

the **Strandloper**

BULLETIN OF THE CONCHOLOGICAL SOCIETY OF SOUTHERN AFRICA

Strandloper 281 & 282 September / December 2005/06



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Patron : Dr R.N. Kilburn

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Please contact me for more details. I have a Microsoft Excel spreadsheet with a list of main articles.

Ed.

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Front page: *Tonna berthae*, Vos 2005
New specie of *Tonna* from South Africa,
full article on page 4.

Conchological Society of Southern Africa

The 2006 Annual General Meeting will be held on

Saturday 22nd July 2006
at the

Pretoria Zoo Hall.

Time: 11h00

A talk on a shell family will be held by Roy Aiken after which a short DVD will be shown on shell collecting in the Bahamas. Light refreshments will be provided. Family and friends welcome.

Exhibition theme: "A thorny question"
Any combination with a maximum of 12 shells


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Tonna berthae, Vos 2005

A new *Tonna* from South Africa

A new *Tonna* from South African waters has been described by Chris Vos, Belgium in *Gloria Maris* 44(1-2), 10-17.

Chris had a small juvenile *Tonna* specimen from South Africa in his collection that he couldn't match to any known described specimen. He obtained adult specimens from the late D & M Meyer' collection that matched the juvenile specimen in his collection and described it as a new species. He named it after his late mother, Bertha Goossens.

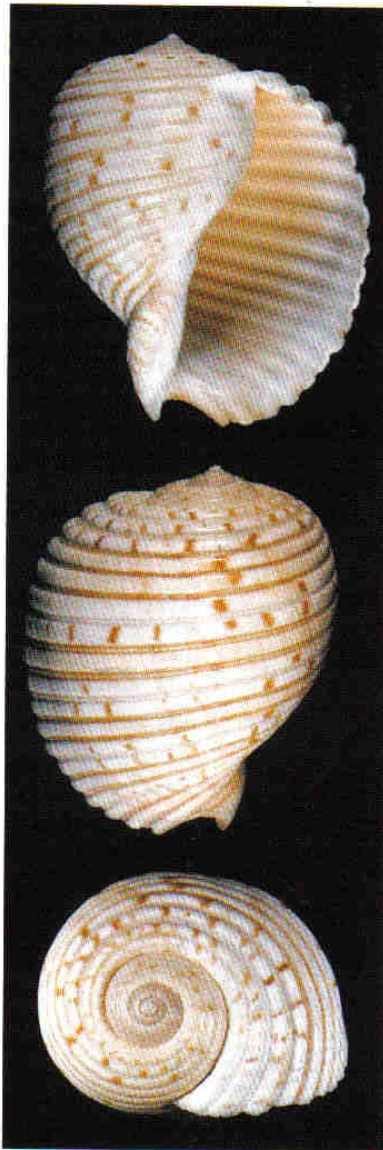
Type locality: Natal South Africa

Range: East coast of South Africa, at least from East London to Durban

Size: The largest specimen measures 89.75 mm

Habitat: Presumed on sandy flats as for all *Tonnidae*

Description: Rather bulbous, thick shell with a low spire and raised shoulder. Shallow canal along suture. Protoconch completely white, smooth and covers about 2.5 whorls. Body whorls covered with as little as 17, and up to as many as 20 rather strong spiral ribs with relatively wide interspaces in between. The top 4-5 ribs are slightly rounder in shape, with the lower ribs somewhat flatter. Periostracum – translucent greenish-brown. The basic colour of the shell is creamy white with irregularly placed blotches



Top: Paratype 1 – Tugela Bank, trawled on sand

Left: Paratype 5 – Natal. With periostracum

Right: *Tonna variegata*

of medium brown. The inner colour is pinkish-brown that fades to white towards the lip.

Remarks from the author – "It is presumed – based on the occurrence of the species over the many years of collecting and studying - that this is in fact a very rare species."

Comparison: *Tonna berthae* is comparable to *Tonna luteostoma*, as far as the inner rib structure is concerned, but it is smaller and with more ribs than the latter. Colour wise it is reminiscent to *Tonna rosemaryae* Vos, 1999 but it lacks the yellow/orange aperture and thickened lip. The rib structure and number of ribs resembles those of *Tonna variegata* and it is clearly a member of the *variegata* group.



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Marine Mythology

some stories associated with sea creatures

Text By R M Tietz
Pictures Kobie du Preez



I would like to start with the story of the shell ***Nerita albicilla***. In the Eastern Cape it is known as the Lucky Shell because it is believed to attract good fortune. For example if you put it in your purse, your purse will never be empty (which stands to reason).

But what about people in other places? In Mpumalanga and Limpopo the seed of the coral

tree is kept for luck and in the Comoros a cowrie shell ***Cypraea moneta*** is kept in purses so that they will never be empty.

I would be interested to hear other stories about our shells but in the meantime would like to tell you how some names of marine organisms and especially molluscs, have been derived from the myths of Greece and Rome.

Best known is the Jellyfish with its

circlet of venomous tentacles. The **Medusa** stage gets its name from one of the Gorgons whose hair was a writhing mass of serpents and who was successfully slain by Hercules.

Not all the classical names came from myths and legends but also real people. You must all be familiar with the Hermit Crab, **Diogenes** who has taken over many of our shells.

He gets his name from the Greek philosopher, Diogenes who was distinguished for his austerity, coarse clothes and plain food. He needed so little that we are told he took up residence in a jar.

The nudibranch **Godiva quadricolor** with its mass of brightly coloured tentacles recalls Lady Godiva who rode naked through the streets of Coventry clothed only by her hair.

