Deep-water species of Mollusca in the Mozambique Channel Part I

Frank Nolf [1] & Johan Verstraeten [2]

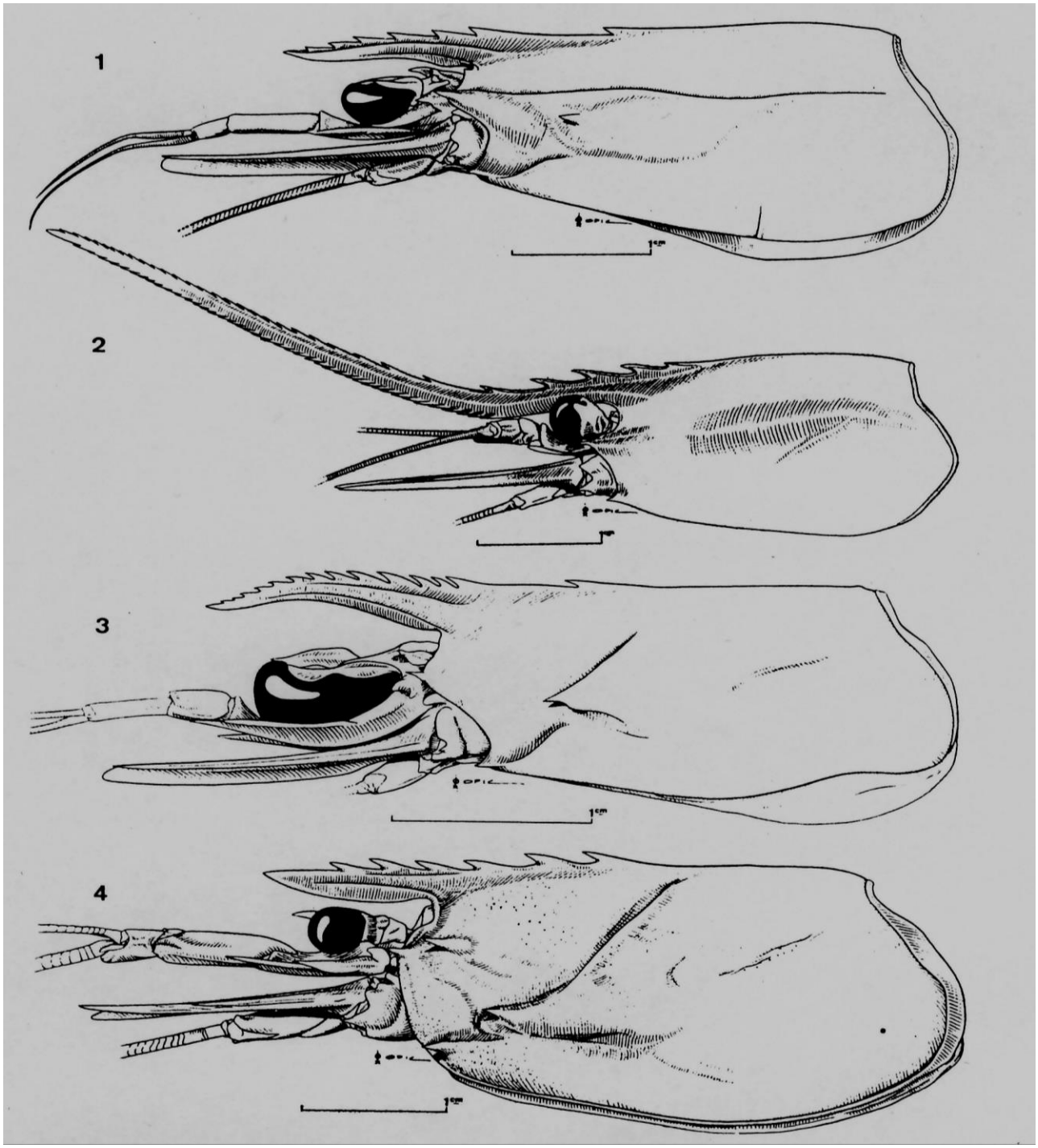
[1] Pr. Stefanieplein, 43/8 – B-8400 Oostende
frank.nolf@pandora.be
[2] Warschaustraat, 48 – B-8400 Oostende

1. Introduction

The previous decades witnessed strong evolutions in the bottom fisheries in deep water fishing grounds. Two factors had a major contribution to these evolutions: on the one hand, the technical evolution that allowed fishing with tow nets at great depths and on the other hand the depletion of the traditional fishing grounds, whose economical exploitation became less profitable.
A special aspect with regard to this is fishing for Crustacea (lobsters, crabs, deep-water shrimps, etc.). Whenever these catches are carried out using tow nets, a number of seashells living sympatrically with these Crustacea is collected.
Shell collectors or shell dealers who are able to establish contacts with the crew of such fishing fleets all of a sudden bring considerable numbers of rare to undescribed species of Mollusca within reach of the normal collector. On top of this, our knowledge of certain species is seriously expanded and we now have more data with regard to the variability within the species, the depth at which the molluscs occur and above all the geographical range at our disposal. New localities are often very remote from the place from which a species was originally described. A typical characteristic of deep-water fishery is that it can be stopped as sudden as it got started, thus resulting in a sudden stop in the supplies of these shells.
We think the time has come to publish an overview of the recent evolutions and pay special attention to the deep water fishing activities along the western coast of the island Madagascar. Many very interesting molluscan species, previously only known from a few oceanographic expeditions in the nineteenth and twentieth century such as the expedition by the 'Valdivia' in 1898-1899 have been found there.

2. The deep-water fishing activities in Madagascar

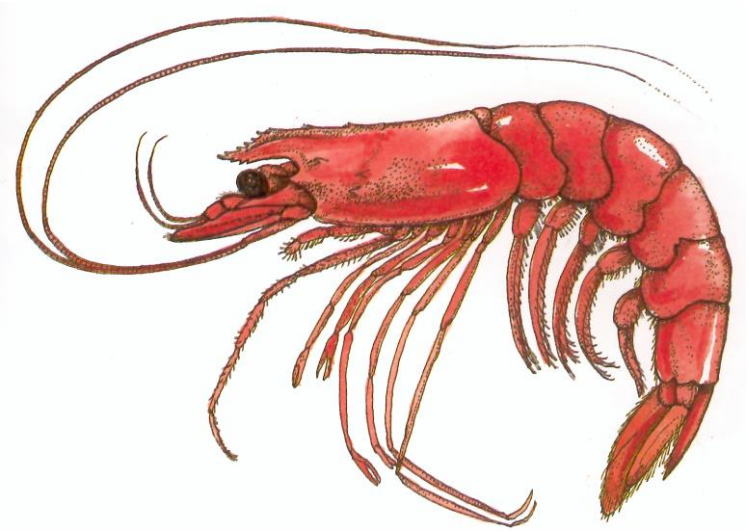
The fleet responsible for the supply of deep-water molluscs is according to reports not of a foreign (Taiwanese, Korean, Japanese nor Russian), but actually of a Malagasy origin. It has got its home port in Toliara (the former southwesterly located Tuléar).
This deep-water fishery is especially the consequence of the hunt for a certain species of deep-water shrimp by Japanese order. As the Asians are willing to pay a lot of money for this, it is possible to fish profitably for this species, which is equipped with very thick armour, but above all has very taste meat.
Up to 1973, the shrimp fishing along the Malagasy coasts was still carried out at a depth of 5 to 25 metres. However, the supplies gradually started dwindling. The production could not exceed 8,000 tons per year at that time and therefore the prospectus of possibly new fishing grounds along the flanks of the continental shelf at a depth of 100 to 1,000 metres (Crosnier, A. & Jouannic, C., 1973) was started.



