the Strandloper

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Front Page

Calpurnus verrucusus (Linne, 1758) on soft corals.

Valda Fraser

In this Issue

Waiting for picture

Things that glow in the light

by Maurice Evans and Alwyn Marais

This makes me think of Christmas lights and baubles.

Well I suppose if one thinks of it, it's a bit like Christmas with the unknown of what gifts the sea is going to present to you.

A few years ago I was astounded to discover that certain of my shells glowed when exposed to ultraviolet (UV) light. What was even more amazing was that not all members of the same species or different species from the same locality reacted in the same way. What made certain shells glow or fluoresce.

The term fluoresce or fluorescence means that if some objects are exposed to light of a certain wavelength, the absorbed light is emitted by the objects at a different wavelength. This is illustrated best by using a UVA lamp "black light" that emits short waves in the 200-400 nanometre range, which are practically invisible to the human eye. This invisible "light" is absorbed by certain shells or other fluorescing objects and again emitted at longer, visible wavelengths (400-700 nanometres) that we can readily observe in the dark as different colours.

It was not until the existence of UV light was broadly recognized in about 1852 by scientists such as George G Stokes that the true fluorescence of shells under UV light was recognized.

In more recent times studies on the fluorescence of shells have been associated primarily with the names of five men, namely Fischer (1930), Furreg and Quermer (1930), Turek (1933) and Comfort (1949).

Emphasis has generally been on the chemical structure of shell pigments (Fischer and Comfort) leading to the recognition that the pigment which fluoresces a brilliant red in certain shells is a member of the porphyrin family of organic compounds and related to the compounds which make blood red and leaves green.

It is known that certain minerals fluoresce according to their mineral compositions. All seashells consist mainly of calcium carbonate ($CaCO_3$) in the form of calcite or arogonite, which are known to fluoresce. It therefore stands to reason that all seashells should fluoresce because of their chemical composition, however this is not so.
So what is the reason for this?

It is proposed that even thought the main components of shells normally fluoresce, some pigments present in certain species may act as inhibitors of fluorescence.

Furreg and Querner applied shell fluorescence to aid in identification of species. Felix Lorenz Jr and Alex Hubert in **A Guide to Worldwide Cowries** mention the use of fluorescence: "*venusta* shows a crimson fluorescence when viewed under UV light, distinguishing it from other *Zoila*".

It should be noted that practically all light coloured or white shells will show some degree of fluorescence, and this got Dr. Stocks interested in this phenomenon. A lot of research still needs to be done in this field; only time will tell.

So even though we don't have all the answers, what can be more beautiful for a collector than a display of selected fluorescing seashells with their magnificent glowing colours and geometric

Shells under UV light (left) and normal light (right).

Top: *Leoporicypraea mappa mappa* (Linne, 1758)
Second from top: *Zoila venusta* (Sowerby, 1846)
Third from top: Beached *Marginella ornata* Redfield, 1870
Bottom: A dived *Marginella ornata*

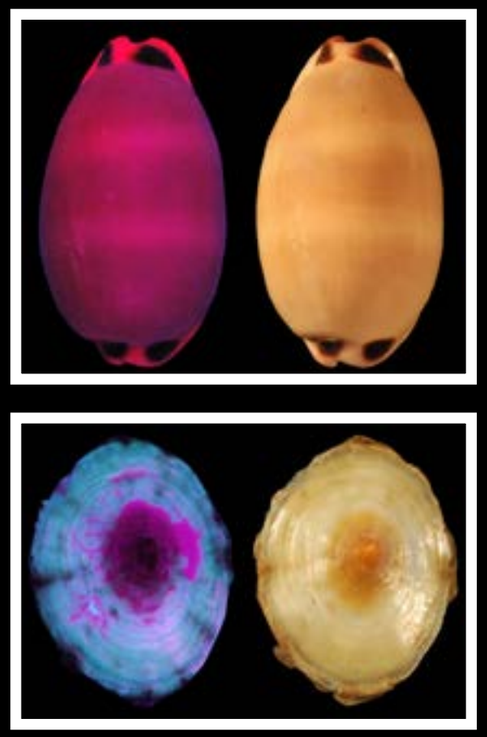
designs?

Such a display can be made very simply and inexpensively. A wooden box of approximately 350 mm wide, 300 mm deep and 400 mm high, painted matt black internally should suffice. Leave the top open as you will turn the box upside down over the shells. Secure a 200 mm strip short wave UV light to the base of the box close to the one 350 mm wide side, but centralized. Drill a hole the width of your electric cable through the side of the box through which you run the cable. The length of the cable will depend on the distance to your power supply. Cut a 50 mm x 100 mm slot into the base approximately 60 mm from the edge of the opposite side to the UV light; centralize this from left to right with the 100 mm slot running left to right. This is your viewing portal.

A word of warning! UV light is harmful to the eyes so do not look directly into the light. Should you be able to see the UV tube when looking through the viewing slot, attach a strip of wood to the inside of the box between the slot and the light, wide enough to obscure the light.

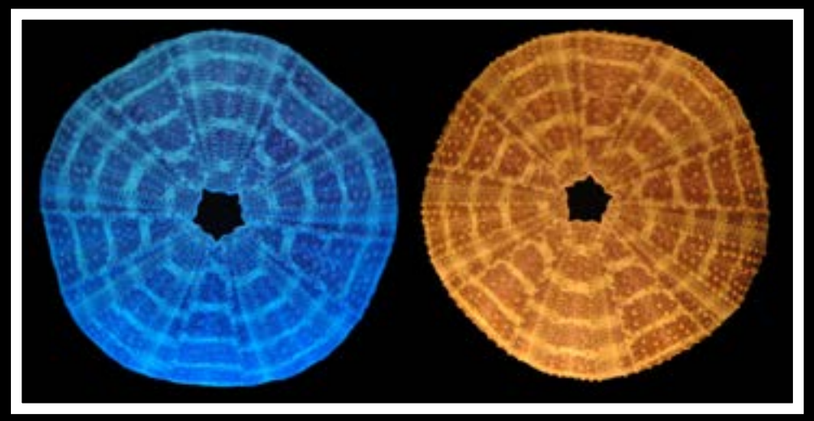
Personally collecting fluorescing shells is tremendously rewarding. Shells collected during the day can be later examined, or even a night trip to the water's edge with a portable UV lamp will not only reveal shells which glow, but also other forms of marine life that fluoresce.

This can be another facet to our beautiful hobby, so give it a try. It may even open up more opportunities for some who thought they had done it all.



Shells under UV light (left) and normal light (right).

Top: *Luria pulchra* (Grey, 1824)
Middle: *Umbraculum umbraculum* (Lightfoot, 1786)
Bottom: *Toxopneuste pileolus* (Lamarck, 1816)



Gastropodial MUSINGS

an informal column for questions, thoughts and answers

by Roy Aiken

Many species of Volutidae are elusive, some maintaining a status of continued rarity due to their deep water existence as well as their generally assumed habit of burrowing during day time. It is even more rare to be able to find living subjects, and opportunities to present photographs of living material are indeed few and far between. With grateful thanks, therefore, to Dr Dai Herbert and the Natal Museum, a rare set of pictures is presented hereunder.

Fig 1 is a live *Fusivoluta pyrrhostoma*, with pure white animal. A feasible first?
Fig 2 is the striped animal of *Simililyria queketti*.
Fig 3 is probably the first ever view of a live *Athleta abyssicola*.
Fig 4 is a good larger shot of the same shell.
Fig 5 is the dorsal view of a live small *Festilyria duponti* off northern Natal.
Fig 6 is a ventral view. In Strandloper 187 we introduced pictures of probably the first live *L. ponsonbyi*. The animal likenesses are clear in these photo's, which are also good proof that *duponti* does exist off northern Natal.

Fig 1

Fig 2

Fig 3

Fig 4

Fig 5

Fig 6

Re-discovery of the muricid *Phycothais texturata* (E.A. Smith, 1904) – a historic review

A.P. Marais and J.P. Marais

The British officer, Lieutenant-Colonel W.H. Turton, an enthusiastic shell collector, was stationed in South Africa during the Anglo-Boer War. At the conclusion of the war in 1902 he returned home, but re-visited South Africa on several occasions collecting extensively in the Port Alfred area. One of his collections, consisting entirely of beach-worn shells, was sent to the British conchologist E.A.Smith (1904) who described amongst many others the muricid *Purpura texturata* distinguishing it from *Purpura capensis* Petit (1852), a common shell along the South African coastline. The four severely beach-worn syntypes of *Purpura texturata* are presently held in the British Museum (BMNH 903.12.19. 949-952). A second shell collection made by Turton, including two specimens of *Purpura texturata* (USNM 186779), was sent to the United States National Museum for study by Paul Bartsch. In his report on the Turton collection Bartsch (1915) listed it as *Thais texturata*, but did not provide an image of the species. Subsequently the British conchologist J.R. le Brocton Tomlin (1923) commented on *Thais texturata*, suggesting that it is merely a young *Thais capensis*, or perhaps a form of *Thais pura* E.A. Smith (1903) [synonym *Thais blanfordi* Melvill, 1898] only lacking brown spots on the tubercles. Much of the confusion was undoubtedly due to the typically worn state of the *T. capensis* spire. Turton (1932) briefly described *Thais texturata* (without illustration), but shared Tomlin's sentiments regarding the shell. Consequently, further specimens collected have merely been regarded as juvenile *Reishia capensis* and the South African molluscan literature of the past 80 years contained no further reports on *Purpura* (or *Thais*) *texturata*.