Among the swimming crabs is **Scylla** the huge estuarine species





and **Charybdis**. They take their names from two rock islands between Italy and Sicily. These rocks were at one time inhabited by the fearsome monsters Scylla and Charybdis, the peril of the seas. Scylla boasted 12 feet and six heads bearing 3 rows of teeth. Our **Scylla serrata** the edible crab has 10 legs and its pincers are armed with destructive teeth. The repulsive Charybdis was a voracious carnivore who also swallowed the waters of the sea twice a day leaving ships stranded and sailors at his mercy and twice a day threw them up again. This demanded expert navigational skills to avoid being tossed on the rocks. Our **Charybdis** is also a glutton and flushes water in and out of its gill cavity.

Among the molluscs one of our most coveted shells is the paper nautilus **Argonauta argo**. It is richest in its association with myths as both its specific and generic names originate from the classics. The Argo was a boat with 50 oars and the Argonauts were its sailors who accompanied Jason on his quest for the golden fleece

Then we have **Argobuccinum argus**. This whelk is found all round South Africa but is most abundant on the west coast. It is a member of the Cymatiidae or Triton shells. Triton was the

son of Neptune, the chief marine deity of the Romans. Triton lived in a golden palace at the bottom of the sea. **Argobuccinum** feeds off and is most frequently found in association with banks of the labyrinthine tubeworm or reef worm, *Gunnarea capensis*. The tubeworm has a crown of shimmering golden tentacles, a tenuous connection with the golden palace of his namesake.

Triton is also referred to in the plural and Tritons were known to blow trumpets made out of shells to soothe the restless waves of the sea. "Buccinum" is from the Latin "Buccina" meaning a trumpet and some of this family are indeed used for this purpose and called trumpet shells.

Argus was the son of top god Zeus, and was blessed with 100 eyes. Legend has it that he was put to sleep by Hermes's flute, who then cut off his head and planted his eyes into the tail of a peacock. The connection of Argus with this whelk is obscure.



More appropriate perhaps is the Genus **Thais** which gets its name from a famous Athenian courtesan, Thais, who first clung to Alexander the Great and when he died she attached herself to Ptolemy. The Thais or Rock shells (The South African species

are now *Nucella*) sit on or beside a limpet until it lifts its shell to breathe. They then inject a poison into the flesh. Finally the limpet loosens its hold and the Thaid will feed at leisure as Thais the lady, may have sapped the strength of Alexander and then Ptolemy.

The necklace shell **Polynices** feeds on bivalve molluscs by boring through the shell using a combination of chemical and rasping action. The proboscis enters and sucks up the soft flesh.

The original Polynices was the son of Oedipus and Jocasta. Those of you in the know will know that Oedipus was fated to kill his father and marry his mother. An event that is eminently possible among predacious, hermaphrodite molluscs.

Of all the shell names taken from the myths I believe that of *Philene* to be most appropriate. **Philene aperta** is an opisthobranch mollusc found along our coast from False Bay to KZN. It is an oval, milky white sea slug with a delicate internal translucent shell. The legend goes that there was a boundary dispute between Carthage and one of the other City States of ancient times. It was decided to settle the dispute by dispatching deputies from the 2 cities and the place where they met would form the boundary. Philene set out from Carthage but had advanced further than the other party by the time they met. This intensified the dispute and Philene was accused of having started earlier. Eventually this boundary point was accepted on



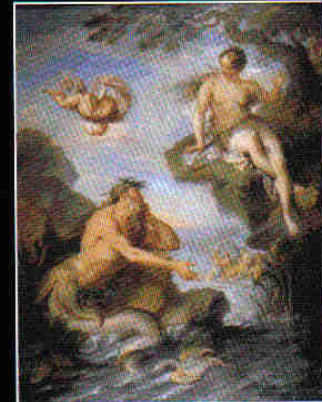
condition that Philene agreed to be buried alive in the sand - and that is how you will find him to this day - buried alive in the sand.

It is not surprising that there are a number of sea creatures that take their name from the Nereids. These sea nymphs were the daughters of Nereis (recalled as the polychaete worm **Pseudonereis**) and **Doris** (a nudibranch mollusc). Since there were more than 50 of these Nereids they are an abundant source of names. Two examples are the worm **Eunice**, and the isopod **Eurydice**. Eurydice was a beautiful sea nymph beloved by Orpheus. When she died and was taken to the underworld Orpheus followed her and persuaded Pluto the god of the underworld to release her. His request was granted on condition that he should not look back as she followed him. He could not resist the temptation so she was transformed into a grotesque creature condemned forever to inhabit the underworld. This is, as we know her - the beach louse!

One of the nereids was Glaucus - meaning the personification of the colour of the ocean and any of you familiar with **Glaucus** with its various hues of blue will agree that it is indeed the personification of the colour of the sea. However there is another character in Greek mythology called Glaucus. This unfortunate was torn to shreds by his horses because he had

ridiculed the goddess of beauty, Aphrodite. Our nudibranch also represents the tattered remnants of this Glaucus.

The goddess of beauty is recalled by both her Greek and Roman names: Aphrodite is a shimmering polychaete worm and Venus a bivalve mollusc. But there is some anomaly for our shell's specific name is *verrucosa* which means 'full of warts' - often called the warty Venus. Kypris is another name for Aphrodite, goddess of beauty from which the name Cypraeidae is derived - the beautiful cowrie shells are all incarnations of the goddess of beauty. The Goddess of Beauty is also associated with the scallop shell **Pecten** made famous in the Botticelli painting 'The birth of Venus' and of course with *Haliotis sanguinea*, the Venus ear.



There are many other shell names derived from mythology but the association is obscure - examples are **Ancilla**, a handmaiden, **Trivia**: another name for Diana goddess of hunting who presided over all places where three (Tri=3) roads (via) met and Callisto an attendant of Diana's who was turned into a bear and who may have given her name to **Calliostoma**, the top shells.

How many gods and heroes do you have in your collection?