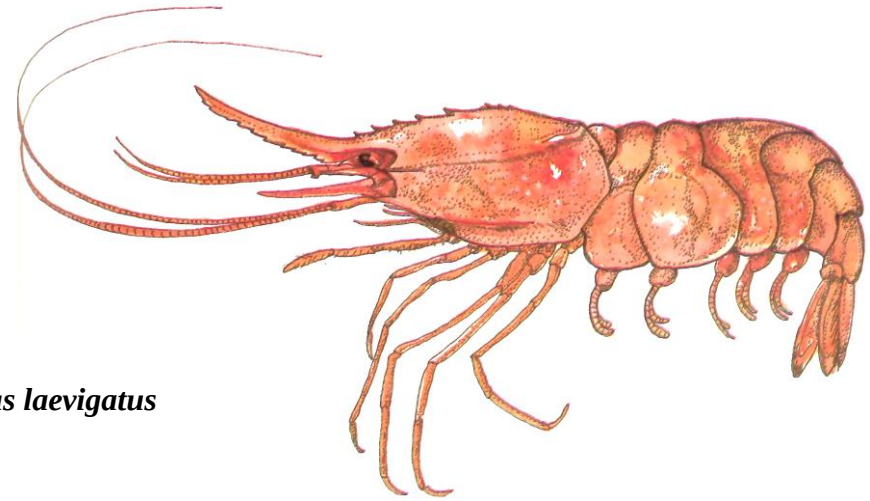
Some examples of the different species of shrimp that occur in the Mozambique Channel (only their heads are illustrated):

1. ***Parapenaeus sextuberculatus*** **Kubo: 14 cm**
2. ***Plesioinka longirostris*** **(Borradaile): 14-15 cm**
3. ***Penaeopsis serrata*** **(Bate): 14-15 cm**
4. ***Hymenopenaeus lucasi*** **(Bate): smaller than 12 cm**

Information taken from Crosnier, A. & Jouannic, C., 1973.

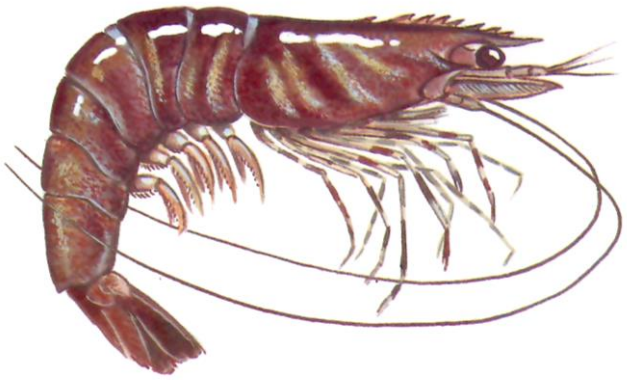


Haliporoides triarthrus



Heterocarpus laevigatus

Penaeus japonicus



Penaeus semisulcatus

The bathymetrical and cartographical surveys especially focussed on the area around Nosy-Bé, Diégo Suarez (at present Antsiranana), Majunga (now Mahajanga), the St. Augustin's Bay, the NW and the SO of Madagascar (near Fort-Dauphin = Taolanaro). The scientists yielded the following conclusion:

- down to a depth of 250 m, the bottom is sandy, but covered with rocks and therefore not suitable for fishing activities;
- in between 250 and 450 m deep, there is a sandy bottom, mixed with mud: the presence of some rocks renders fishing activities risky, yet not impossible;
- in between 450 and 650 m deep, there is even more silt and there aren't any rocks anymore: this area is suitable for fishing activities;
- deeper than 700 m, the muddy bottom is no longer very suitable for fishing activities as the silt is too weak, which means that a traditional trawl gets filled too easily and gets anchored.

Especially near Toliara (SW Madagascar), the conditions turned out to be rather favourable to convert to deep sea fishing, but Mahajanga and Nosy-Bé yielded satisfactory results as well. It should be noted that we are only talking about shrimp fishing.

During the prospectus, which lasted for three years, more than 250 different species of crustaceans were found, which indicates the extensive faunal riches of the searched area! We should of course take into account that only a limited number of them is of commercial value.
The Mozambique Channel now knows fisheries at a depth of 600 to 800 metres, more or less in between Toliara and Morondava. These depths house some attractively coloured species of shrimp of an average size between 20 and 33 centimetres. They contain some solid meat and have a strongly developed tail.
The trawlers themselves have been adapted and equipped with very powerful motors. We are talking about rather small boats, crewed by ten to fifteen men, all of them Malagasy, except for the captain and the engineer, who are French. The tow nets are attached to steel cables of about two kilometres long (!).
Because of specific problems typical of bottom fisheries, the boats are often faced with failures.
It seems to be that fisheries in shallower water (about 200 m deep) do occur, especially for private consumption. This yields some bivalved species (like *Euciroa sp.*) as well as specimens of *Perotrochus africanus* (Tomlin, 1948). These shells end up with collectors through sailors working on such boats.

3. Overview of the encountered species

What follows are a list and an iconography, both aiming at presenting an image of the species riches yielded by bottom fisheries during the past few years. Additional comments have been added for certain species.
Needless to say that we cannot present a complete overview of all the species encountered. We assume that smaller shells are not kept by the crews and as we have never had the opportunity to witness such a trawl 'in situ', a lot of information has inevitably been lost. The most important data were provided by Michel Charles (Madagascar) and completed with information provided by Luigi Bozzetti (Milan, Italy). A number of newly discovered species still has to be studied by different conchologists, aiming at a later description and this list will also have to be taxonomically completed or corrected. The average amount of species produced by this type of fishery is estimated at about 70.

Most specimens were caught with hermit crabs inside. This can probably be explained by these animals' habit to hold on to the trawling nets. The shells themselves are most often in bad condition and usually show the typical flaws caused by the presence of hermit crabs.

4. Acknowledgements

We are indebted to Michel Charles (Madagascar) and Luigi Bozzetti (Milan, Italy) for showing a profound interest in our study. They did not only provide us with many shells for sale or on loan, but also with valuable information as to the localities and fishing methods. Alain Crosnier (Muséum national d'Histoire naturelle, Paris, France) provided us with a publication about the shrimp fisheries in Madagascar.
Koen Fraussen (Aarschot, Belgium) collected all kinds of data and identified some species. We also got some help from Jos Christiaens (Hasselt, Belgium) and Jan Verberckt (Kalmthout, Belgium) in researching *Erginus sp.* and *Euspira cfr. simulans* E.A. Smith. Claude Vilvens (Oupeye, Belgium) took care of *Calliostoma sp.* and the species belonging to the genus *Calliotropis*.
We also thank J.L. Van Goethem, T. Backeljau and C. Claes for access to the collections of the K.B.I.N. (Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels, Belgium; Royal Belgian Institute for Natural Sciences) and particularly for photographing *Cypraea broderipii*. David Monsecour (Rillaar, Belgium) has carefully made the English translation.

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6. Overview of the most important molluscs