Original drawing by E.A. Smith

In a recently published identification guide on South African seashells, Houart, Kilburn & Marais (2010) described and illustrated a syntype of *Purpura texturata* and proposed it in *Phycothais*. It appeared strangely familiar, but its worn state made identification impossible. Shell collectors were urged to be on the lookout for the species. It did not take long before local collectors found beach-worn specimens in their collections, incorrectly labelled as juvenile *Reishia capensis*. Despite a thorough search no live specimens have as yet been found, suggesting an infratidal habitat. Nevertheless, comparison of fresh specimens of *Phycothais texturata* (14 mm in size; mean of 40 sp.) with juvenile *Reishia capensis* confirmed that two separate species are involved. Live specimens of *P. texturata* are now required for DNA analysis.

Acknowledgements
Sincere thanks to Roland Houart (Belgium), Val van der Walt, Rina and Jurie Matthee and Markus Lussi for their help in elucidating the *texturata* riddle.

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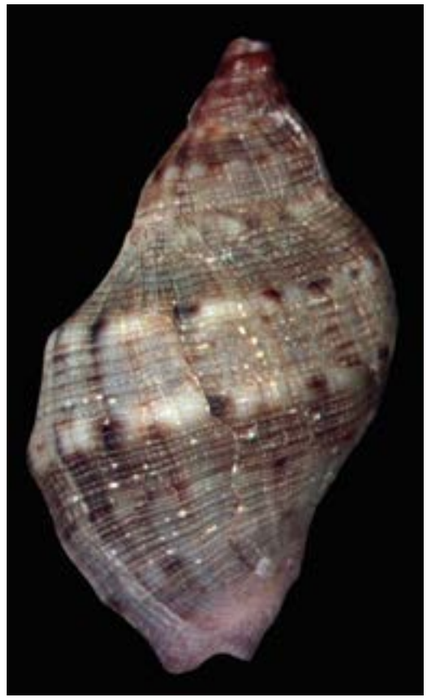
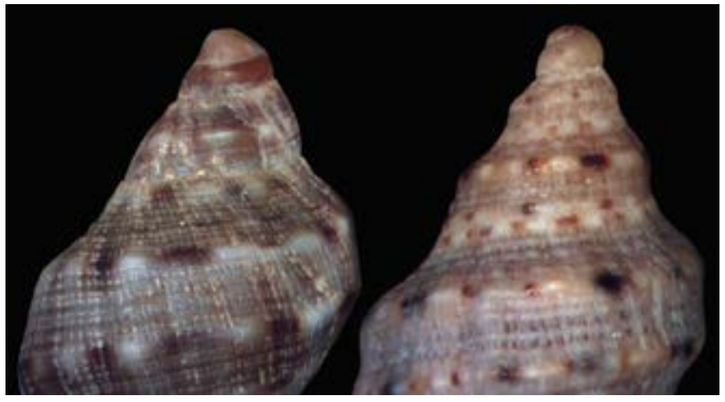
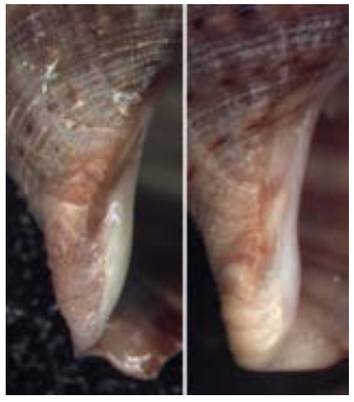


Reishia capensis **(**juvenile**)**
16 mm

Phycothais texturata ***(***beach-worn***)***
13 mm





Images comparing spire and columella of *capensis* (left) and *texturata* (right)

Feature	*Reishia capensis*	*Phycothais texturata*
Protoconch diameter	broad (2.0 mm)	narrow (1.1 mm)
Primary spiral ridges	low, weakly angled	strongly angled
Markings	grey-brown spots	brown dashes
Secondary spiral interspaces	shallow, not pitted	deeply pitted
False umbilicus	distinct groove	shallow depression

A species of diversity

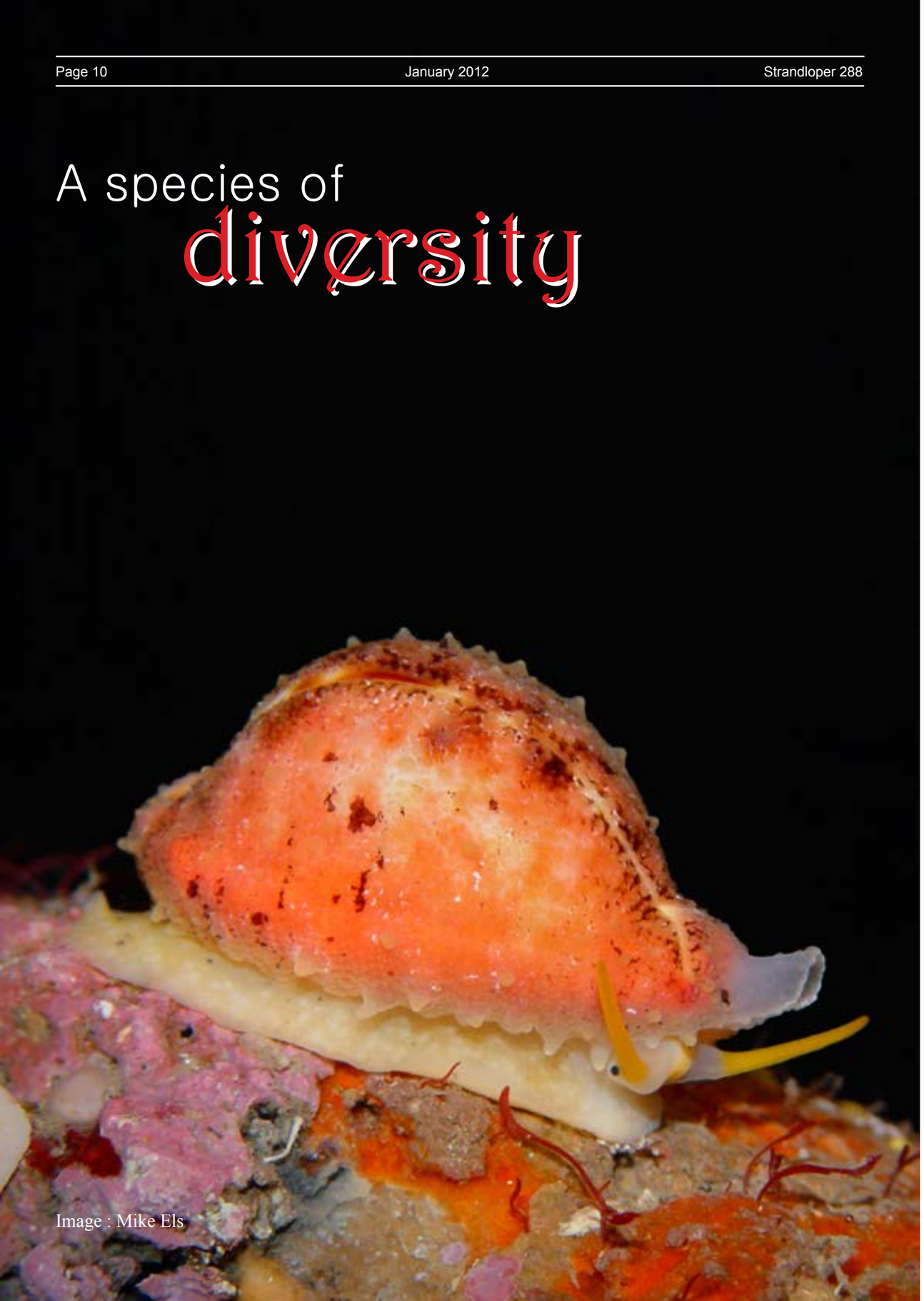


Image : Mike Els

Cypraeovula coronata (Schilder, 1930)

By **Roy Aiken, Mike Els, Alwyn Marais** and **Anton Mauve**

This is one of South Africa's beautiful endemic cowries which has become better known over the last 15 years. The occasionally prominent marginal nodules seen in this species are probably unequalled in any other living cowry species and make it special amongst our marine fauna.

Named by F.A. Schilder in 1930, in Zool. Anzeiger, Vol 87, p 113-4, this species has acquired an interesting and varied history. It was considered 'extremely rare' (many collectors were unaware of – or doubted – it's existence) among cowrie collectors until well into the 1970's, where up to that time, and to the end of the 1980's, the taxonomic status of the species remained shrouded in mystery. The purpose of this article is to provide the most recent, complete update of the forms and subspecies according to shell characteristics of this variable, unusual and beautiful species.

A chronological history will give the reader some perspective on the convoluted course the species has followed, as well as giving an indication of how some of the names were derived. Luigi Raybaudi Massilia provided a marvellous platform from which to further any studies in his comprehensive article on this species in The Connoisseur of Seashells no. 8 of 1986.