(article based on a presentation at the Border Shell Club)

Picture References

- www.webshots.com
Medusa
<http://www.paleothea.com/Gallery/medusa.html>
- Scylla (<http://www.paleothea.com/Gallery/ScyllaGlaucusDumont.html>)

Scylla Carving from Milos, 5th century BC British Museum, London

www.answers.com

Paris Shell Show

a Photo Journal

by Roy Aiken

A longstanding dream was finally brought to fruition when I was able to attend the COQUILLAGE de COLLECTION in March 2005.

Paris is in any event one of those places one really needs to visit at least once in a lifetime for such a variety of reasons. The Louvre, Eiffel Tower, Champs Elysses, Street cafes, french cuisine, Notre Dame, Crepes Marnier, Moulin Rouge ... a colourful and fascinating cosmos. Add to this an array of gastropods to boggle the mind, and voila! a life experience happens.

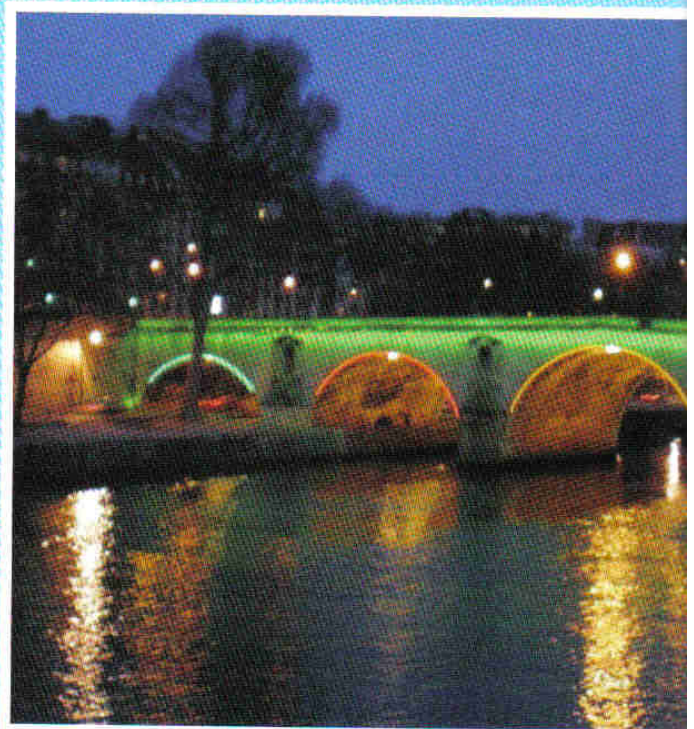
Briefly, it was inspiring to meet some well known international collectors and authors, see new books, and just admire the sheer variety of shells on show. I was grateful to Brian Hayes for his guidance and



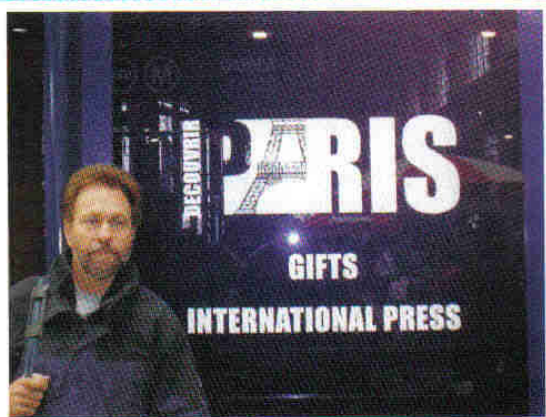
advice during our stay, from ordering food to catching the underground! My senses were on overload by the end of the show on day two, and I knew that it would probably be almost as amazing a second time who knows?!!!



'Mr.Volute', Patrice Bail. It was special to finally meet him. He was always courteous, even in his busy position as president of the show.



Bridges over the Seine were all coloured up for the Paris 201



Paris beckons!



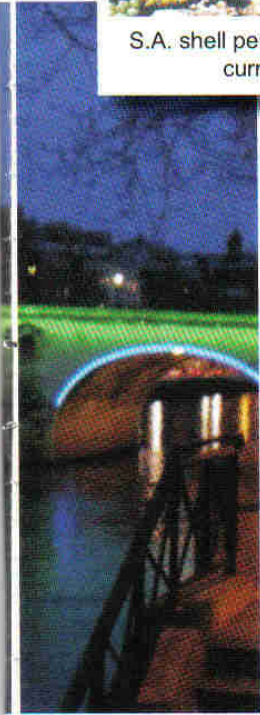
First cup of 'Cafe American' with Brian Hayes.



S.A. shell personality Mike Hart (*Cypraea mikeharti*), currently residing in New Zealand.



A Triton announces the COQUILLAGE de COLLECTION with Roy at the entrance giving some idea of scale.



Olympic bid.



Magnificent fresco which made up the domed ceiling of the Bourse de Commerce. Note the upper gallery as well.



The exceedingly rare *Cymbiola mariaemma* (+4?)



World record size *Lyria guionetti*

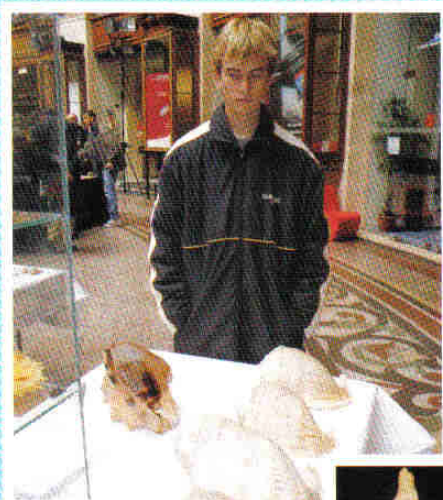


Another exquisite display

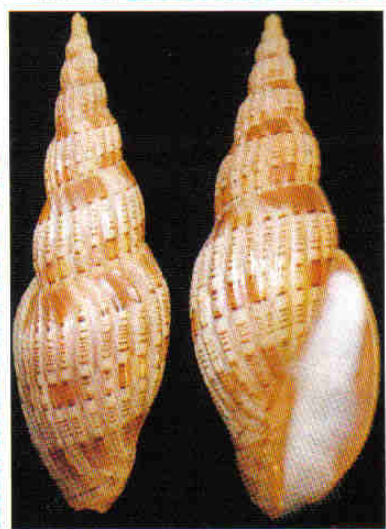


The unusual and rare *Fasciolaria thersites*, trawled off Western Cape, South Africa.