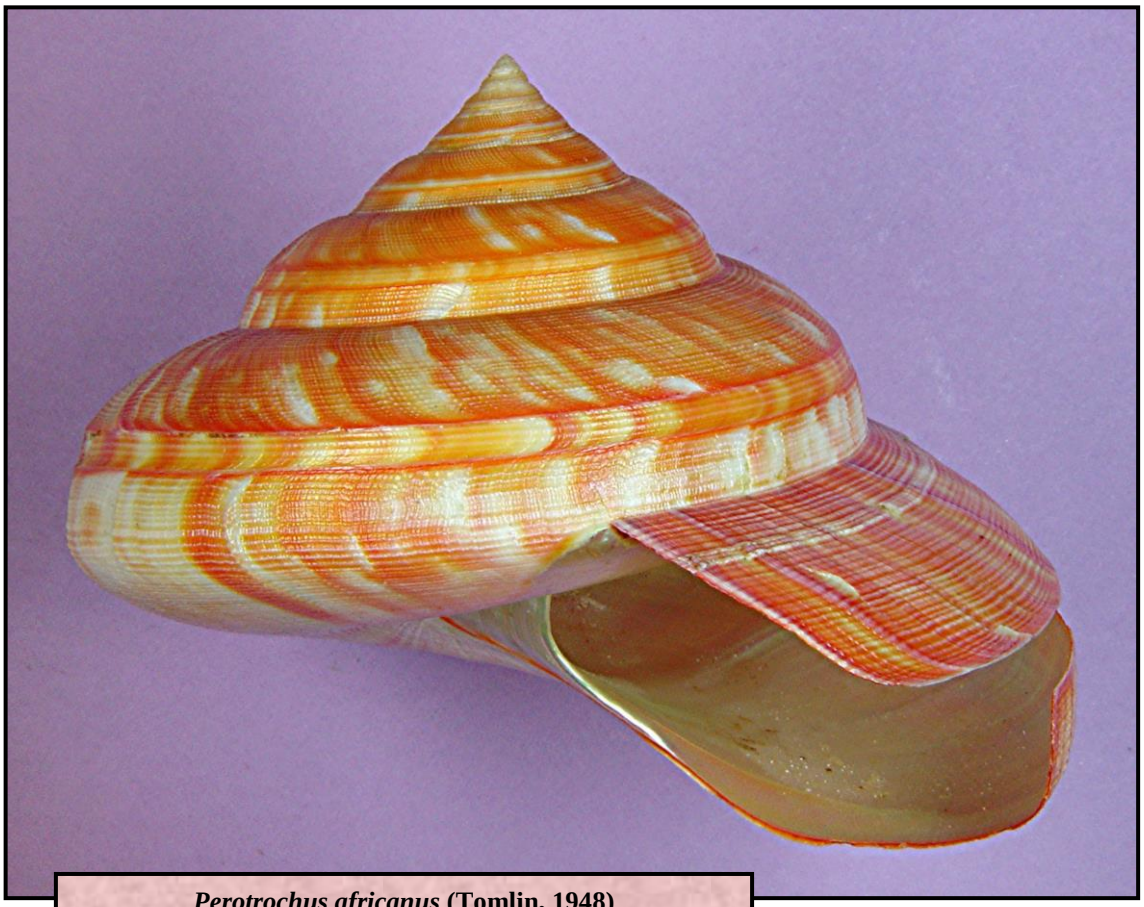
Class Gastropoda

Family Pleurotomariidae

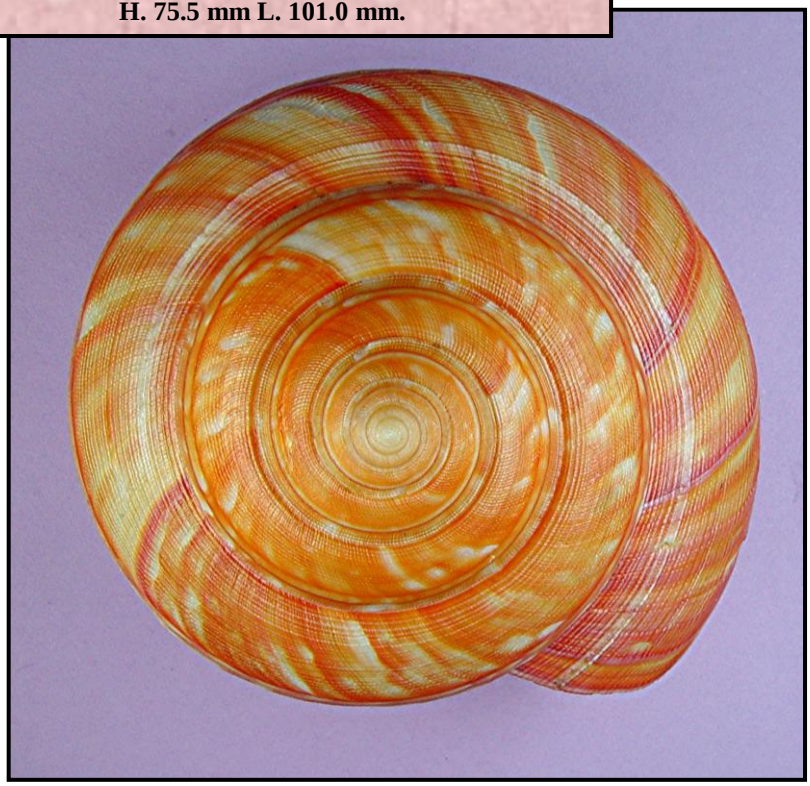
Perotrochus africanus
(Tomlin, 1948)

This species is found at a depth of 150 to 200 m near Toliara. These specimens are usually deep orange to vermillion red, as opposed to South African specimens from Natal, which often show a paler colour and a higher overall shape.
We hereby make a visual comparison between specimens from both localities.

***Perotrochus africanus* (Tomlin, 1948)**
Trawled near Durban, Natal, South Africa on a sandy bottom at a depth of 300m.
February 1976.
Collection F. Nolf.
H. 73.0 mm L. 93.0 mm.



***Perotrochus africanus* (Tomlin, 1948)**
Trawled by shrimpers at a depth of 200 m near Toliara, SW Madagascar. 2002. Collection F. Nolf.
H. 75.5 mm L. 101.0 mm.



***Perotrochus africanus* (Tomlin, 1948)**
Trawled by shrimpers at a depth of 200 m near Toliara, SW Madagascar. 2002. Collection F. Nolf.
H. 99.0 mm L. 132.0 mm.

Family Lottiidae

Erginus sp.

Erginus sp.
Near Toliara, SW Madagascar.
Trawled at 700 m deep. 2002.
Collection J. Verstraeten.
H. 10.0 mm L. 17.0 mm.

This unknown species lives at a depth of 600 to 800 metres and is found amongst organic remains that stay behind in the fishing nets (e.g. fragments of dead coral and shell grit). This shell seems to be fairly common in this region as it is regularly offered by Malagasy fishermen. It belongs to the **subgenus *Problacmaea* Golikov & Kussikin, 1972** within the **genus *Erginus* Jeffreys, 1877**. *Problacmaea* was first placed in the subfamily Tecturinae as a full genus, but was later degraded to a subgenus by Lindberg in 1988.

Family Trochidae

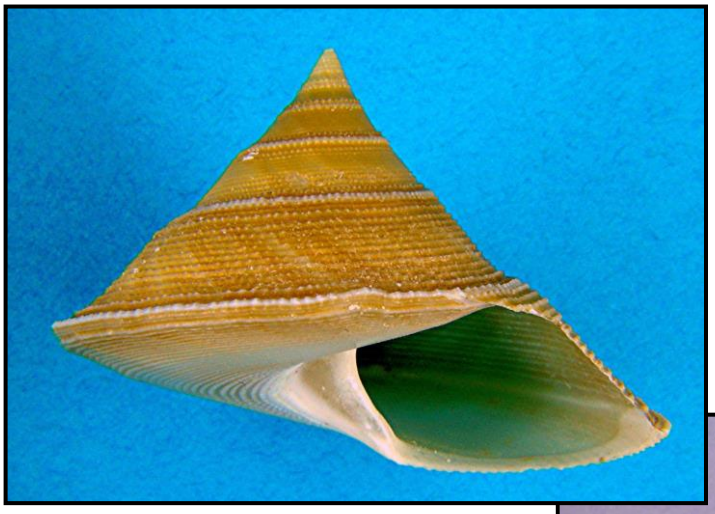
***Calliostoma muriellae* Vilvens, 2001**

***Calliostoma muriellae* Vilvens, 2001**
Near Mahajanga, W Madagascar. 22°17' S. - 42°56' E. 2002.
Dredged at a depth of 800 m. Collection F. Nolf.
H. 32.0 mm L. 26.0 mm.

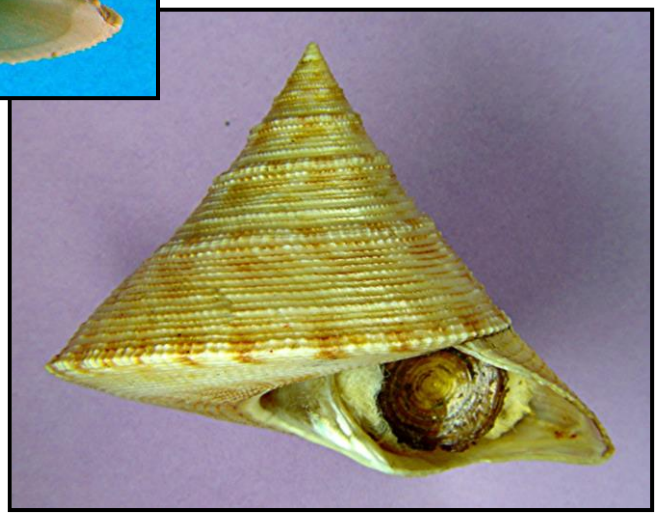
This species was described by Claude Vilvens in Novapex **2**(4) and is found near Mahajanga, Madagascar (22°17' S. - 42°56' E.).
It strongly resembles ***Calliostoma delli*** **McLean & Andrade, 1982** from Chile. The latter, however, has got a lower spire and is smooth without any beaded axial ribs. Its relation to ***Calliostoma eltanini*** **Dell, 1990** (southern Pacific – Antarctica) and ***Calliostoma alertae*** **Marshall, 1995** (Chili – Peru) is even smaller.