- Schilder creates *coronata* in 1930, as a proposed subspecies of *fuscodentata*, Gray. It was named from a single beached specimen, which was most likely from an area just to the east of False Bay, probably in the region of Struisbaai, one of the southernmost areas in the southwestern Cape Province where dead cowries can regularly be found on the beach. The holotype had several clearly developed nodules along the margins. Schilder felt they looked like a crown of pearls, and so he chose the name *coronata* for its description. The holotype was lodged in the Museum of Hamburg, until its destruction during the bombing raids of World War II.

- In his well known Prodrome (1938), Schilder mentions two more specimens, not as tuberculate, but confirming the existence of the species. However, no further specimens came to light over the following nearly 50 years and the species was nearly forgotten, or regarded with scepticism by many who read of it – particularly since the holotype was now represented by a drawing only!

- Steadman and Cotton mention *coronata* in 1944 in the Genus *Luponia*, and proceed to place it as a synonym of *Notocypraea angustata* from Australia.

- In 1956, Joyce Allan in her famous book, Cowrie Shells of World Seas, exacerbates the situation by putting *angustata* into the genus *Luponia*, and synonymising both *coronata* and *fuscodentata* under that species, proving what limited knowledge was available still.

- In the Annals of the S.A. Museum in 1963, K.H. Barnard provides further insight as to the lack of knowledge surrounding the species. He felt that the two local races (as above), from such a small area was unscientific.

- A deeper water, more inflated, more round and calloused shell with particularly strong, dark brown *fuscodentata* –like dentition is described as *gloriosa* by Shikama in 1971.

- In 1975, Jerry Walls shows *coronata* as a synonym of *angustata*. However, by 1979, he alters this record, mentioning it as a synonym of *fuscodentata*.

- In 1979, Bill Liltved dives a cowry on the West Cape coast of a species which had been unknown and unseen for a near half-century - then also does the successful identification of it as *coronata* -, as it had some tubercles. He finds more shells, which were instrumental in

cementing its status as a full species. This must surely rank as one of the defining moments in South African *Cypraeovula* study and one can imagine the excitement which must have been present at the time.

- In 1982 in their landmark book, Sea Shells of Southern Africa, South African authorities Kilburn and Rippey still regard *C coronata* as an "interesting form of *C. fuscodentata*", despite noting that WR Liltved had discovered living specimens from between Cape Agulhas and the west coast of the Cape Peninsula.

- Allan Connell finds a wonderful specimen off Sea Point at 30 metres, which is illustrated in its live state on the front cover of The Connoisseur no. 6, of 1985.

- Burgess, in his comprehensive book of 1985, Cowries of the World, illustrates *coronata* as a full species. He mentions that the species has unique, coarse, rounded teeth, its pyriform shape, and that it is a white cowrie, alluding to the base.

- In August 1985 Liltved and Gosliner describe the shell, animal parts and radula in detail in The Annals of The South African Museum, Vol 96, part 4.

- Luigi Raybaudi Massilia produced an extensive review of the species in The Connoisseur, no.8 of 1986, providing the most complete overview of the species at that time, supplemented by his (at the time probably unparalleled) personal *Cypaeovula* collection often acquired directly from leading South African divers, dealers and collectors. His excellent photo of *Cypaeaovula gloriosa*, Shikama 1971 provides a rare illustration of this almost mythical species. In his Catalogue in the same publication he introduces 12 form names (f. t*ypica, minima, maxima, globosa, elongata, tuberculata, profunda, saturata, violacea, rosacea, immaculata*), including "*f. gloriosa*," which he regards as a hybrid between *fuscodentata* and *coronata*.

- 1989 – In his huge, stunningly illustrated work on South African cowries, Bill Liltved illustrates the relative variability of pattern in the species, as well as shells similar to Shikama's *gloriosa*. He recognises and discusses three separate populations of *coronata*.

- March 1996 - In World Shells # 16, Brian Hayes discusses and illustrates *C.c. gabriellii* (named by Lorenz in 1993), as a valid subspecies.

- Steyn & Lussi, in 1998, show distribution to the East of Agulhas only. Their illustration (fig 212) looks most like *C. debruini*.

- In Feb 2000, Lorenz and Hubert issue the enlarged, revised edition of A Guide to Worldwide Cowries, in which *c. coronata* and *c. gabriellii* are considered subspecies, and *gloriosa* and *immaculata* as forms or variations.

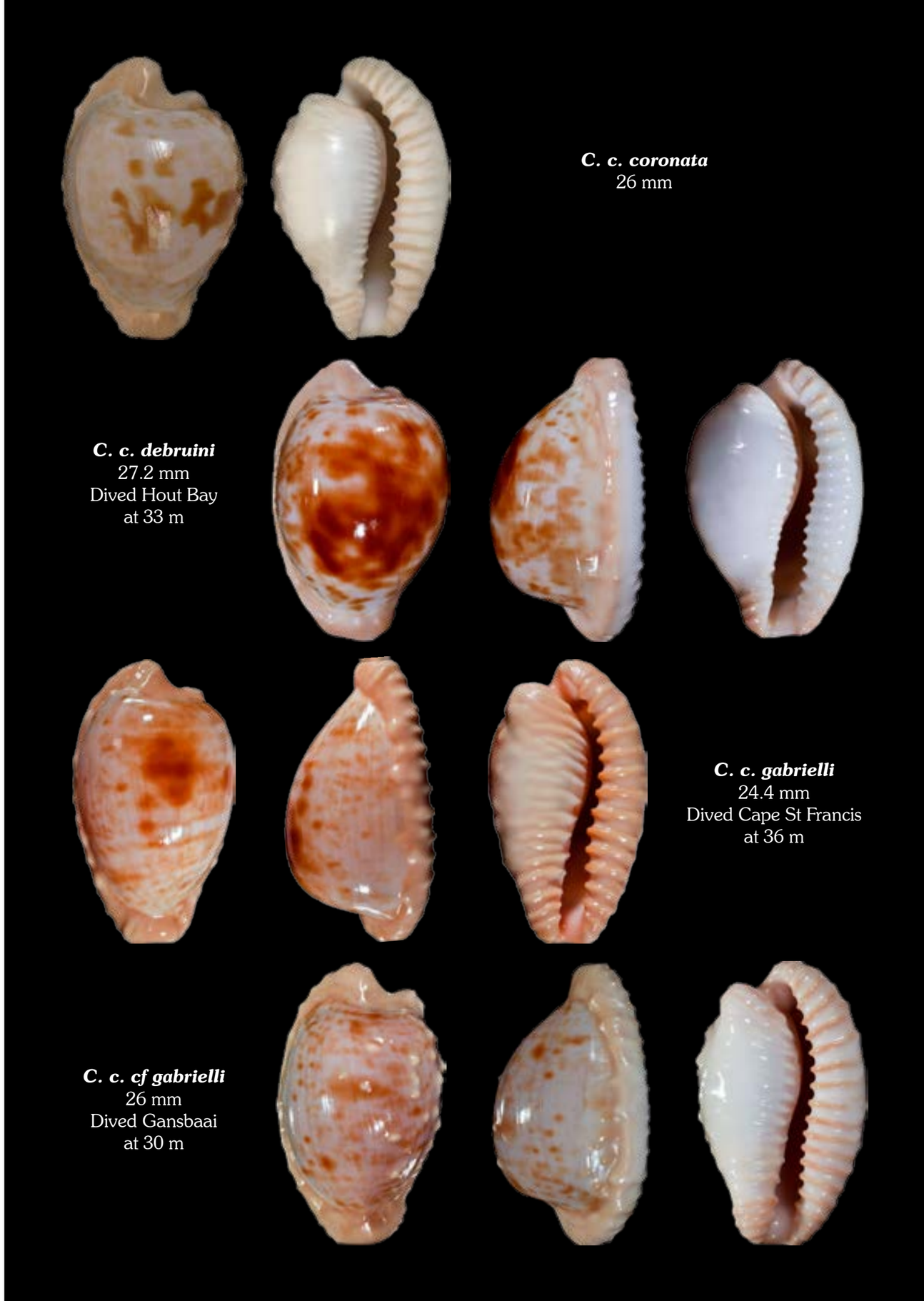
- In Dec 2000, Vellies Veldsman presents *Cypraeovula* in Strandloper 263, and mentions *immaculata* and *gabriellii*.

- In his definitive work, New Worldwide Cowries, 2002, Felix Lorenz illustrates a drawing of the lost, pustulose holotype, describes *C.c.debruini* as a separate western 'Atlantic' subspecies. (and illustrates Shikama's holotype of *gloriosa* using photo from Raybaudi's 1986 article). He mentions that Liltved reports *coronata* from as far east as Kei River.

- Steyn and Lussi in their 2005 work, illustrate three subspecies, but their *coronata coronata* (fig .114) appears to be a *debruini*.

Cypraeovula coronata is an endemic South African cowry with a surprisingly wide distribution ranging from Dassen Island on the Atlantic seaboard, to the Kei River mouth in Eastern Cape. Liltved maintains that it lives in high profile reef environments at depths of 20 -150 metres, and records its general diet as that of dermosponges, but also polychaete worms and bryozoans.

Gosliner and Liltved, in their in-depth study (Annals of the S.A. Museum) of South African endemic cowries, record that the mantle is covered with white, wart-like papillae, and hint that mantle colour differs. This is confirmed by Lorenz, who maintains that the mantle can vary in colour from grey, to reddish (pink), to black. In his 1986 article in "The Connosseur" Raybaudi notes from photos



of living animals of *debruini* that: "The mantle colour is much changeable: from translucent white to cream with brown, black or nearly absent reticulations. Furthermore, some specimens have been found with an almost entirely black mantle with the usual whitish papillae. That is enough to confirm once again that animal may be as and more changeable than its shell, within the same species." Deep water specimens from the Algoa Bay area tend to have predominantly orange/red mantle colouring.