Left: Matthew, Roy's eldest son gives an idea of just how big those West African Cassidae can get.



An exquisite *Lyria lyraeformis* on display



A lovely group of far east Fulgorarinae.



A selection of lovely displays



Ex- Countdown

I have been collecting shells from fish guts since 1995 and over the past eleven years have found a total of 630 species in this way. A great many of these species are still unnamed, and some are in the process of being described.

It has always been exciting to find treasures within smelly fish guts and I would like to share some interesting shell finds with you. Over the next few Strandlopers we will show my top 25 favorite ex-pisce shell finds. This issue will feature the first five shells counting down from number 25. I trust that you will also get excited and venture into this exciting way of shelling.

Danny Spengler

25



***Dentimargo* sp.**

A new *Dentimargo* specie,
4.5mm

24



Engina ignicula

Fraussen, 2004
Recently described specie from
R. Bay specimens, 8.7mm

23



Cypraea becki

Gaskoin, 1836

My largest one found to date,
17.4 mm.

22



Primovula diaphane

Liltfed, 1987

A very rare shell, 7.7mm

21



Nassarius fretorum

Melville & Standen, 1899

A very rare Nassaridae specie
8mm

Suid-Kaapse kus verras met vywers en prehistoriese puinhope

Deur: Joh Groenewald

'n Sterk verband tussen visvywers en skulp-puinhope aan die Suid-Kaapse kus is bevestig deur 'n veldverkenning wat die Duineveld-Kusvereniging as 'n projek aangevoer het en wat oor twee jaar gestrek het.

Die studiegebied van sowat 48 km kuslyn tussen Gouritsmond in die ooste en Jongensfontein in die weste het agt groepe visvywers aan die lig gebring, en nog meer prehistoriese puinhope. Net tussen Stilbaai-Oos en Gouritsmond is tien puinhope geïdentifiseer. Vier hiervan is letterlik teenaan vywergroepe.

'n Hele reeks interessante bevindings is saamgevat in 'n goed geïllustreerde wetenskaplike verslag oor die projek.

Die Duineveld-Kusvereniging se inisiatief is ondersteun deur die Suid-Afrikaanse Erfenis-Hulpbronagentskap (wat die ou Raad op Gedenkwaardighede vervang het), die Hessequamunisipaliteit en die Stilbaaise argeologiese komitee.

"'n Mens was letterlik besig met 'n ontdekkingsreis," sê Renée Rust, projekleier en komiteelid van die kusvereniging. Mev Rust, 'n argeoloog, is besig met 'n doktorsale studie oor die interpretasie van Sanrotstekeninge in die Gamka-gebied van die Klein Karoo (tussen

In party hope is die skulpreste dik gepak, en vasgekalk of gesementeer. Van die puinhope is groot, tot byna 10 m hoog en 200 m lank, en party het tekens van prehistoriese 'kombuise' of vuurmaakplekke.

Ladismith en Oudtshoorn).

Die kusstrook tussen Gouritsmond en Jongensfontein is die viswywerkus van Suid-Afrika. 'n Vywer is basies 'n klipkraal wat in gelyk en redelike vlak water gepak is. Met hooggety kom die water oor die muur aan die seekant, en daarmee saam kom vis. Namate die gety sak, dreineer die water deur die muur, en die vis bly agter, binne bereik van die mens, wat die vis dan kan bykom met stokke, spiese, mandjies of hoe ook al.

Visvywers aan hierdie kus is volgens beraming al meer as 3000 jaar in gebruik. Eintlik het die meeste verval, en daar is nog

net een wat steeds in gebruik is en wat op die tradisionele manier in stand gehou word. Dit is die vywerkompleks by Noordkapperpunt, naby Stilbaai.

Dit is veral met 'n nagtelike hoogwater tydens die donkermaan-springgety dat vis in die vywers kom, om dan vroegdag gevang te word. Die vis wat so by Noordkapperpunt gevang word as voedsel vir werksmense, is harders. Harders is nie 'n beskermde vissoort nie.

Die meeste skulp-puinhope is van so naby as 50 m van die see af, en verder, en op 'n hoogte van 15 m en hoër. 'n Aantal is direk by vywers, en ander is in die nabyheid.

Sulke puinhope bevat nie net skulpreste nie. Daar is 'n verskeidenheid Steentydperk-werktuie, bene, erdewerk, krale, volstruis- en skilpaddop-voorwerpe, en ander kenbare artefakte. Enkele krale is vanskulp en ander van volstruiseierdop.

In party hope is die skulpreste dik gepak, en vasgekalk of gesementeer. Van die puinhope is groot, tot byna 10 m hoog en 200 m lank, en party het tekens van prehistoriese 'kombuise' of vuurmaakplekke.

Skulpe wat deur Renée Rust

geïdentifiseer is in al die puinhoop wat ondersoek is, is arikreukel (*Turbo sarmaticus*) met opercula van meestal 25-30 mm, *Haliotis spadicea*, *Haliotis midae*, *Patella cochlear*, *Patella longicosta*, *Patella oculus* en *Oxysteles sinensis*. In een puinhoop is ook stukke van *Perna perna* gekry.