Calliostoma madagascariensis **Vilvens, Nolf & Verstraeten, 2004**

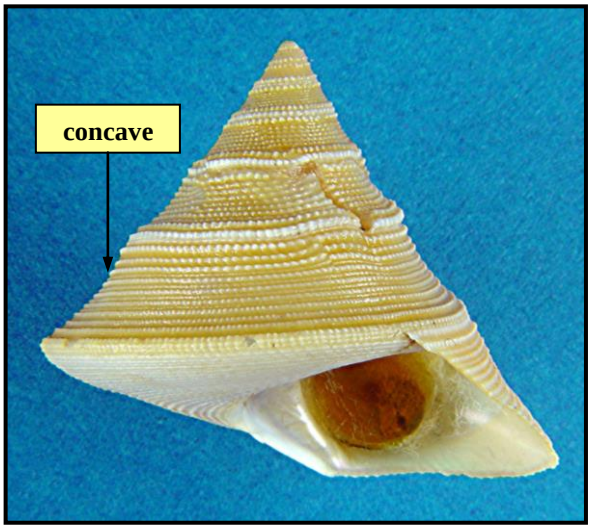
Johan Verstraeten's collection was host to three specimens that had been offered by Michel Charles (Madagascar). They all supposedly belonged to ***Calliostoma scotti*** **Kilburn, 1973**, by lack of the original description and accurate illustrations, but a thorough comparison with a specimen of *C. scotti* Kilburn, 1973 from the collection Frank Nolf lead to the surprising result that we were dealing with a different species or subspecies. Both molluscs live at a great depth in the Mozambique Channel. Further investigations lead to the conclusion that we were indeed dealing with a yet undescribed species. It was therefore described in Novapex **5**(2-3): 49-57 as *C. madagascariensis*.
The next pages provide us with a comparison between both above-mentioned species and we also briefly refer to the relation with ***Calliostoma sublaeve*** **E.A. Smith, 1895**, a species that was described from Sri Lanka, where it probably occurs at a depth of 366-540 m. A variety of the latter, namely ***C. sublaeve var. chuni*** **von Martens, 1903** occurs at a depth of 150-800 metres along the Somalian coast.
Calliostoma madagascariensis shows some resemblance to ***Calliostoma formosense*** **E.A. Smith, 1907**, a species occurring in the northwestern Pacific (Taiwan, Japan).

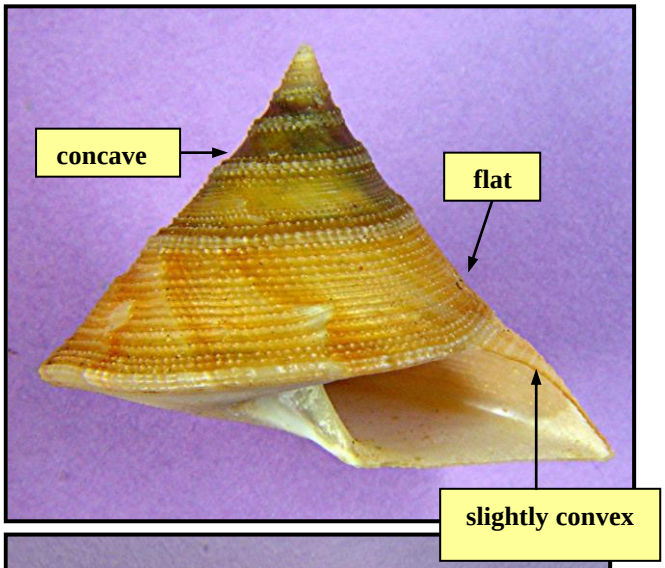


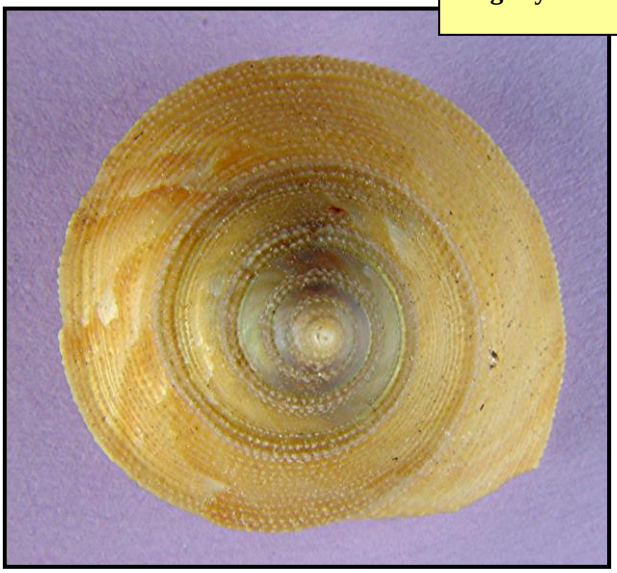
Calliostom madagascariensis
Near Toliara, SW Madagascar.
Dredged at a depth of 500-700 m.
Collection J. Verstraeten.
H. 27.5 mm L. 39.5 mm.

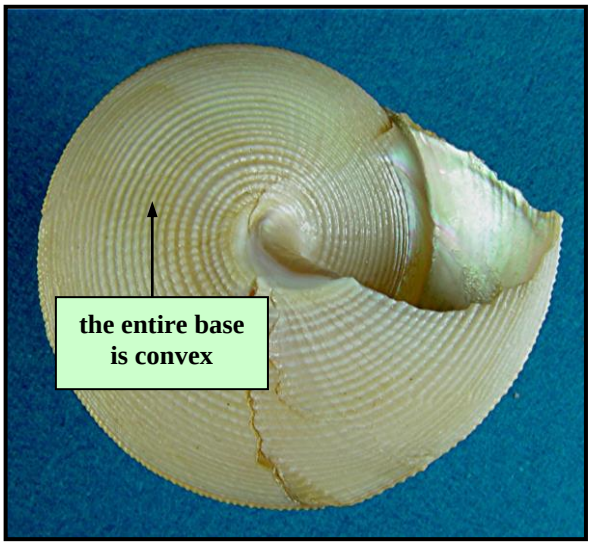


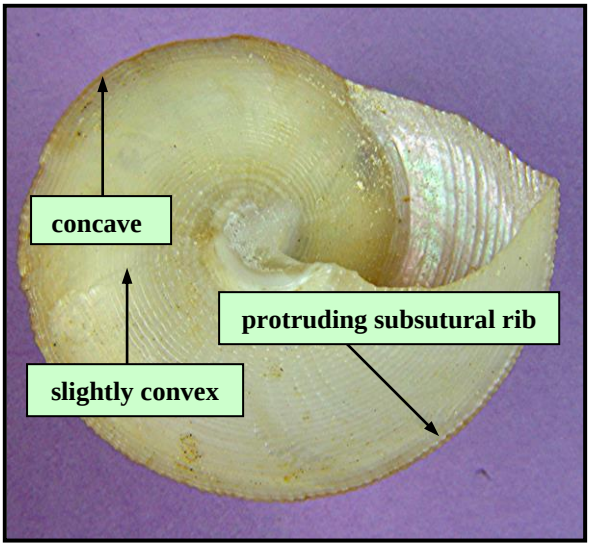
Calliostoma formosense **E.A. Smith, 1907**
Tongkang, Taiwan.
Dredged.
Collection F. Nolf.
H. 46.0 mm L. 59.0 mm.