Notwithstanding their major interest in Southern African *Cypraea*, the authors have gathered a very good sample of this species, and hereby discuss and illustrate six subspecies/forms, including of some unusual material that may prove later to be a variety of deep water forms occurring along the Agulhas Banks.

1) ***C. coronata coronata*** **(Schilder, 1930)**

Shells of the nominate species, occasionally dived in the 1980's between Cape Hangklip and Cape Agulhas, only recognized as being *C. coronata coronata* (by Felix Lorenz) after a locality near Cape Agulhas became more frequently dived by a small group of commercial divers which yielded a larger number of specimens to collectors after approximately 2002. The shells are medium-sized, dived in 25 – 40 metres on high profile reefs around Agulhas, Cape Hangklip, Struisbaai and Danger Point. Historically, it must be assumed they drifted into slightly shallower water to have washed onto the beach (per holotype). Lorenz also shows a photo of a beach specimen from Struisbaai in his "Guide to Worlwide Cowries").

They are elegantly pyriform, and generally heavily pustulose, particularly around the margins. Labral teeth are strong, to the point of forming elevated ribs, and are coloured pale grey to light brown, and extend fully across the labrum. Columellar teeth are light grey, and extend up to half way across the columella. The aperture is relatively wide. Colour of margins may be magnificent purple - mauve in fresh live shells, fading to light purple-brown. Dorsal blotch is of varying size, brown to deep brown, often with rows of spaced light brown transverse dashes. The base is pale grey, and not very calloused.

2) *C. coronata debruini*, Lorenz, 2002

The subspecies most frequently available to collectors over the preceding 30 years, first rediscovered by WR Liltved, distributed in the icy cold waters from Dassen Island to Kommetjie, Atlantic coast, at 30-50 metres on low and high profile reef systems. The vast majority of specimens of this subspecies in collections probably come from the small Hout Bay area and nearby surrounds. Shells are pyriform but inflated, and attain largest known size of all *coronata's*. The base of this subspecies is pale grey-white, columellar teeth very short, labral teeth pale to light-brown and strong. Base colour of dorsum is grey, with a pattern of an irregular brown blotch and brown transversal dashes. Specimens without any dorsal marking (informally known as "*immaculata*"), can be found amongst populations of normal specimens. On average, this group is far less pustulose than the true *coronata*.

3) *C. coronata gabriellii*, Lorenz, 1993.

Found on high profile reef at 30 -70 metres around the type locality of Cape St. Francis (8 kms West of Jeffrey's Bay, Eastern Cape). Shells narrowly pyriform to elongate, medium sized. The aperture is fairly wide, and the base distinctively brown to light brown. The teeth are coarse and often dark brown, and extend extensively across the labral as well as columellar area. There can be a strong similarity between these shells and specimens of *C. fuscodentata*, but the sporadic appearance of marginal pustules in this subspecies places these shells into the *coronata* group. (Hayes, 1996).The dorsum is pale yellow-grey, overlaid with sparse brown blotching and transverse brown lines. It should be noted that this subspecies was described from specimens dived off Cape St Francis at 30-40m, probably as a surprise finding by divers searching for the elusive *Luponia castanea* which occurs in the same area. The dived specimens usually differ from elongated deep water (70 – 100m+) specimens which are sometimes identified as *C. coronata gabrielli* in various articles. Frequently any elongate specimen of *coronata* is labelled as "*gabrielli*". The dived specimens are usually smaller, more lightweight and less calloused. Dived fresh/ live collected *C. coronata gabrielli*, as described from the type locality, must remain amongst the rarest of South African Cypraeovulidae.

C. c. gloriosa
26 mm

Deep water - Form B
29 mm
Dredged Jeffreys Bay
at 60 m

Deep water - Form B
28.6 mm
Dredged Algoa Bay
at 70 m

4) *C. c. gloriosa*, Shikama, 1971

Raybaudi in his "The Connosseur" article, regards it as a hybrid between *fuscodentata* and *coronata*. Due to the points mentioned above, it would probably be prudent to await further discoveries in the future before "lumping" *C. gloriosa* into one of the presently known populations.

5) Deep Water Complex

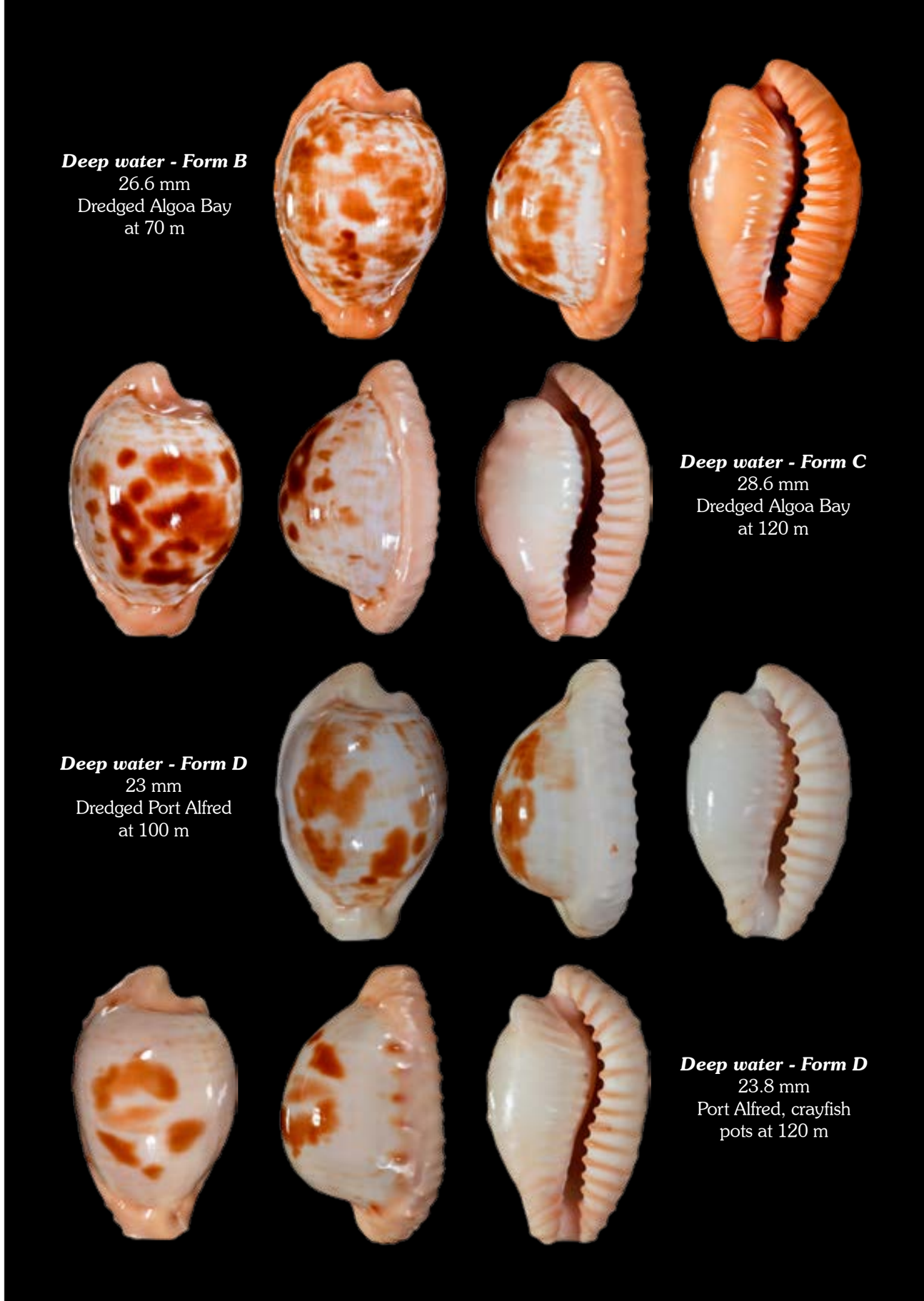
A complex of very beautiful deep water forms occur along the Agulhas Bank. Liltved, in his book, illustrated probably the more southern specimens. From Tsitsikamma to Port Alfred area, another 3 groups can be distinguished. These shells vary considerably in conchological characteristics, causing much confusion in various circles. Specimens may be called *C. coronata sphaerica*, *C. coronata gabrielli*, *C. coronata gloriosa* or *C. gloriosa*, depending on the source concerned. Raybaudi's form "*profunda*" may be one of these. For ease of understanding, we will discuss them in terms of source of origin, making 4 rough groups:

C. coronata - Form A
A "globose deep water" form is illustrated in Liltved on page 74 in figures 103 & 104 from the Agulhas Bank. Over a period of 16 years this form has not been seen (pers. comm. Mike Els) from commercial lobster boats in the Algoa Bay area and it is assumed that this form occurs further south outside the usual operative range of the local vessels. It should also be noted that certain commercial grounds may be depleted over time and vessels may only return after years of absence. Rare locality forms of *Cypaeovula* may therefore remain unique or rare for many years – particularly if it is remembered that *Cypraeovula* are a very rare by-catch of the lobster traps.