Verskeie soorte diere se bene is gevind. In een puinhoop in duine van meer as 50 m bo seevlak is beenreste gevind van olifante, buffels, 'n soort renoster, robbe en groot boksoorte soos eland. Die buffel is waarskynlik van die uitgestorwe Kaapse spesie. Die ouderdom van 'n puinhoop soos hierdie word op 10 000 jaar geskat.

Dis nie net aan die kus waar skulpreste voorkom nie. Skerwe en groot stukke skulp is gevind by 'n skuiling in 'n vallei in die duineveld, sowat 8-9 km vanaf die see. Die skulpe is twee soorte klipmossels (*Patella* sp) en arikreukel, met opercula. Hierdie bepaalde skuiling het ook rotsversierings wat uit rooi spikkelpatrone bestaan.

Hoewel daar 'n verband bestaan tussen die voorkoms van vywers en skulphope, kom die skulpe nie noodwendig uit die vywers nie - die vywers is gebou om vis vas te vang, nie skulpvis nie.

Die projek het vroeg in 2004 begin met 'n eerste lugopname van die kus, gevolg deur 'n aantal terreinverkenning, opnames en opmetings wat tot November 2005 geduur het. Feitlik al die vywers is teenoor private eiendom langs die kus, en al die puinhoop is op private grond,



Die visvywers by Noordkapperpunt, naby Stilbaai. (Foto: John Gribble, SA Erfenis-hulpbronagentskap)

wat beteken dat dit redelik goed vir verdere ondersoek bewaar kan word.

Goeie nuus vir besoekers aan

hierdie gebied is dat 'n hele aantal artefakte, en skulpreste, nou in die argeologie-lokaal by die Stilbaaise toeristesentrum te sien is. -- JG



Die groot skulp-puinhoop by Bosbokfontein oos van Stilbaai, met die visvywers in die agtergrond. (Foto: Renée Rust, Duineveld-Kusvereniging)

New species described from southern Africa

A.P. & J.P. Marais

Recently four new shell species have been described from southern Africa. Two were trawled on the Agulhas Bank and were made available for study by Bryan Hayes of Port Elizabeth. The third is a large *Gemmula* occasionally found by Durban trawlers. It is also illustrated in *Offshore shells of southern Africa*, by Steyn & Lussi (No 584). The fourth is a tiny *Scissurella*, found in shell grit dived on the Aliwal Shoal and dredged off Park Rynie by Alwyn Marais.

All the turrids are described in a recent paper by Dr R.N. Kilburn entitled, *New species of Drilliidae and Turridae from southern Africa* (Mollusca: Gastropoda: Conoidea). *African Invertebrates* 46, 85-92. The *Scissurella* was described by Dr D.L. Geiger in his paper, *Eight new species of Scissurellidae and Anatomidae* (Mollusca: Gastropoda: Vetigastropoda) from around the world, with discussion of two new senior synonyms. *Zootaxa* (in press).

Editor's note: Please inform us of any newly described species from southern Africa, for illustration in the *Strandloper*.

Scissurella maraisorum Geiger, 2006

Shell white, characterized among South African species by its small size, flat spire, wide open umbilicus and absence of spiral sculpture. Attains 0.72 mm. Aliwal Shoal in 20 m and off Park Rynie in 100 m.

SEM courtesy: Dr D. Geiger



Naudedrillia hayesi Kilburn, 2005

Shell light yellowish-brown, with an interrupted white band on the periphery, large for a *Naudedrillia*, anal sinus deep, parietal nodule distinct, spiral sculpture restricted to the base of last whorl. Attains 32.8 mm. Off Cape St Blaize in 150 m.

Scans courtesy: Dr RN Kilburn



Gemmula alwyni Kilburn, 2005

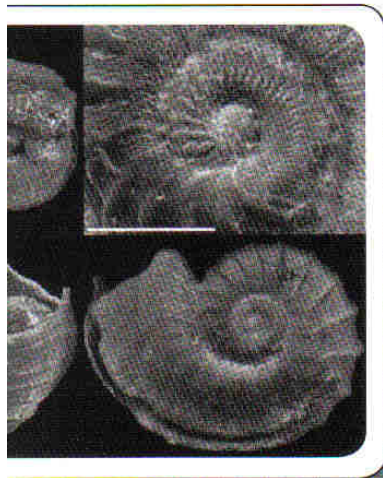
Shell pale brown, with brown axial streaks, main spiral ridges with dots, gemmules white with orange-brown interstices. Somewhat resembles a very large *Lophiotoma indica*, but shoulder of whorls much more keel-shaped. Attains 81.8 mm. Off KwaZulu-Natal and southern Mozambique in about 280-700 m.



Gastropodial MUSINGS

an informal column for questions, thoughts and answers

by Roy Aiken



muse - v. & n.(literary) 1. To ponder, reflect on; gaze meditatively.

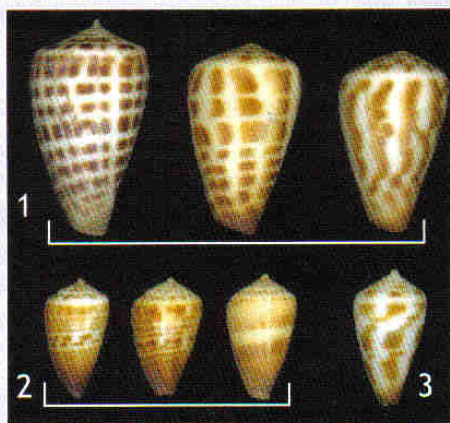
By definition this regular column is intended to promote thought and hopefully some interactive comment, albeit sometimes in a more lighthearted vein.

The focus in this issue is on Conidae and Buccinidae.



