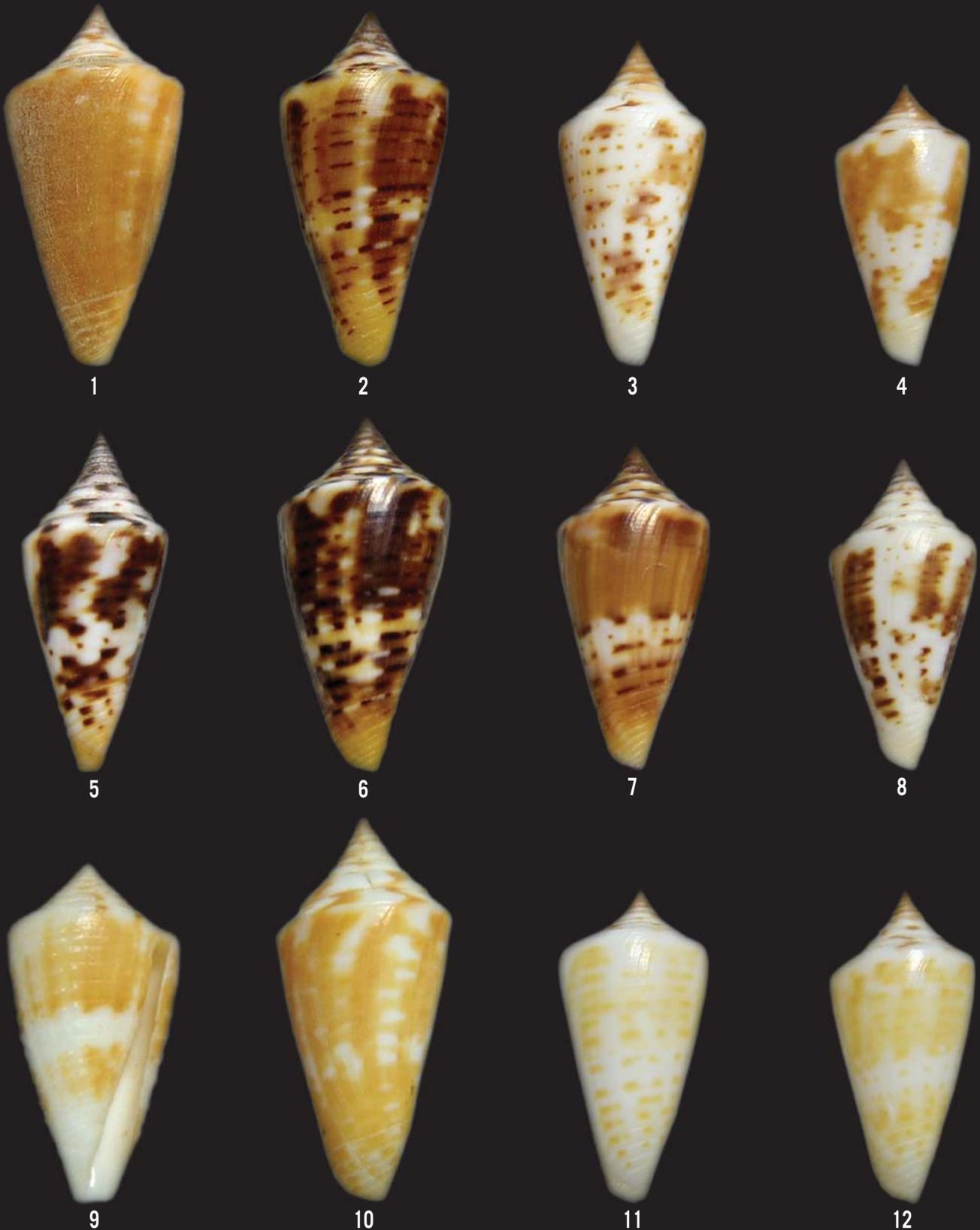


Fig. 1 This specimen seems to be very close to the form "*burryae*." **Fig. 2-4** These specimens represent a wonderful array of spectacular patterns and color. **Fig. 5-6** Two very dark specimens, these are very hard to find. **Fig. 7-8** Two specimens with very unique pattern, a transitional phase possibly between forms? **Fig. 9-10** Two very curious specimens collected in the same area in 02/2005. One is a bright overall orange, specimen on the right. The specimen on the left appears to be *C. floridanus floridensis* with a worn apex (dead collected), and if the ID is correct, it would be the first specimen I have personally seen that is granulated. **Fig. 11-12** Two collected specimens that are of the bright lemon yellow variety.