C.coronata - Form B
The vast majority of deep water *coronata* which have been available to collectors over the preceding 15 years were dredged at around 70 metres coming from a relatively small area off Jeffrey's Bay covering a few square kilometres of very flat sandy reef. These shells are variable, medium sized, usually calloused, round, and inflated. Markedly elongated, narrow shells resembling the shallower water *gabrielli* also occur. The aperture is wide (except in the elongate forms, where it is very narrow); the base is of a distinctive yellow-brown colour. It often possesses marginal pustules. Labral teeth are widely spaced, thick and brown. Columellar teeth are relatively long. Margins of the shell are a beautiful yellow-brown to rich caramel in fresh specimens. The dorsum is pale grey, overlaid with irregular brown blotching.

C. coronata - Form C
A second broad group is rarely seen from deep water lobster traps which are usually set at between 90 and 150m depth in the area from Tsitsikamma to east of Algoa Bay. The lobster trap specimens from commercial fishing boats come from a much wider radius around Algoa Bay (from near Port Alfred to Plettenberg Bay area) covering usually deeper water reef areas than the dredged group B above. These are similar in shape and form to the dredged specimens (Form B) described above but seldom obtain the richness of colouration that the "shallower" dredged specimens show. The margins and base are usually tan to pale brown. This may turn out to be due to habitat and dietary differences since the rich growth found at 70m reef habitat appears to decrease in the deeper waters (90m +) around Algoa Bay (personal observation Mike Els).

C. coronata - Form D
This unnamed form appears to be the most eastern form and has been dredged at depths of more than 90 metres between Port Alfred and Fish River, and at this point, represents the most eastern known limit for the species. They are also rarely seen from deep water lobster traps from east of Algoa Bay to an undetermined point between Port Alfred and East London. They are noticeably smaller on average than the more southern forms, broadly pyriform, with an inflated dorsum. Margins are produced and pale yellow-brown, in some cases giving a distinctly rostrate appearance. Colour is variable, but in most specimens seen the base is light creamy-brown, occasionally white, labral teeth coarse and light brown, strong columellar teeth extend across the base, margins with pustules. The dorsum is a distinctive pale blue-grey, overlaid with chocolate brown blotching of varying size. Very rarely darker brown specimens are seen, but retain smaller size and other features. The base appears to be relatively consistently lighter in colour than the southern forms and this together with the more elongate outline usually allows easy



separation between other population groups. This rare form is a relatively recent discovery, with most being found after 2002 following dredging in 90-100m off Port Alfred/Fish river area in search of *C. volvens* where it co-exists with *C. capensis gorda*. There was also an intensification in fishing effort by the commercial lobster fishing industry on the deep water grounds in this area over the same period due to the prescence of relatively unexploited lobster grounds to the east of Algoa Bay, which yielded a few specimens to collectors. The strong Agulhas current makes both commercial lobster trap fishing and any form of deep water shell collecting in this area and further eastwards very difficult.

6) *C. coronata "profunda"*, Raybaudi

This name, promulgated by Raybaudi in his detailed World Shells article, to describe a very unusual form of *coronata*, as illustrated, is distinctive but rare, and may furthermore prove to be yet another *Cypraeovula* hybrid.

Occasional specimens of an unusual, seldom seen form are found in the Western Cape area, indeterminate locality. They are medium sized, broadly pyriform, sparsely pustulate, with a cream base. Labral teeth are coarse, light coloured, columellar teeth short.

The smooth brown-grey dorsum is overlaid with very light sparse brown blotching, even in very fresh shells.

Interestingly, Liltved illustrates an apparent hybrid specimen showing features of both *C. coronata* and *C. algoensis* from the west coast. This suggests that *C. coronata* hybrids with other sympatric species can expect to be encountered in future, and may exist already in collections but not recognized, or difficult to conclusively identify on conchological grounds (eg - refer *C. gloriosa* notes above – a *fuscodentata* / *coronata* cross may be difficult to prove!)

From the above it can be seen that we know several of the forms/subspecies from a relatively few localities and there are some large gaps, or "zones of discovery" in the relatively considerable range of this endemic *Cypraeovula*. The shells vary widely and specimens from many unexplored localities on our coastline are required to form a true picture of this beautiful species. Conchological intergrades between many of the eastern forms indicate that only when detailed DNA analysis can be done in the future will a true understanding of which are valid subspecies and which are forms, emerge.

The above history is testimony to its elusiveness, and not only does it have a considerable coastal distribution, but can be found from 20 to at least 150 meter depths. Certainly in the future, there will most likely be more material brought up from possible intermediate localities that will enable future cowrie enthusiasts the chance to gain an even better picture of the diversity of this beautiful, sought-after species – the cowry with the "Crown of Pearls".

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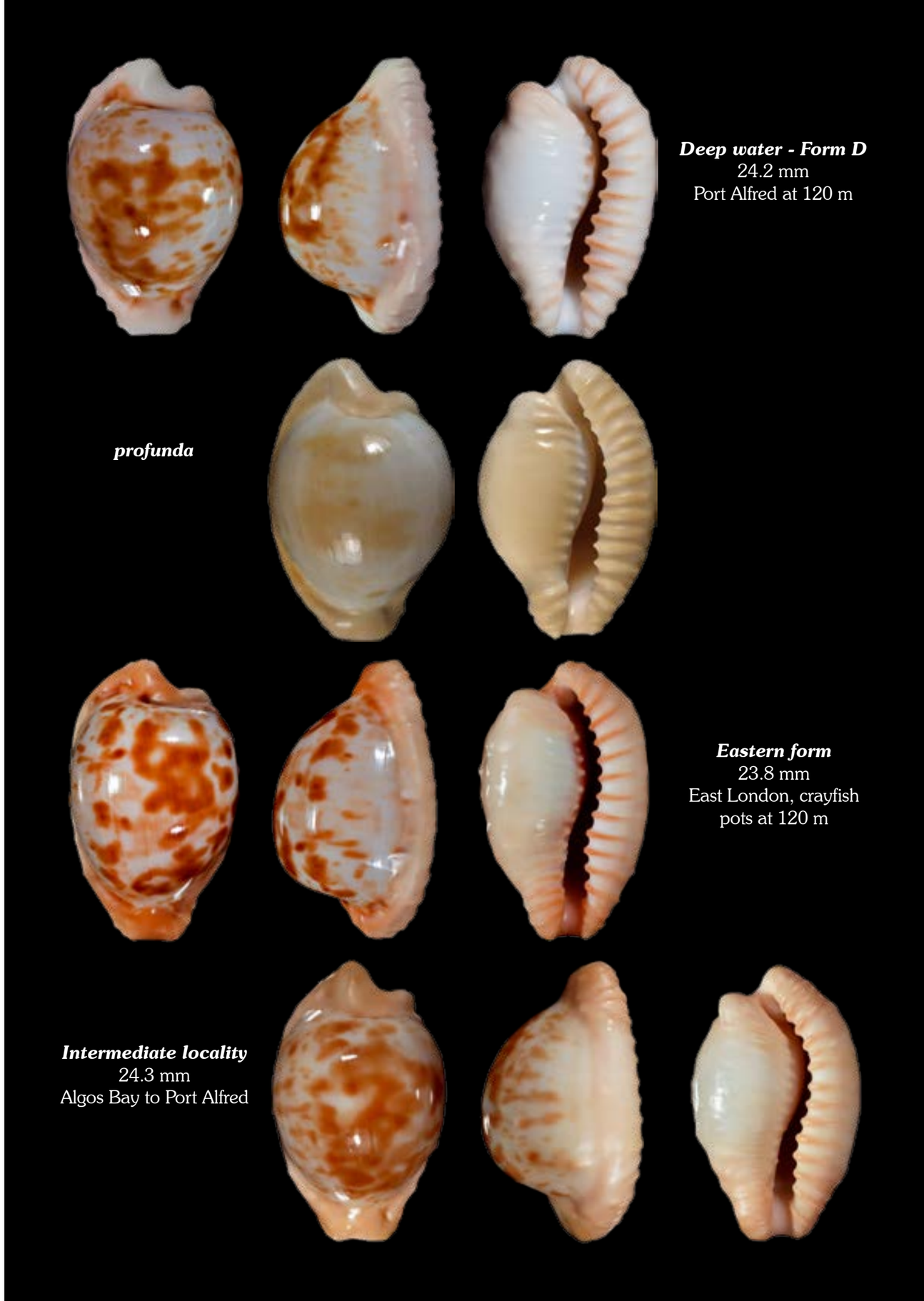
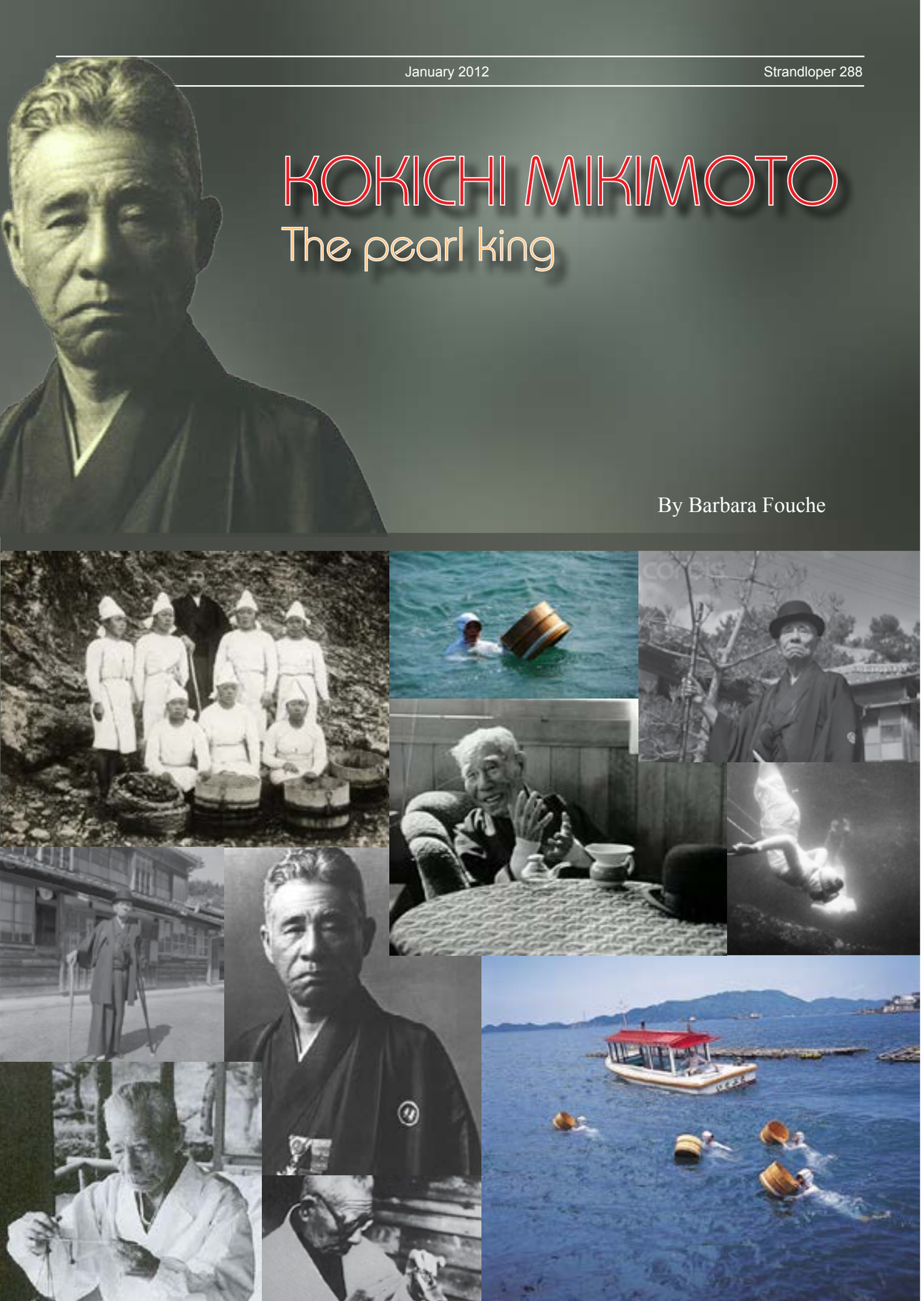