***Inkinga carnosa* Kilburn, 2005**

Shell uniform flesh-colour, spire with fine axial ribs and spiral ridges, early whorls with subsutural cord, weak or absent on later whorls, whorls with a distinct peripheral angle, shoulder not nodular, outer lip wing-like. Attains 13.8 mm. Off Cape St Blaize in 150 m.



Pattern differences in *Conus* :

- 1) *C. bairstowi*
- 2) *C. brianhayesi*
- 3) *C. brianstowi*?!

Shell shape, as well as pattern can be quite variable in the case of *C. bairstowi*. (Fig 1.)

Consistent shape, but variable pattern, is seen in *C. brianhayesi* (Fig 2.)

Conus cf.? is the shape of *brianhayesi* but has a more "bairstowi" pattern? (Figs 3). Shells were dredged off fish river in 70 to 90 m.

Freak, or *Africomina* crossed with *Bullia annulata*, or new species?

The smooth, grey *A. turtoni*? is used as comparison with the unusual specimen with distinct sutural cord. Both shells dredged off East London in 60m.



The southern African Scissurellidae

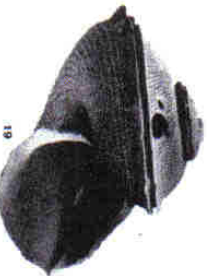
Anatoma agulhasensis (Thiele, 1925)



Anatoma yaroni Herbert, 1986



Anatoma ?japonica (A. Adams, 1862)



Scissurella jucunda Smith, 1890



Anatoma



Sukashitrochus



Scissurella



Sinezona



Scissurella maraisorum Geiger, 2006



Scissurella rota Yaron, 1983



Sinezona doliolum Herbert, 1986



Sinezona insignis Smith, 1910



Sukashitrochus maraisi Herbert, 1986





Conus geographus - Linné, 1758



Conus striatus - Linné, 1758



Conus textile - Linné, 1758



Conus tulipa - Linné, 1758

Conotoxin

by J.P. Marais and A.P. Marais

"10,000 times more potent than morphine"

A toxin for killing prey

Carnivorous molluscs employ different techniques of killing their prey, but none as sophisticated as that of the cone shells. In geological terms cone shells are quite recent. The genus probably originated only 50 million years ago. Since then they perfected their venom apparatus and a whole array of toxic substances to paralyse their prey. The venom apparatus (Fig. 1), consists of a long, tubular venom gland ending at one end in a large, muscular bulb and the other end entering the throat just behind the entrance of the large V- or L-shaped radular sack. The hollow, harpoon-like radular teeth are produced in the long right arm and stored in the smaller left arm of the radular sack, until they individually enter the buccal cavity and move to the tip of the proboscis just prior to use. The trunk-like proboscis can extend to a length exceeding that of the shell.

Members of the Conidae prey on tube worms, other molluscs or small fish, usually during the nocturnal active period. When the proboscis of the mollusc comes in contact with a suitable prey organism, the tip of the tooth is stabbed into the prey, while its rear end is held by the proboscis lip. Venom is pumped into the wound by muscle action. The paralysed prey is swallowed whole, with the venom tooth still attached. It is interesting to note that the gut contents of mollusc-eating cones often contain several of their own teeth with the remains of the prey, suggesting that it may use several teeth to kill the prey.

Most South African intertidal cones such as *Conus coronatus*, *C. ebraeus*, *C. lividus*, *C. miliaris*, *C. rattus* and *C. sponsalis*, live on polychaete worms and their venom can do little harm to human beings. However, it is always best to handle all cones with caution. South African gastropod-hunting cones, such as *Conus marmorius*

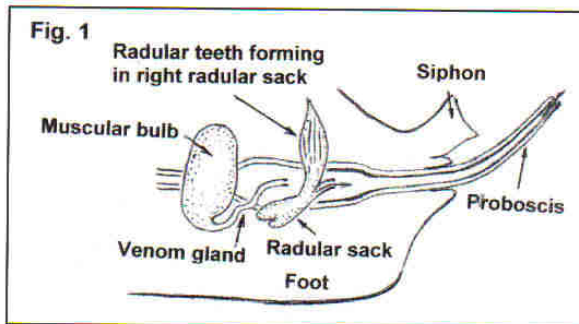


Fig. 1 Schematic representation of the radular apparatus of cone shells

and *C. textile* are much more venomous. *Conus textile* in particular is dangerous to man. Fish-hunting cones such as *Conus geographus*, *C. magus* and *C. striatus*, which live subtidally along the east coast of South Africa, have developed highly potent toxins to kill their prey instantly before they can swim away and get out of reach of the cone. These toxins have even caused human fatalities. More than 100 incidents involving humans have been reported worldwide, of which more than 30 were fatal.

The nature and mode of action of conotoxin

In the case of a small fish the effect of the toxin is so overwhelming that all body functions stop immediately, leading to instant death. In the case of a human being with a much larger body mass, the process is much slower. In one case study it was reported that directly after the person had been stung, there was a slight numbness in the affected area, but no pain. After 10 minutes the lips felt stiff and after 20 minutes his sight became blurred. After 30 minutes paralysis of the legs set in and the person slipped into a coma after one hour. Five hours after the event the person was dead. In most instances, however, the effect of the toxin is less severe and the victim usually recovers completely after a week or two.

How is it possible that a small amount of conotoxin can have such a devastating effect on the body? Conotoxin affects the nervous system of the victim. The nervous system consists of a ramification of

nerve fibres connecting every organ in the body to the central nervous system (spinal cord and brain). The normal functioning of the body is totally dependent upon impulses transmitted along these nerve fibres. Without receiving nerve impulses all organs in the body will cease to function and death will ensue.