What Exactly is *Conus proximus cebuensis*?

Paul H. Kersten & António Monteiro

In a 1990 paper, Ed. Wils described *Conus proximus cebuensis* as a new subspecies of *C. proximus* Sowerby, 1859. His work was based on the examination of a number of specimens of the nominal species from Papua New Guinea which were compared with specimens obtained from the Philippines. The differences encountered, put together with Walter Cernohorsky's statement that *C. proximus* occurs in Melanesia, especially Tonga, Fiji, New Caledonia, Vanuatu, Solomon Islands and New Guinea, prompted Wils to propose his new subspecies. The nominal species is shown for instance in Estival (1981), page 105 nr. 96.

According to the original description, the subspecies *cebuensis* differs from the nominal species in that the latter is more slender, with nearly straight sides, whereas *cebuensis* is stouter and convex beneath the shoulder; also, *cebuensis* has a weakly coronated spire, whereas coronations are pronounced in *C. proximus proximus*; finally, the new subspecies has less spiral cords (16 against 22).

Wils even indicates that *C. proximus proximus* is in fact closer to *C. moluccensis* Küster, 1838 than to *C. proximus cebuensis*.

Röckel et al consider *C. proximus cebuensis* as a mere form of *C. proximus*, stating that "in Philippines, the typical form occurs sympatrically with heavily sculptured shells (form *cebuensis*; [...]) and shells with rather smooth last whorl [...]. These forms intergrade in shell morphology and shell pattern.

All of this is clear enough, but it is curious to notice that many specimens currently available in the market and handled by dealers and collectors seem to bear the wrong identification. As a matter of fact, many specimens labeled as *C. proximus cebuensis* actually do not correspond to this subspecies, while others handled as *C. proximus proximus* actually conform to Wils's description. This short note is aimed as setting the record straight, regardless of the taxonomical status given to *C. proximus cebuensis*, and to help collectors in the correct identification and labeling of their specimens of *C. proximus*.



Fig. 1 *C. proximus cebuensis* **2** *C. proximus* Balut Island, Mindano, P.I. **3** *C. proximus* Sogod, P.I.

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A Case of Batesian Mimetism

Conus unifasciatus KIENER, 1845

Imbricaria carbonacea HINDS, 1844

Giancarlo Paganelli

At first sight the specimens in Fig. 1 could seem to be both *Conus unifasciatus*, but seen from the ventral side (Fig. 2), the one on right side turns out to be a mitre, *Imbricaria carbonacea*, as clearly shown by the plaits on the columella. Since both species come from Senegal, and most probably live in the same habitat, in my opinion a batesian mimetism is taking shape.

Mitres are carnivorous, but cones are venomous as well and certainly more aggressive, therefore *I. carbonacea* “has taken” the shape of *C. unifasciatus* to avoid the strikes of the predators. Usually *I. carbonacea* has a more concave and pointed apex and a darker colour. The specimen in question has an apex and a colour pattern very close to *C. unifasciatus*: very hard to distinguish indeed!



Left *Conus unifasciatus*, Senegal, Popenguine. 26.3 mm
Right *Imbricaria carbonacea*, Senegal, Dakar. 25.9 mm

Can Anyone Answer These Questions?

One of the purposes of TCC is to be an outlet for any questions, doubts, etc., concerning Cones that can be presented to a vast audience, thus raising the chances that someone will be able to come up with the right answers. Everybody's views on the following will of course be much appreciated:

Our friend Henny van Vilsteren asks:

There are so many questions about the shells themselves, how they live and most of all what is the purpose of all that beauty! Nevertheless, most living cones have their shells covered with a thin to quite thick layer that hides much of that beauty so, what is the function of a periostracum and why is it smooth on some shells and why does it have spiral and axial ridges and is sometimes tufted on others?

Can anyone answer this?

Our friend Giancarlo Paganelli asks:

I don't know if there is a literature on *Conus*' predators; by the way I think that Starfishes, Crayfishes, Fishes Crossbow and other *Conus* too can be predator to *Conus*. Of course Crayfishes and Fishes Crossbow can crush the shell of *Conus*. Have you other information about this topic? Many thanks in advance.

Can anyone answer this?

We hope to see your contribution in the next TCC!