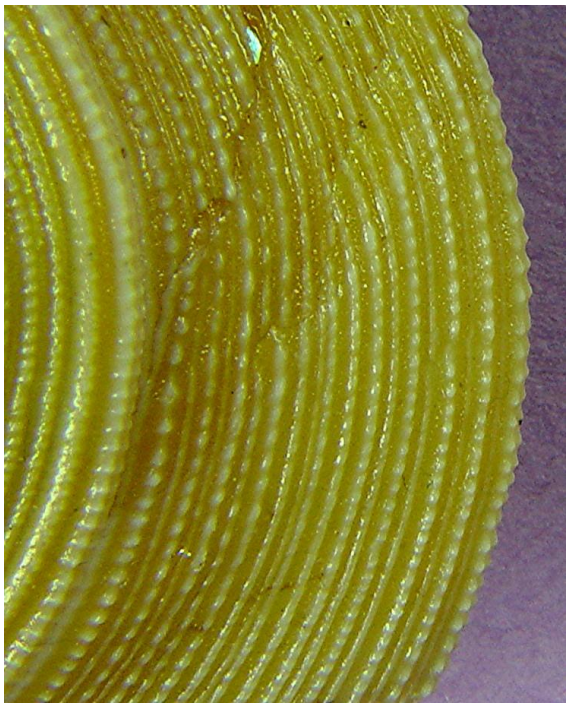


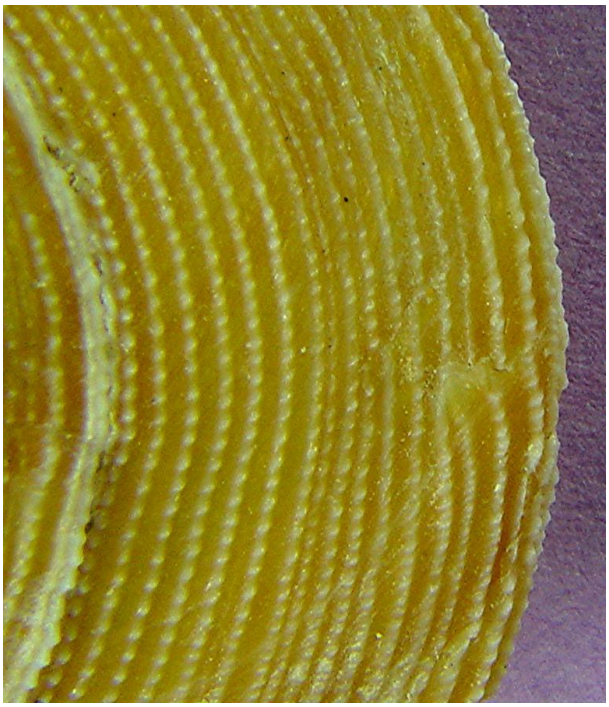


Calliostoma scotti **Kilburn, 1973**
Near Durban, Natal, Republic of South Africa.
Dredged in deep water, on a sandy bottom.
5 January 1974. Collection F. Nolf.
H. 30.5 mm L. 36.0 mm.

Calliostoma madagascariensis
Near Toliara, SW Madagascar.
Dredged at a depth of 700 m. 2002.
Collection J. Verstraeten.
H. 27.5 mm L. 36.0 mm.

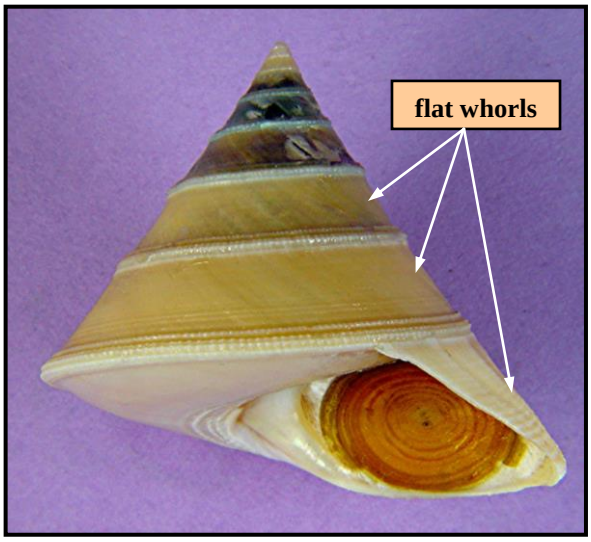
	Calliostoma scotti	***Calliostoma madagascariensis***
Shape	body whorl smaller	body whorl bigger
Whorls	concave	first whorls slightly concave, the penultimate one is flat and the body whorl is even slightly convex.
Base	convex	the subsutural rib is protruding above the base, rendering the outer part of the base even concave and the inner side of the base sloping down to the middle
Colour	yellow to ochre	pinkish orange with sporadic darker flames
Weight	twice as heavy as *C. madagascariensis*	twice as light as *Calliostoma scotti*



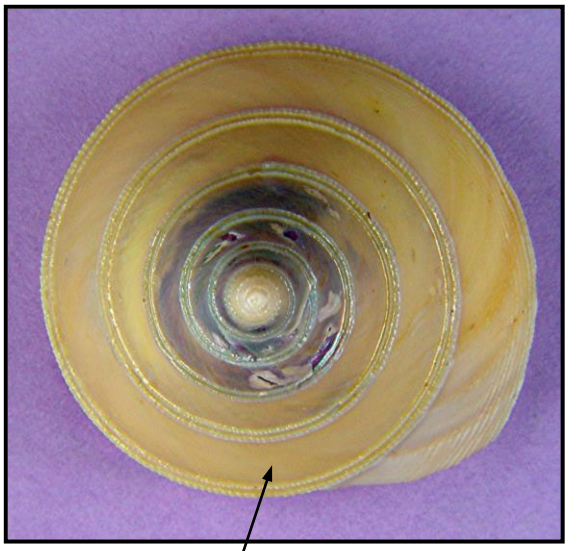


Comparison of the rib structure on the body whorl of:
***Calliostoma scotti* Kilburn, 1973 (left) and**
***Calliostoma madagascariensis* (right)**

***Calliostoma sublaeve var. chuni* von Martens, 1903**
Ras Hafun, Somalia, NE Africa.
Dredged at a depth of 150 m. 1993.
Collection J. Verstraeten.
H. 28.0 mm L. 30.5 mm (L)
H. 28.5 mm L. 33.5 mm (R)



***Calliostoma sublaeve* E.A. Smith, 1895**
Tuticorin, India.
Dredged at great depth.
January 2002. Collection F. Nolf.
H. 35.0 mm L. 40.0 mm.



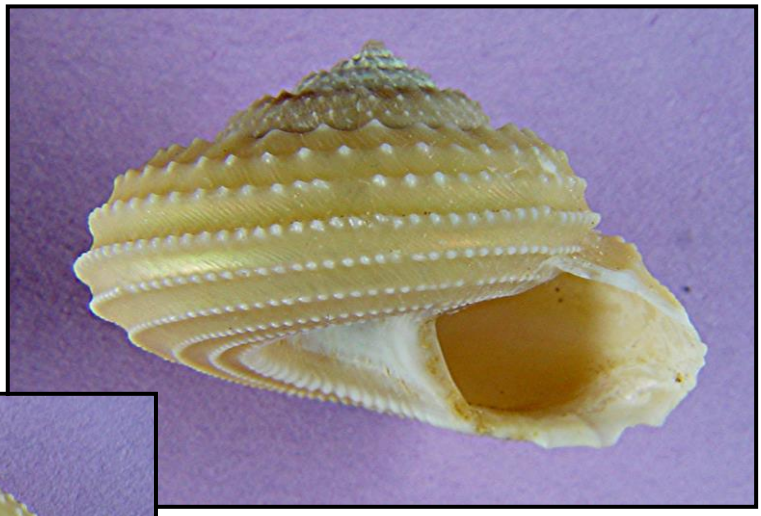
Calliotropis sp.

We distinguish between two different forms, most likely representing two species:

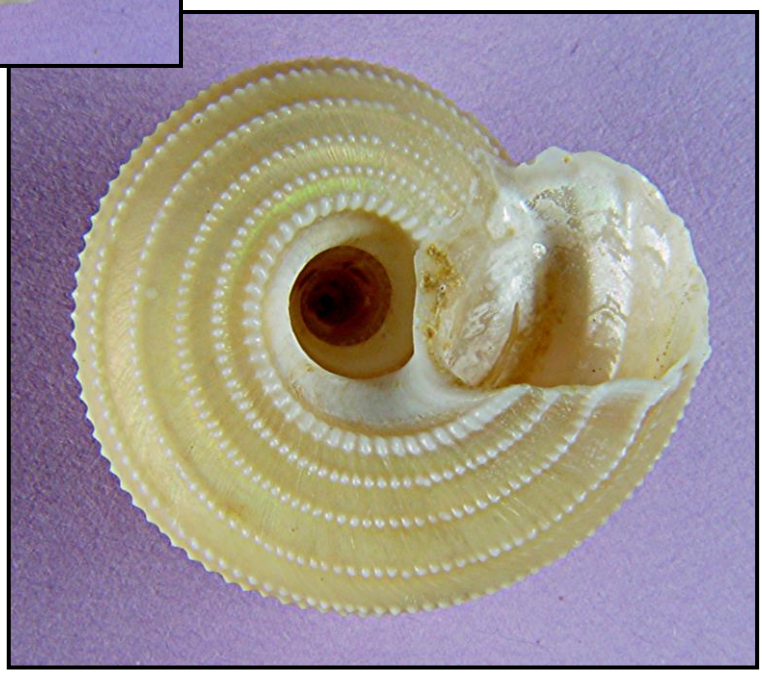
a. a **'lower'** form: ***Calliotropis sp.1***

This species was compared to ***Calliotropis patula* (von Martens, 1901)** by Claude Vilvens (Oupeye, Belgium).