The nerve fibres are made up of long strands of connected nerve cells or neurons, which consist of a cell body and a long process, called an axon. Strangely enough, nerve cells are not directly connected to each other, but are separated by a small gap between the tip of the axon of one cell and the body of the next nerve cell (Fig. 2). For nerve impulses to be transmitted from one nerve cell to the next and eventually to the brain, or from the central nervous system to all organs, certain chemical substances called neurotransmitters, produced within nerve cells, must cross this gap to trigger the next nerve cell. This is a complicated biochemical process. A key step in the process is the entry of calcium ions from the surrounding medium into the nerve cells through certain pores or channels in the cell wall. Calcium ions

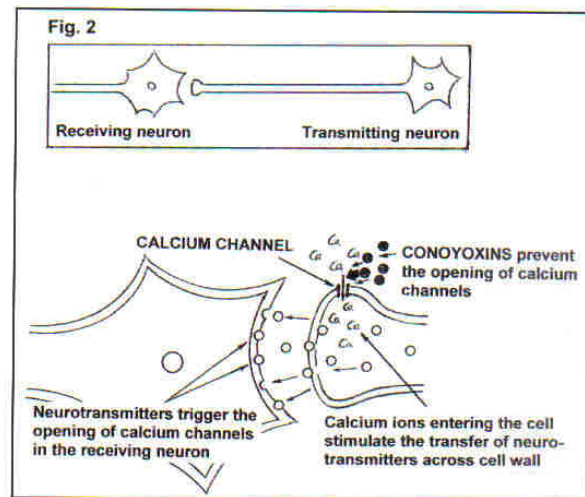


Fig. 2 Schematic representation of the role of conotoxins in the transfer of nerve impulses

entering a nerve cell stimulate the release of neurotransmitters across the cell gap to the surface of the next nerve cell. This process, in turn, causes the opening of calcium channels in the receiving nerve cell. Research has shown that conotoxin

molecules have exactly the right configuration to block the processes effecting the opening of the calcium channels, thus preventing the entry of calcium ions into nerve cells and the release of neurotransmitters. In the absence of calcium in the cell, no impulse can therefore be transmitted from one neuron to the next, leading to the impairment of body function. In the scientific world conotoxins are therefore known as calcium channel blockers. In addition, they also appear to have many other neuroactive properties. Conotoxin is slowly broken down in the body and loses its effect over a period of time. There is no antidote to conotoxin available at present, since the rare incidences of serious cone stings do not warrant the manufacture of antisera. It is far better to put the victim on a life support system to keep the heart and lungs functioning until the conotoxin has dissipated. The patient should recover completely within a fortnight.

Application of conotoxin in the medical field

Scientists studying conotoxin made the interesting discovery that in low doses the toxin does not impair body function, but instead blocks pain signals to the brain, thereby acting as a strong painkiller. As painkillers, some conotoxins appear to be as much as 10,000 times more potent than morphine. They are also non-addictive and without side-effects. Conotoxin is not a single substance. The toxin of each cone shell consists of an array of up to 50 neuroactive peptides. Peptides are substances very similar to proteins. Proteins are built up of thousands of amino acid molecules linked together in long chains, like a string of pearls. Peptides are similarly constructed, but the chains of amino acid molecules are much shorter. In the case of conopeptides the chains are only 10-40 amino acids long and differ from each other in the type of amino acid present and the sequence in which these amino acids are arranged in the molecule. Every conopeptide chain is folded into a ball, giving each conotoxin a unique 3-dimensional shape and therefore a unique set of properties as a painkiller.

The family Conidae includes more than 500

species worldwide. Since the venom of each cone snail consists of up to 50 different peptide toxins, there could, theoretically, be as many as 25 000 conotoxins in nature, each with its own unique neuroactive properties. This is of great interest to pharmaceutical companies. At present several research groups are screening cone species from all over the world for conotoxins with suitable properties in order to develop novel therapeutics

*“as many as 25 000
conotoxins in nature”*

for the treatment of a range of neurological conditions. Once the particular chemical structure of a natural conotoxin can be linked to suitable neuroactive properties, the conotoxin can be synthesized on a large scale for medical use. One of these synthetically produced peptide toxins, called Ziconotide, is in the final stages of clinical testing as a treatment for severe chronic pain. In sufferers who have failed to obtain relief from morphine therapy, pain relief on Ziconotide was shown to be moderate to complete in 53% of treated patients. An important added bonus is the fact that patients do not appear to develop a tolerance to Ziconotide, as is the case on other drugs presently in use, and there are no side-effects.

Researchers at Harvard Medical School state that cone shells contain the largest and most clinically important pharmacopoeia of any genus in nature. The lowly, but dangerous cone shell is rapidly becoming an important factor in our fight against neurological ailments.



A U C T I O N

CSSA Book Auction

Over the years the Society has accumulated many shell and sea related books. These books have been in storage for decades without being accessible to the members. During the 2005 CSSA AGM a proposal was voted on to make these books available to members at the 2006 AGM by means of an auction. Books have been divided into 13 lots of about 5-10 books each. The books will be available for viewing at the AGM.

Included in this Strandloper you will find a bidding form which you can fill in and send to The Editor, P.O. Box 187, Groenkloof, 0027. An electronic form is available on request from alwyn@deark.co.za. Should you not be able to attend the AGM, your bidding form will be entered for you on your behalf. Bidding boxes and bidding forms will be made available at the AGM with every lot. It is important to enter your name and contact information with each individual bid. The Editor will not be eligible to bid during the auction.