KOKICHI MIKIMOTO
The pearl king

By Barbara Fouche

The World's Pearl King"
Born in Toba, Shima Province (present day Mie Prefecture) on 25th January 1858. The first son of an Udon (noodle) shop owner. He studied in a tiny one-room school until at the age of 13 years when he left to sell vegetables to support his family. In 1881 he married Ume, wife and partner in business, the eldest daughter of a master swordsman from the Toba clan.

Without her enduring patience and co-operation, Mikimoto may not have realized the success that he achieved. He devoted his whole life to the creation of the cultured pearl. His motto "to decorate the necks of all ladies inn the world with Mikimoto pearls."

He was great at anecdotes "The important things in life are wisdom and good fortune, which brings success" and "Anyone who can't put forth a bad plan would hardly be able to put forth a good one".

Letter from Thomas Edison
At the Mikimoto pearl museum in Toba, visitors can read a 1927 letter from Thomas Edison to Kokichi Mikimoto, written after they visited together at Edison's West Orange, New Jersey home and addressing him "Dear Kokichi". Edison thanked him for the visit and congratulated him on receiving an award from the Japanese government. During their meeting, Edison had said that "it is one of the wonders of the world that you were able to cultivate pearls." Kokichi humbly responded, "If you were the moon of world of inventors, I would simply be one of the many tiny stars".

His wish to create parks all over Japan was realized in the Ise-Shima region when it was designated as the Ise-Shima National Park after World War II.

The story of his eventful live has surely passed from generation to generation as a strong-willed man who established the pearl industry in Japan and who at the same time demonstrated a marked individuality as seen in various anecdotes.

Just before his death, Mikimoto was awarded the Order of Merit (First Class) by the Japanese government and posthumously awarded the grand Cordon of the Order of the Sacred Treasure.

Ume passed away at the age of 32 leaving five young children to be cared for.

Mikimoto passed away on the 21st September 1954 at the age of 96 years.

How it all began
The Greek philosopher Apollonius of Rhodes in the second century B.C. expressed the long-held goal of man by discrediting in very unscientific terms how the pearl fishermen of the Persian Gulf made "cultured pearls". First they would render the sea smooth by flooding it with oil, a procedure that today would not seem necessary, considering the large number of perfectly calm days per year on the Persian Gulf. They then dived into the sea, and by holding out a small container of the aromatic herb, myrrh, as bait, they would induce the oyster to gape. Into the opening they would insert a long hollow pin and draw off the pearl making liquid, which was then placed into iron moulds, where it would solidify into pearls!

The Chinese first developed the techniques for producing cultured pearls in fresh water mussels. The originator, Ye-Jin-Yang lived in the years 1200 and 1300, around the time the pearly Buddhas were made by inserting tiny lead images into the oysters and then sold in the temple markets.

And then came the Japanese ….

In 1888, Mikimoto obtained a loan to start his first pearl oyster farm at the Shinmei inlet in Ago Bay in Mie prefecture with his wife and partner Ume. On the 11th July 1893, after many failures and near bankruptcy, he was able to create the hemispherical cultured pearls. He introduces these pearls at a marine products exposition in Norway in 1897 and began an export business. However, it took him another 12 years to create completely spherical pearls that were indistinguishable from the highest quality natural ones, and commercially viable harvests were not obtained until the 1920's.

Mikimoto did not know that government biologist Tokishi Nishikawa, who incidentally, was married

to Mikimoto's daughter and therefore was a son-in-law, and a carpenter, Tatsuhei Mise , had each spent time in Australia and learned the secret to spherical pearl production from expatriate British marine biologist William Saville-Kent – inserting a piece of oyster epithelial membrane (the lip of mantle tissue) with a nucleus of shell or metal into an oyster's body or mantle causes the tissue to form a pearl sack. The sack produces nacre, which coats the nucleus, thus creating a pearl. Mise received a 1907 patent for this grafting needle. When Nishikawa applied in the same year, he realized that Mise had already secured a patent. In a compromise, the pair agreed to co-operate, calling their discovery the "Mise-Nishikawa method".

Mikimoto had received a patent in 1896 for producing hemispherical pearls, or mabes, and the 1908 patent for culturing in mantle tissue, but he could not use the Mise-Nishikawa method without invalidating his own patents. Mikimoto then altered his patent application to cover a technique to make round pearls in mantle tissue, which was granted in 1916. However this method was not commercially viable. Mikimoto finally made arrangements to use Nishikawa's methods after 1916, and Mikimoto's business began to expand rapidly.

Pinctada martensi, P. margaritifera, P. maxima and *P. fucata* were some of the bivalves used for mariculture. Mikimoto founded the Japan Pearl Producers Association. By 1937 he was operating pearl farms in 10 Japanese locations, a total area of 40,830 acres, cultivating 10million oysters and breeding three million more per year.

He also invented the "pearl basket, a metal rack to hold the developing oysters, which can be pulled out of the water for periodic cleaning, or to move the oysters away from storms or red tides.

Pearls are about 91% calcium carbonate, 6% organic conchiolin and 3% water. The original Japanese cultured pearls were known as Akoya pearls.

The pearl divers

Before the beginning of the 20th Century, pearl hunting (pearl diving) was the most common way of harvesting pearls. Divers manually pulled oysters from ocean floors and river bottoms and checked them individually for pearls. Unfortunately, not all natural oysters produce pearls. It would take nearly one ton of oysters to produce only three or four perfect round pearls, making them highly scarce, and valuable.

Difficult and dangerous, this occupation was at times forced upon slaves. And yet, the Ama or "Sea Women" of Japan have been diving successfully for perhaps 2000 years and still are very proud of this tradition. In the past they were after pearls and seafood until Mikimoto cultured pearls came along. Today, this gemstone is but a bonus secondary to the abalone, sea urchin, sea-

snails and other Japanese delicacies.

They free dive, which means that without modern scuba gear, they have about a minute or so to swim down, find the seafood, often wriggling upside down in small crevices to get at the oyster or abalone, lever it out and ascend. Women likely excel at this because they are able to withstand the cold better than men and with their smaller size, able to fit into tighter corners. Thinking of synchronized swimmers, there may be some truth to the belief that women can hold their breaths longer than men. The season is short - from bone-chilling March to September with strict controls on how long they can dive per day - and yet, they make a very good living. The best divers are usually middle-aged.