The deep and broad umbilicus is striking. It is possible that this shell has never been described.

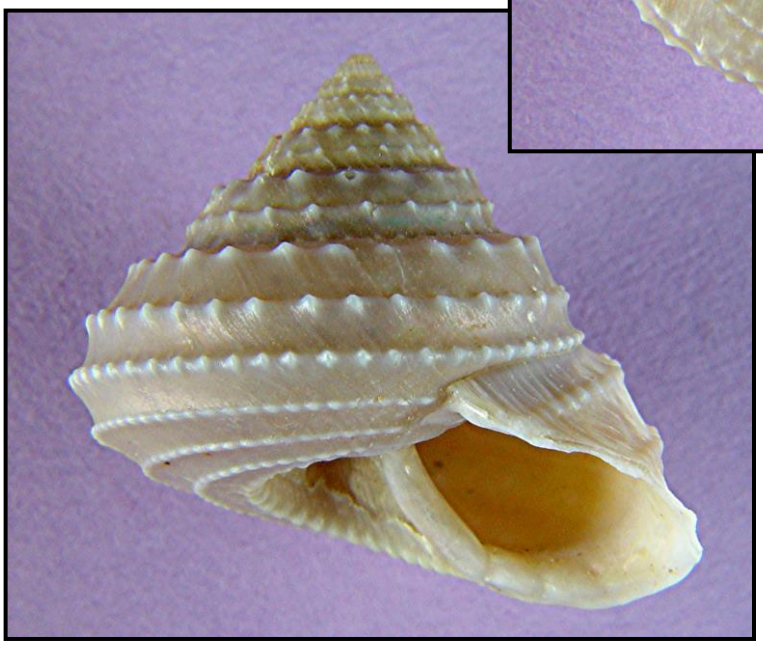


***Calliotropis cfr. patula* (von Martens, 1901)**
Near Toliara, SW Madagascar.
Trawled at a depth of 700 m.
Collection J. Verstraeten.
H. 19.0 mm L. 29.0 mm.



b. a **'higher'** form: ***Calliotropis sp.2***

Claude Vilvens (Oupeye, Belgium) thinks this species is comparable to ***Calliotropis concavospira*** **(Schepman, 1908),** which was first offered by the Siboga-expedition at great depth near Sumatera (the former Sumatra, Indonesia).



Calliotropis cfr. concavospira
(Schepman, 1908)
Near Toliara, SW Madagascar.
Trawled at a depth of 700 m.
Collection F. Nolf.
H. 20.5 mm L. 24.0 mm.

Calliotropis sp.1* & *Calliotropis sp.2
Near Toliara, SW Madagascar.
Trawled at a depth of 700 m. 2001.
Collection L. Bozzetti.

***Lischkeia mahajangaensis* Vilvens, 2002**

Unfortunately, we do not possess a specimen to be illustrated here and we therefore refer to the recent original description by Claude Vilvens in Novapex **3**(4). The title of this publication erroneously refers to a new species from 'eastern Madagascar', yet Mahajanga is indeed situated in western Madagascar. *Lischkeia mahajangaensis* can be compared with ***L. oxycana* (Smith, 1899)** from the Andaman Islands and ***Calliotropis metallica* (Wood-Mason & Alcock, 1891)** from the Indian Ocean. However, both of them show an umbilicus whereas *L. mahajangaensis* doesn't. ***Solariella infralaevis* von Martens, 1898** (Somalia, E Africa) is less elevated and shows a subsutural axial rib on the final whorls, whereas there are only two axial ribs on the base, one of which is situated on the outside and the other one around the umbilicus, with a smooth zone in between.

Family Ampullariidae

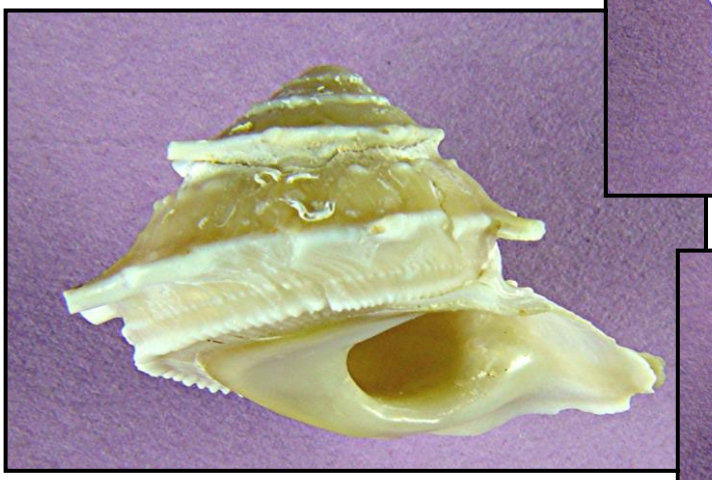
Lanistes sp.: a left-handed terrestrial/fresh water snail found at a depth of 1000 metres, 10 km off the coast, transported by water from rivers and deposited on the ocean floor.

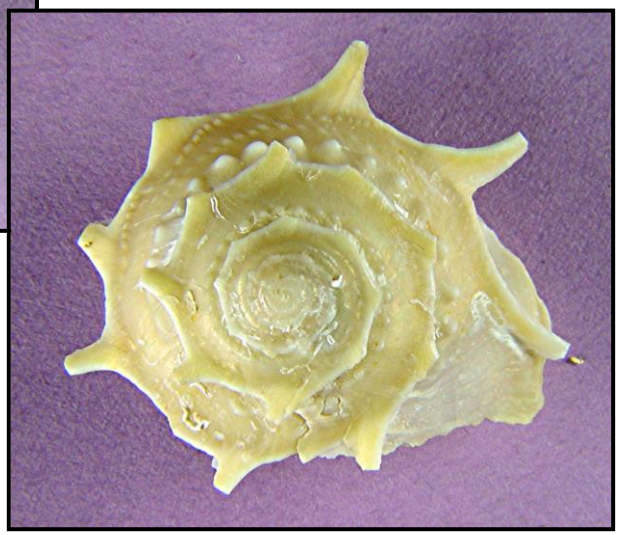
Family Turbinidae

Astralium sp.

Once again, we meet an unidentified shell. It most strongly resembles ***Astralium abyssorum* (Schepman, 1908)**, illustrated in the 'Compendium of Seashells' (1982). This is confirmed by figure 5343 of **'*Bolma henica* (Watson) *form abyssorum* (Schepman)'** in the card catalogue as published by Sally Diana Kaicher (Turbinidae I). If the specimens at hand should really be ***A. abyssorum***, we think that the structure of the base shows enough differences in order not to degrade it to the status of a 'forma' of the very variable species ***Astralium henicus* Watson, 1879**, but that it should be considered as a subspecies of the aforementioned species or as a separate species. The illustrations on the next page support our point of view.
In our humble opinion, however, ***Astralium sp.*** is a different species. We only have a single specimen at hand, so we have no clue as to the variability within the examined area.

Astralium sp.
SW Madagascar.
Trawled at a depth of 500-700 m.
Collection F. Nolf.
H. 18.0 mm L. 28.5 mm.

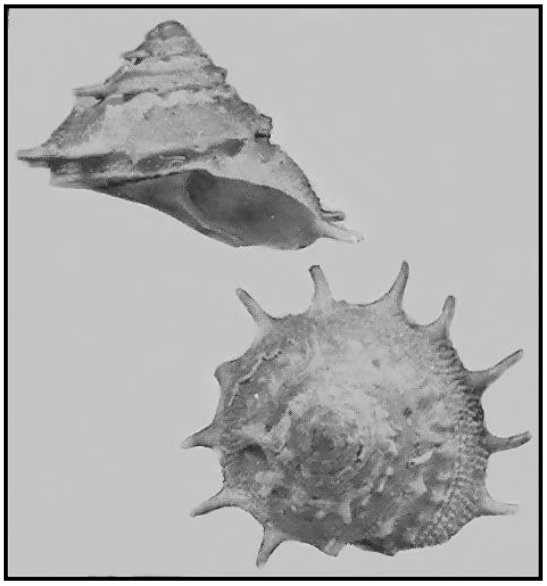




***Astralium henicus* Watson, 1879**
Tosa Bay, Japan.
Dredged at a depth of 250 m.
Collection F. Nolf.
H. 22.0 mm L. 35.5 mm.