After the bidding period, the bidding boxes will be opened and the winning person and bid will be announced. As bidding takes place per individual lot, care should be taken when bidding on multiple lots. The bidding price must be in South African Rands. The amount bid if for an entire lot and not for any individual book. No books will be swapped or exchanged between lots. Winning lots are to be paid at the end of the AGM before removing the lot. Should you not be able to attend the AGM and your bid is a winning bid, you will additionally be responsible for the postage of the books. A bidder may place multiple bids on a single lot. The highest accepted bidder on each lot shall be the winner. Bids without a bidder name will be deemed a void bid. The Auctioneer has the right to regulate the bidding. A bid shall be taken as proof that the bidder has made himself/herself acquainted with the condition for lots for which he / she bids. All goods are sold voetstoots. Lots once knocked down remains the risk of the purchaser.

This is an unique opportunity for members to acquire these interesting publications.

Lot No: 1

- Dance, P.S.** 1974. The encyclopedia of shells. Blanford, London.
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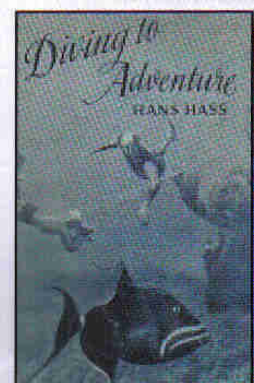
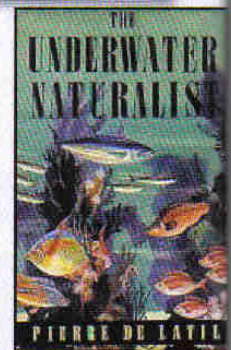
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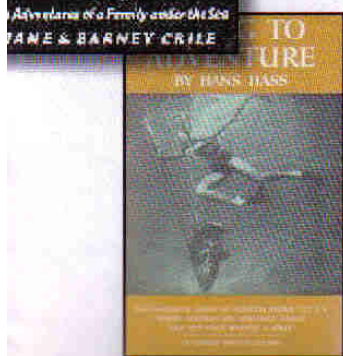
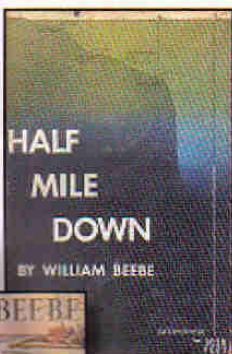
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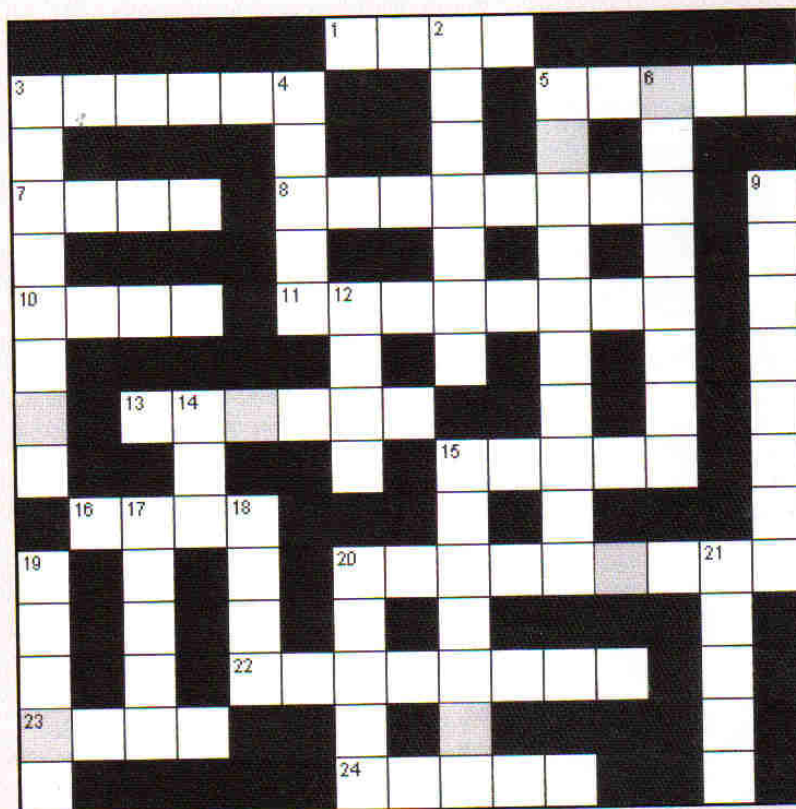
Shell Puzzle No. 1

Across

1. Ships and certain shells have this in common.
3. Plough snails
5. A rib
7. A ridge of some sorts
8. This SA Volute known for its aggressive spirit
10. A tide
11. Needle shaped
13. A 19th century German naturalist collecting extensively in Port Natal.
15. Big Chiton indeed
16. Only found in valves
20. Limpet living on kelp
22. Author of *Haliotis midae*
23. Has effect on tides
24. Author of several books on South African shells.

Down

2. From the guts of fish
3. Middle part of rocky shore
4. Genus in the family Diastomidae.
5. Famous 19th century research vessel dredging on the Agulhas Bank
6. Rough, not unlike a file
9. A cold sea current
12. Small projection, often tooth-like
14. Another ridge
15. With bead-like nodules.
17. Tiny shell indeed
18. Egg-shaped
19. Mark that tapers to a point
20. Fish eating mollusc.
21. A notch



Win

1st Prize



A wonderful selection of essential oil products, distributed by *ESCENTIA PRODUCTS*

2nd Prize

A selection of Natal trawled shells

Instructions

1. Complete the crossword puzzle.
2. Arrange the letters in the shaded blocks to form the name of a famous 19th century British conchologist.
3. Put your one word answer on a post card with your name and address and send to Shell Puzzle No 1, P.O. Box 1855, Rooihuiskraal, 0154 or alternatively you can email the answer to alwyn@deark.co.za
4. The first two correct entries drawn will each receive a prize.
5. The decision of the Committee will be final.
6. The winners will be announced in the next Strandloper.
7. The closing date is 15th May 2006