Over the past century, they have tried using better equipment but these were abandoned to avoid overfishing. They do wear some light clothing today although the white, near transparent suits are worn only by divers working in the tourist areas. Up until the 1950's, they wore usually not much more than loincloths.

The Ama played on essential role in the cultivation of pearls. They dove to collect pearl oysters and dove again to replace them on the sea bed following insertion of the nucleus. They also had to promptly transfer oysters to safe locations in the case of a red tide attack or typhoon. The success of pearl cultivation would not have been possible without their contribution. Today, as new pearl cultivation technique has been developed, the Ama are no longer needed. However, their techniques are still displayed on Pearl Island in order to commemorate their once important role in pearl cultivation. Pearl Island is now the only place where you can see Ama in the traditional white diving wear.

Industry success

The new technology enabled the Japan's cultured pearl industry to quickly expand after 1916; by 1935 there were 350 pearl farms in Japan producing 10 million cultured pearls annually.

By 1935 the Japanese pearl industry was facing over supply issues and plummeting prices for Japanese cultured pearls. Mikimoto promoted Japanese pearls in Europe and the USA to counteract falling prices. He publicly burnt tons of low-quality pearls as a publicity stunt to establish a reputation that the Mikimoto company only sold high-quality cultured pearls.

In 1899, the first Mikimoto pearl shop opened in the fashionable Ginza district of Tokyo selling natural seed pearls and half round pearls. The Mikimoto business expanded internationally, opening stores in London (1913). After World War II Mikimoto opened in Paris, New York, Chicago, Boston, Los Angeles, San Francisco, Shanghai and Bombay, and was thus one of the first Japanese brands to attain an international presence and recognition.

Mikimoto had to constantly fight allegations that his pearls were only "imitation" of real pearls, despite scientific reports to the contrary. Mikimoto took advantage of every opportunity to personally promote his pearls, and took part in the 1926 Philadelphia Exposition, displaying "The Real Pagoda", which was studded with 12,760 Mikimoto pearls and took 750 artisans six months to complete. At the New York Worlds Fair in 1939, he presented a replica of the "Liberty Bell", one third of the size of the original Liberty Bell and covered by 12,250 pearls. These works are now housed in his museum on Mikimoto Pearl Island.

In memory of Dawn Brink

A shell meeting held in the Natal Museum. (from left) Dawn Brink, Markus Lussi, Val van der Walt, Dr Dick Kilburn.

Born Dawn Picard-Cambridge on the 10th June 1931 at Seaford. Sussex, England. Passed away in Durban on 29th October 2011. Married to Hendrik Johannes Brink known as Hennie.

Started collecting Worldwide Shells in 1978, joined the Natal Shell Society in 1979 and then the C.S.S.A. in 1981. She was the C.S.S.A Durban group's Treasurer from 1984 to 2011. She wrote many interesting and well-researched articles for *The Strandloper*, the last one of which was "South African" in March 2004 (No.274) with Markus Lussi & Alwyn Marais. Was awarded the C.S.S.A Lifetime Achievement Award in 2011.

Her favorite families were:
Strombidae; Bursudae; Ranellidae; Cassidae; Colubrariidae; Cardiidae and *Ovulidae*.

I always will remember her telling the story how she bought a *Festilyria duponti* Weaver, 1968 for R1.50 from an Indian souvenir shop! What a great find! She amassed a truly magnificent collection wherein everything was perfectly, correctly labeled and always kept right up to-date with name changes. Something I remember was how particular she was about the pronunciation of shell names and authors names.

Shells named for Dawn.

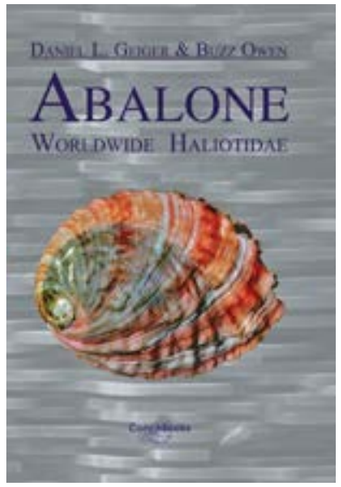
Prunum dawnbrinkae	Massier, 1993 Syn. of Hydroginella elctrina (Sowerby,1892)
Mipus brinkae	Kosuge, 1992
Fusolatirus brinkae	(Lussi, 1996)
Mitra brinkae	Salisbury & Kilburn, 1996
Colubraria brinkae	Parth, 1992 (Trawled off Taiwan)

Dawn will be sadly missed and always remembered for the knowledgeable and lovely lady that she was. Our sincere condolences to Serina, Rowan, Lucien and their families.

Rest in Peace

Barbara Fouche

Book review



Waiting for additional inner page images

Abalone Worldwide Haliotidae - Daniel L. Geiger & Buzz Owen (authors). 2012. ConchBooks: Mainzer Str. 25, D-55546 Hackenheim, Germany. 361 pp. (hardcover). ISBN 978-3-939767-43-5

Abalone have been known to man for a very long time and have been mentioned in the literature since the publications of Aristotle in the 4th century B.C. Taxonomic studies on the family only commenced with the description of seven species by Linnaeus in 1758. Now an authorative book on the family Haliotidae is available, which includes the 56 presently known valid species, 18 additional non-nominotypical subspecies and five named forms. Each species is discussed under the headings, Synonymy, Types, Type locality, Illustrations, Description, Comparisons, Range, Remarks and Literature. The book is superbly illustrated with high-quality colour photographs showing variations within each species and many images of the live animal in its natural habitat.

Both authors have been passionate about the Haliotidae since childhood and have become world authorities in the field. Apart from its scientific value, this book is a work of art and a must for everyone interested in the Abalone.

Dr J.P. Marais, *Centre for Molluscan Studies*; E-mail: alwyn@sashells.co.za

New locality for *Cypraeovula algoensis namibiensis* Massier, 2006

By **Stephan Veldsman**

In 2006 Werner Massier described a new subspecies of *Cypraeovula algoensis* (Gray, 1825). *C.a.namibiensis* had a distribution from Elizabeth Bay (Type Locality), south of Luderitz in southern Namibia to north of Port Nolloth in the Northern Cape Province in South Africa. Shells were also collected from grit dived at 20m depths (Massier 2006). All specimens Massier received were dead-taken without pattern or gloss (Massier 2006).

Comparison of the two subspecies after Massier (2006):

Cypraeovula algoensis namibiensis	***Cypraeovula algoensis algoensis***
Number: A, B, C, D	Number E, F, G, H
Elongated shape	Inflated shape
Dorsum not humped, display a dorsal plateau	Dorsum humped
Aperture curves gently towards the posterior terminal	Aperture is bent at a more acute angle
The ridges across the base of the anterior terminal are numerous and distinct	The ridges across the base of the anterior terminal are finer and not as distinct
Thin light shell	Thick heavier shell
Average of 15.8 columellar teeth and 15.8 labral teeth	Average of 18.3 columellar teeth and 19.9 labral teeth

Specimens of *C.a.namibiensis* were recently collected by the author at Cape Columbine, along the West Coast of South Africa. This seems to be a new southern locality for the subspecies. All specimens were found in grit on the beach, dead without any pattern visible. The identification of the shells was confirmed by Werner Massier (2012 *pers. comm.*).

Reference

Massier W. 2006. *Description of a new subspecies of Cypraeovula algoensis (Gray, 1825)*. Malacologia.

Figure 1

A-D: *Cypraeovula algoensis namibiensis* (Cape Columbine) and
E-H: *Cypraeovula algoensis algoensis* (Kommetjie).

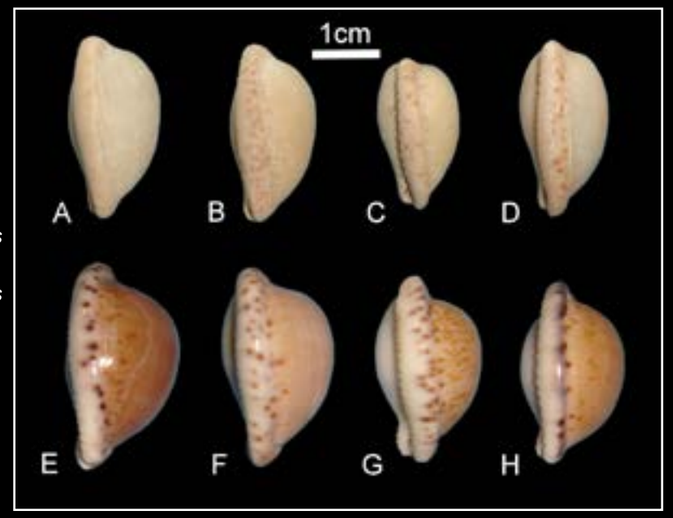


Figure 2

A-D: *Cypraeovula algoensis namibiensis* (Cape Columbine) and
E-H: *Cypraeovula algoensis algoensis* (Kommetjie).