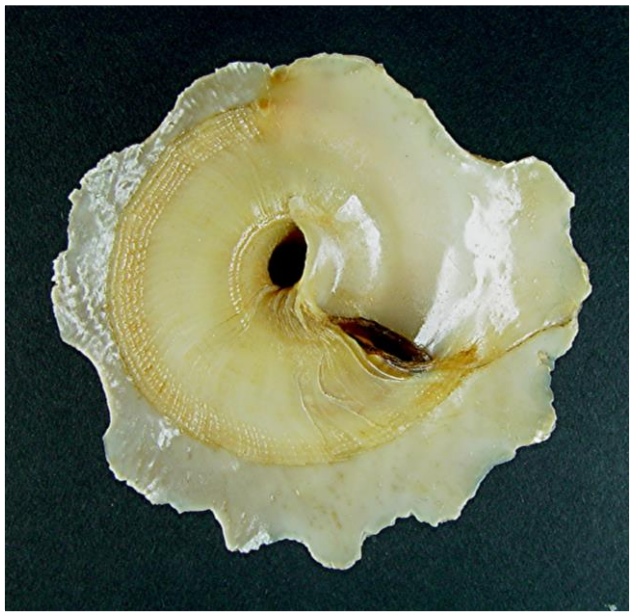
‘*Bolma henica* (Watson)
forma *abyssorum* (Schepman)
Moluccas, USNM 239286’.

Card 5343, Turbinidae I, Sally Diana Kaicher.
August 1988.



Family Xenophoridae

***Onustus exutus* (Reeve, 1842)**



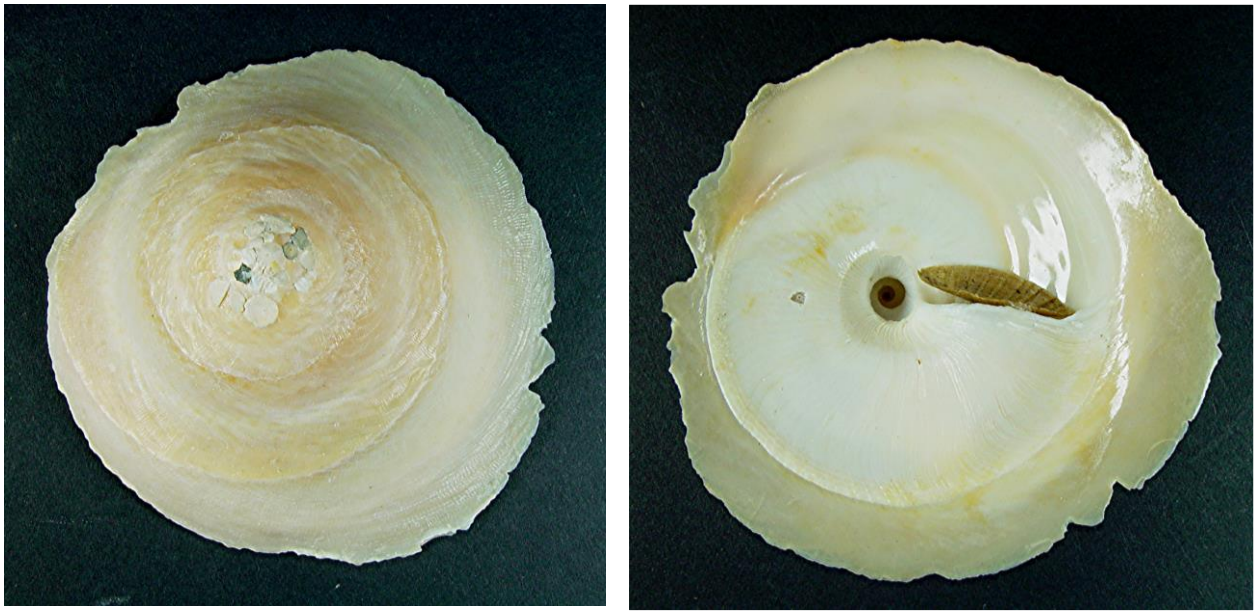
Onustus exutus (Reeve, 1842)
Nosy-Bé, Madagascar. Trawled by shrimpers at a depth of 20 m.
December 1970. Collection F. Nolf.
H. 33.0 mm L. 64.0 mm.

The occurrence of this species in the Mozambique Channel was orally communicated to us by M. Charles (Madagascar) and L. Bozzetti (Milan, Italy).
As yet, we have never been able to actually see any specimens yielded by the deep water fisheries in the Mozambique Channel and therefore doubt the correct identification of the collected specimens. The range of this species is – based upon W.F. Ponder (1983) and K. Kreipl & A. Alf (1999) - as a matter of fact limited to the western and southwestern parts of the Pacific Ocean from southern Japan to southern Indonesia, across northern Australia, Papua New Guinea down to southwestern Australia.
We could not find any literary references from the Indian Ocean. In ‘Indian Seashells’ (part I) N.V. Subba Rao mentions seven different species from India. They are all illustrated (pl.30, fig.1-16), but only six of them are discussed.

The seventh species – one can already imagine – is *Onustus exutus* (Reeve, 1842) ?! Subba Rao only based on the standard work by Ponder (A Revision of the Recent Xenophoridae of the world and of the Australian fossil species, 1983). Kurt Kreipl & Axel Alf most likely also used this revision, but forgot to state this amongst the other 130 (!) references. It is remarkable that Subba Rao does not dare to discuss this taxon as a valid species from the Indian subcontinent, regardless of the report of one (?) or a few (?) finds. The sources are probably unreliable or he possibly presumes that this shell was trawled somewhere in the western part of the Indian Ocean or the Gulf of Bengal. Maybe he was afraid that this shell ended up in India together with quite some other species from the Pacific Ocean (for example through trading with the Philippines) and was meant to be processed in the local shellcraft industry. This would render the locality completely untrustworthy.
However, our collections host a specimen from Nosy-Bé (Madagascar) that was sent to us by Michael Meyer (Durban, Natal, Republic of South Africa). We have been trading shells with this collector for years and have never had any negative experiences as to for instance changing data labels. Michael most often collected his shells himself in neighbouring countries such as Mozambique and Madagascar (60s-70s of the previous century).
We too maintain a certain reticence with regard to the occurrence of *Onustus exutus* in Madagascar, yet we dare illustrate a specimen in the present paper. We dispose of several records regarding the presence of *Onustus exutus* in the Indian Ocean, all gathered in a limited period of time and it would be a shame if this information were once again neglected. A special addendum or a separate article will be published as soon as we get to additional data for this species.

***Onustus indicus* (Gmelin, 1791)**

As with the previous species, we do not possess a specimen from the Mozambique Channel ourselves. Records were passed on by L. Bozzetti (Milan, Italy) and M. Charles (Madagascar).



***Onustus indicus* (Gmelin, 1791)**
Palm Island, Great Barrier Reef, Queensland, Australia.
Dredged, on a sandy bottom. 10 August 1971. Collection F. Nolf.
H. 34.0 mm L. 76.0 mm.

Due to the lack of proper reference material, we hereby illustrate a specimen from Queensland, Australia. *Onustus exutus* (Reeve, 1842) can only be confused with *Onustus indicus* (Gmelin, 1791), but the lobed edge of the final whorl in *O. exutus* seems to be very specific, of course with the exception of juvenile or damaged specimens.

***Stellaria gigantea* Schepman, 1909**

This is – as indicated by its name – a very big species, in size only beaten by *Onustus longleyi* Bartsch, 1931 (from North Carolina throughout the Gulf of Mexico to Brazil).

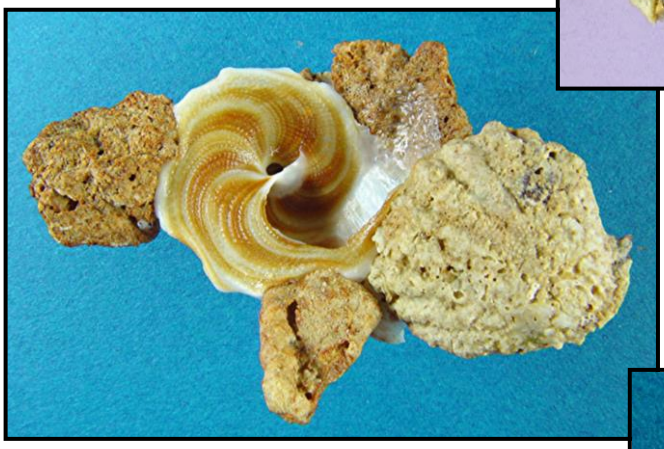
Stellaria gigantea occurs in South Africa (near Durban), Mozambique, the Chagos Archipelago, the Indian Ocean and from southern Japan to NW Australia at a depth of 60 to 700 m (fide Kreipl – 1999 and Ponder – 1983).

***Stellaria gigantea* Schepman, 1909**
Trawled near Durban, Natal, South Africa. At great depth. July 1973. Collection F. Nolf. H. 66.0 mm L. 104.0 mm.

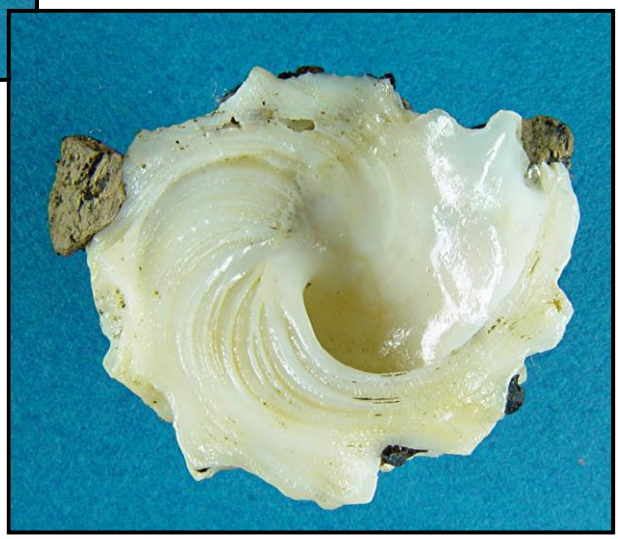
***Xenophora cerea* (Reeve, 1845)**

Unfortunately we do not possess any representatives from the surveyed area and are therefore forced to base on the oral communications of M. Charles (Madagascar) and L. Bozzetti (Milan, Italy) only. This species has got a wide range throughout the entire Indian and Pacific Ocean, from the Red Sea to the Pitcairn Islands. We hereby illustrate a number of typical forms from different localities.

Xenophora cerea **(Reeve, 1845)**
Cape Cleveland, Queensland, Australia.
On a sandy bottom. Trawled at 92 m.
July 1972. Collection F. Nolf.
H. 50.0 mm L. 74.0 mm.



Xenophora cerea **(Reeve, 1845)**
Balicasag Island, Bohol, Philippines.
Trawled by lumen lumen net
at a depth of 180 m.
November 1998. Collection F. Nolf.
H. 18.0 mm L. 32.0 mm.
Juvenile specimen.



Xenophora cerea **(Reeve, 1845)**
Talvat, Papua New Guinea.
On muddy sand. Dived at a depth of 23 m.
January 1982.
Collection F. Nolf.
H. 30.0 mm L. 33.0 mm.

***Xenophora corrugata* (Reeve, 1842)** (syn.= *X. tulearensis* Stewart & Kosuge, 1993)

In contrast with other species discussed in this series of articles, we want to mention a synonym for this species.

Stewart & Kosuge upgraded the forma **'*tulearensis*'** to a valid species in **1993**. As the name speaks for itself, this would be the typical form occurring near Toliara (the former Tuléar) showing stronger resemblance to *X. corrugata*, especially as to the sculpture on the base.

The base of *X. tulearensis* should be brown as opposed to the yellowish brown base in *X. corrugata*. The spire of *X. tulearensis* should be lower and the surface of the whorls for the greater part covered with foreign objects. The central part of the whorls in *X. corrugata* would be more or less uncovered. Kreipl & Alf (1999) saw specimens from Toliara with a yellowish brown base and specimens in which half of the whorls were not covered with all kinds of deposits. Moreover, intermediates between both 'species' do exist and *X. tulearensis* should therefore be considered a mere synonym of *X. corrugata* (Kreipl & Alf, 1999).

***Xenophora corrugata* (Reeve, 1842)**
Trawled near Toliara, SW Madagascar.
1975. Collection F. Nolf.
H. 42.0 mm L. 92.0 mm.

***Xenophora pallidula* (Reeve, 1842)**

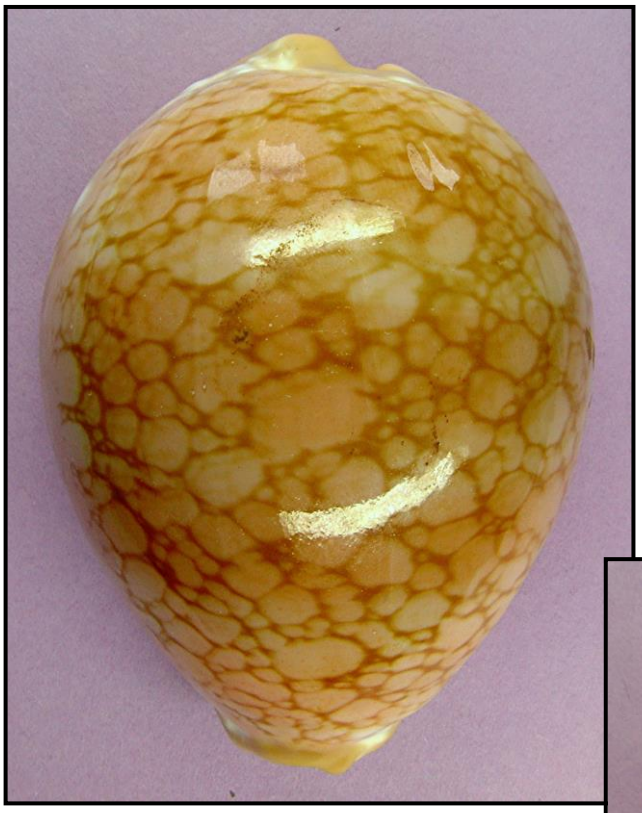
Due to the lack of real representatives of this species from the shrimp fisheries near SW Madagascar, we once again illustrate a specimen from South Africa.

***Xenophora pallidula* (Reeve, 1842)**
Near Durban, Natal, Republic of South Africa.
Trawled at a depth of 183 m.
November 1968. Collection F. Nolf.
H. 71.0 mm L. 136.0 mm.

Family Cypraeidae

Cypraea broderipii (Sowerby, 1832)

This species was originally considered an endemic for the South African coasts. As specimens were only obtained from fish stomachs, it was assumed that *C. broderipii* lived at greater depths. However, a specimen was found at a depth of 10m in Zanzibar and some specimens were dived near La Réunion at a depth of 40 to 90 m. At the end of the 70s of the previous century, *C. broderipii* was also trawled by Italian fishing boats at 150 to 300 m deep off the coast of Somalia. Smaller specimens were named ***C. broderipii* var. *somalica* Massilia, 1981**.



The shells found near Natal all came from deep sea fisheries and were found in the stomach of the black musselcrackerfish *Cymatoceps nasutus* (Castelnau, 1861). In this case, the shells were usually deteriorated by the sour contents of the stomachs of the fish or drilled by the powerful teeth of the predatory fish. Other specimens were collected by divers in caves at a depth of 40m, usually amongst the black coral *Antipathes sp*., tunicates, sponges, soft corals and gorgonia. In this case too, the shell can be deteriorated through scouring against the walls of the crevices.

***Cypraea broderipii* (Sowerby, 1832)**
Near Durban, Natal, Republic of South Africa.
Dived at a depth of 34 m. March 1986.
87.0 mm. Collection R.B.I.N.S.

***Cypraea broderipii* var. *somalica* Massilia, 1981**
Near Mogadiscio, Somalia, E Africa.
Trawled at a depth of 450 m. 1996.
62.0 mm. Collection F. Nolf.

Family Naticidae

Euspira cfr. *simulans* E.A. Smith

Euspira* cfr. *simulans
SW Madagascar.
Trawled at a depth of 700-800 m. 2002.
Collection L. Bozzetti.

This undescribed (?) species was found at a depth of 600 m near Morondova, Mozambique Channel, Madagascar.
At this time, we are still unsure about the identification and the name proposed here was provided by Jan Verberckt (Kalmthout, Belgium).
***Euspira simulans* E.A. Smith** was originally described as a species originating from the Coromandel coast, west of Burma (the present Myanmar), from a depth of 419-426 fathoms (1 fathom = 1.83 m) with the following characteristics: '*in form resembling N. catena, but thinner, more widely umbilicated, without markings*'. Yet, it is possible that we are dealing with ***Euspira psilus* (Watson, 1880)** (South Africa, Kerguelen Islands) or another related species.