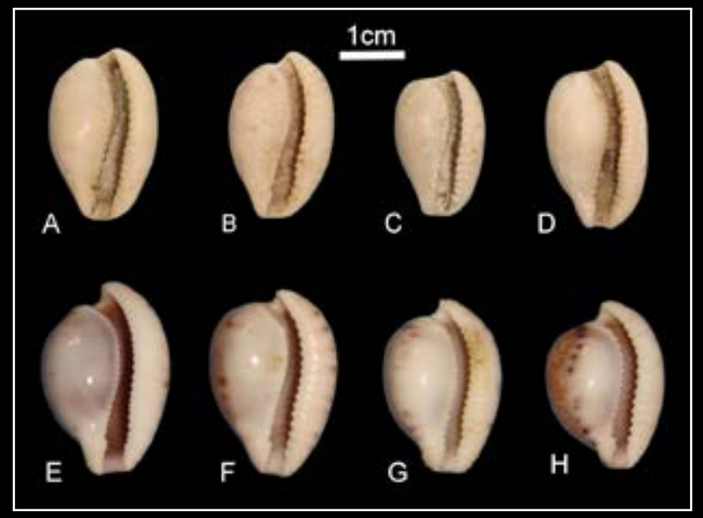


Figure 3

A-D: *Cypraeovula algoensis namibiensis* (Cape Columbine) and
E-H: *Cypraeovula algoensis algoensis* (Kommetjie).

Haliotis midae - facing a bleak future

by Johan Marais

Relaxing in a sea of *Haliotis midae*! Shells destined to the button trade during the 1970's when the industry was still well-controlled.

Haliotis midae, also known as abalone or perlemoen, is the most well known endemic member of the South African Haliotidae. Most populations occur in the south-western Cape between Cape Columbine in the west and Cape Agulhas in the south, with a further substantial population in the Algoa Bay area. In certain areas population densities used to reach 20 individuals per square metre and up to the late 1980's well-controlled management policies ensured a healthy abalone industry.

The bizarre belief of many Chinese and people throughout East-Asia that abalone is an aphrodisiac, and that its consumption ensures good luck, resulted in an increased demand for abalone in these countries. Due to this and the fact that the quota for legal abalone fishing in South Africa was drastically reduced, poaching became prevalent and escalated to such an extent that the industry is now unsustainable. In 2000 population densities in some heavily exploited sites were already reduced to an average of 0.03 individuals per square metre and numbers are still decreasing. It has been reported that the number of poached *Haliotis midae* increased from 400 000 - 500 000 individuals per year in 2003 and 2004 to over 1 million individuals per year in 2005 and 2006. Failure of responsible authorities to control the situation resulted in abalone poaching to become a highly organised, multi-million dollar illicit industry, now strongly linked with organized crime and the drug trade.

In 2007 *Haliotis midae* was included in CITES Appendix III, the only viable mechanism through which South Africa could secure support from other countries in dealing with the illegal abalone trade. However, in 2010 the South African government removed *Haliotis midae* from the CITES list, thereby showing their inability to address serious problems in implementing the listing.

The prospects of abalone populations being able to recover naturally are extremely bleak. Even if, by some miracle, the carnage could be stopped and the abalone resource recovers, it will take many decades to regain the population densities of the past.

Never too old to Shell

On Saturday morning 23 October 2010 at 8,30 am a group of intrepid South Coast Collectors arrived at South Port Beach to go Shelling. So what, I hear you say?

So what indeed! The combined age, give or take a few years between 6 people going onto the beach was 405 years! With the oldest having just turned 90! Yes, congratulations Val we got you onto the beach to celebrate your 90th birthday and your 30th year of shelling.

When the group was deciding what to do for October, Val mentioned that she would love to go shelling and so shelling it was. The weather having threatened storms was wonderful – just enough cloud cover so that no-one got terribly burned, no wind! And the rain held off until the moment we left the second beach Val wanted to visit. Oh yes, not content with having been on South Port Beach for an hour and a half, we proceeded to Sea Park Beach under Val's instructions just to check it out! All in all we trundled home at 1,30 pm.

Not too many shells were found, but lovely bits of sea weed, sponge and other bits and pieces were gathered. In between beaches we stopped for birthday cake and cold drink. Some friends from the South Port Club run by Margaret had joined us too, and so a merry morning was spent, wondering, wandering, bending, talking and eating!

The pictures tell the rest of the tale!

Selecting a national shell for South Africa

With almost 3,000 km of coastline, South Africa can be regarded as a large coastal state with the sea playing an important role in our lives. Apart from the Galjoen, our national fish, there is no other marine animal that symbolizes the importance of the marine environment in our lives.
The Conchological Society of Southern Africa (CSSA) launched a project to select the most likely endemic South African seashell for a national symbol. After much deliberation we identified five shells from which we would like the members of our Society to choose a single shell to be proposed as the national shell of South Africa. Should we be able to get our proposal accepted by the Department of Arts and Culture, South Africa will be the first country in the world to identify a shell as a national symbol.

Advantages of having a shell as national symbol:

- It will make the public aware of the exquisite molluscan fauna of South Africa.
- Could facilitate the protection of endangered marine molluscs.

The following shells have been chosen for consideration:

***Conus visagenus* Kilburn, 1974**

One of our rare deep-water cones. They are endemic to Natal and Transkei waters.

Reason for selecting this shell – it is one of the extremely rare and unique cones of South Africa.

***Cypraeovula capensis* (Gray, 1828)**

Also known as the "Cape cowrie", this shell occurs from Jeffreys Bay to the Eastern Cape and is often found washed ashore. Members of the *capensis* complex of shells are unique in that they are the only cowry shells in the world with ridges extending over the dorsum, margin and into the aperture.

Reason for selecting this shell – The fact that it is often found on the beach and within reach of the general public is an advantage since its accessibility allows many people to admire its beauty. This should also make it easy for educational institutions to acquire specimens for teaching in the classroom, thereby promoting knowledge of our marine environment.

***Festilyria ponsonbyi* (EA Smith, 1901)**

A spectacular but rare South African volute. Occurs infratidally off the southern Natal and Transkei coasts. Shells occasionally wash ashore in a worn or broken state, rarely in good condition. Also found in the stomach of Musslecracker fish caught by anglers.

Reason for selecting this shell – Selected for its exquisite beauty, rarity and relatively large size.

***Chicoreus fosterorum* Houart, 1989**

Undoubtedly the most beautiful of South African muricids. It occurs infratidally off the Natal coast and is occasionally encountered by scuba divers. A rare orange colour form can also be found.

Reason for selecting this shell – Selected for its beauty and rarity.

***Haliotis midae* Linnaeus, 1758**

Commonly known as abalone or "perlemoen" and has the widest distribution of all the shells proposed. It occurs from Saldanha on the west coast to Transkei on the east coast and frequently washes ashore.

Reason for selecting this shell – As with *C. capensis, H. midae* has a wide distribution and is easily accessible to the general public. Although temporarily listed on the CITES list of endangered species, it has recently been removed. Due to the demand for the animal from Asian countries, this species is constantly under pressure from poachers, and a selection of this species as a national symbol may help in the fight against illegal poaching.

We would like to encourage each member to select a shell that you would like to see as the national shell. Please send an email to alwyn@sashells.co.za with the name of your selected shell, to reach us no later than the 31st August 2012. We will collate the selections made and report back in one of the Sea Bones newsletters.

It's an ego thing!

To think that I, Willem van Tonder, can have my name immortalized just by having a seashell named after me! Almost too good to be true! To think that long after I am gone and my bones have turned to dust, a future generation of malacologists will look at *Conus willemvantonderi* and think of the ouk who discovered this magnificent species so long ago. It brings tears to my eyes. However, to get a malacologist to name a seashell after you is more difficult than you ouks think. One way is to drop a hint, but this seldom works because these guys have good imaginations and prefer more descriptive names. A much more difficult way is to look them straight in the eyes and say, " please, I need an ego boost". For this reason ouks like myself, of course, prefer to describe our own shells. Describing your own shell definitely counts more on the ego scale than having a shell named after you. Obviously you can't name a shell after yourself. This is a bit much - even for an egoistic guy like myself. However, to be able to put your own name after the name of the shell, puts you in a bracket way above the other ouks. It's a great feeling of achievement. It's like driving a Ferrari – that feeling of power!

In the olden days the shell experts could describe a shell in 3 or 4 lines. Now it takes malacologists 2 to 3 pages to do the same. Perhaps it's just a lack of intelligence. What's more, when they submit a paper for publication it must be scrutinized by at least two or three pier reviewers before it is regarded good enough to be published. Can you believe it! I mean, what have these guys been doing at varsity in all those years? This gives enthusiastic ouks like you and me the chance to do it ourselves and claim the fame. I can write. I mean, it was not for nothing that I once got a C+ for my English essay in grade 8. In the time those learned guys have their DNA studies done and their paper pier reviewed, we ouks could have completed several papers and added the shell names to our personal achievement lists. Allowing other more knowledgeable guys to read our manuscripts beforehand and make suggestions for improvement must be avoided because it totally destroys the personal satisfaction we ouks so desperately need.

Sometimes I do feel some guilt for intruding in a field of research that I am not really qualified in, and for irritating the hell out of real malacologists for cluttering the literature with invalid names and unnecessary synonyms, but I am trying really hard to suppress the feeling.

It is becoming more difficult to find new species these days – must be global warming. But I have a trick or two up my sleeve that will give me the edge over the other oaks also seeking glory, and it's perfectly legit! Many known species show lots of natural variation – but there are so many grey area. So if I, for instance, describe some of these variants as new species and publish the manuscript without peer review in "you know which" journal, there is nobody who can say I am wrong – or is there? But not to worry, this time I will make them subspecies!

Willem van Tonder