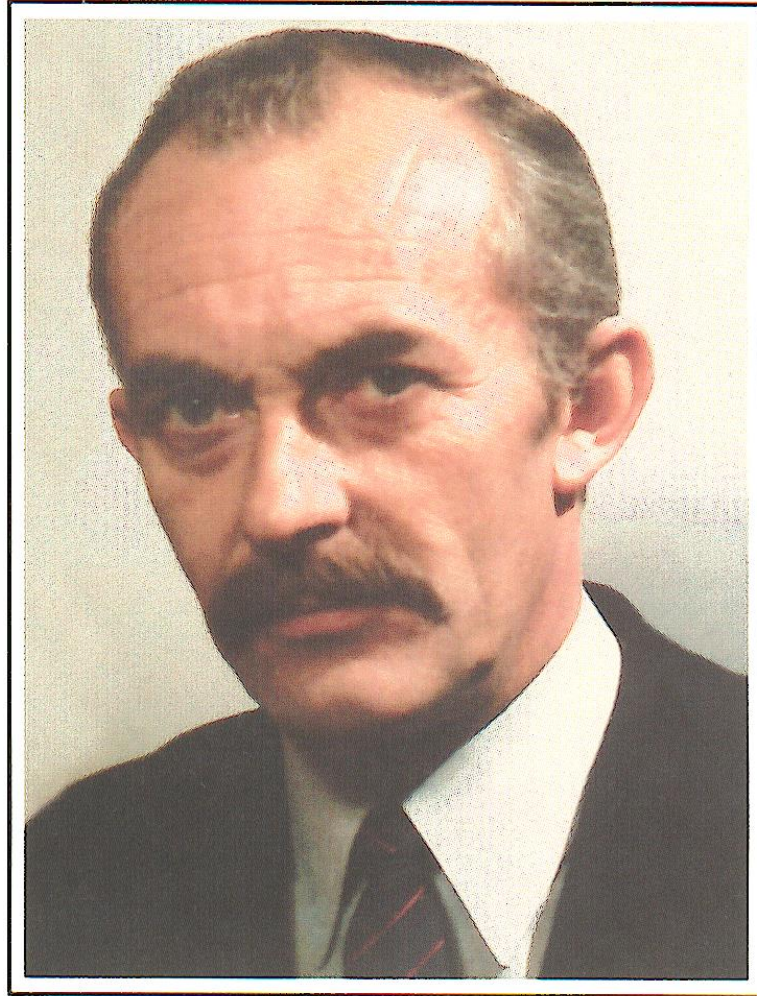


In memory of Richard Van Belle

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Richard A. Van Belle

Ostend (Belgium) 09-06-1926 --- Sint-Niklaas (Belgium) 23-02-2005

R.A. Van Belle was above all a teacher (Master-aggregate secondary education) of physical education at the 'Koninklijk Atheneum' in Sint-Niklaas, but his second life was mostly dedicated to the study of molluscs, especially focusing on Polyplacophora.

Born and bred in Ostend, he became interested in collecting shells along the shoreline at a very early age. Next to that, he also had a special skill in drawing and painting. When he read an illustrated newspaper article about how a Bolivian named José Ituri exhibited shell mosaics, he was bitten by a new microbe. He started collecting all possible dead shells and reduced them to fragments to be used in his

paintings. As a teacher of physical education, he had enough time to have his own exhibition ready after only a few years. This happened at the exhibition "*Schelpen brengen u over de wereldzeeën*" ["Shells take you over the seas"] in Lillo in 1964. This is when the tide turned: Richard got into contact with the astonishing world of exotic shells and met collectors such as Ward Wils and Jean Kruyniers. Full of enthusiasm they told him about the North Sea fisheries and the coasts of Brittany (France).

A first step had been taken and the following summer (1965), Richard and his wife spent two weeks in Erquy and Trébeurden (Brittany).

Upon returning, the car was overloaded and he could start exchanging shells. By using the "Directory of Conchologists", Richard got to know other collectors from all over the world. His collection was growing very rapidly with exotic and European marine shells, as well as land- and fresh water molluscs.

He especially liked the latter and therefore systematically surveyed the polders in the region West-Vlaanderen, the 'Waasland' and the Ardennes in Belgium.

He made yearly visits to Mallorca, the coasts of Brittany or the Swiss Alps. On top of this, he came to Ostend every weekend, not only to visit some fellow collectors, but above all to obtain North Sea shells from Pol Vanhoeck (House 'Diana Pierre'), by Richard nicknamed as "het winkeltje" ["the tiny shop"]. He managed to build a molluscan collection consisting of more than 4,000 species, of which about all specimens had been obtained through field work or exchanges. The biggest part of his collection was later added to the collections Cloet and F. Nolf (both: Ostend, Belgium). The latter was by the way inspired by R. Van Belle's view on storing and classifying.

He rarely really bought shells. Richard was a pioneer in the 'exchange-selling'-trade: he offered shells provided with a price in order to make exchanges easier. After the exchanges, the price difference was simply paid by one of the two parties involved. The prices used were a lot below the then current dealers' prices and the same criteria were maintained for decennia. This system was followed by many other Flemish collectors and is nowadays still being used at

meetings and on shell shows.

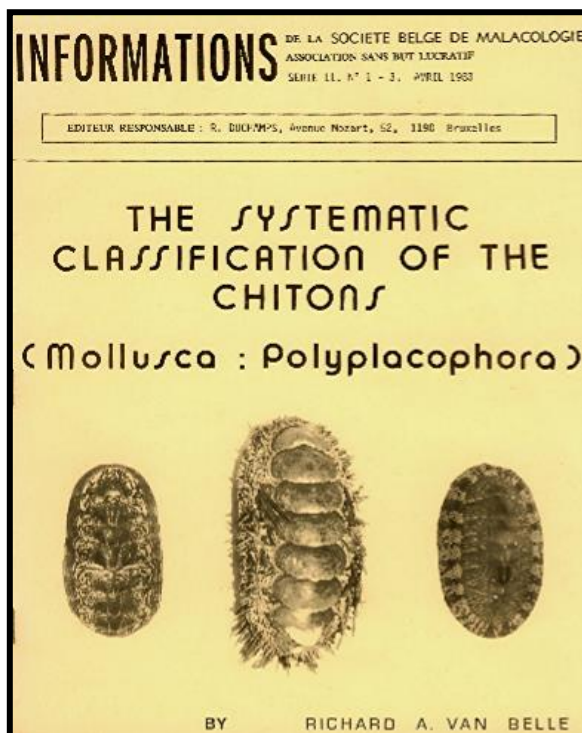
When he obtained a few beautifully preserved chitons from two American ladies, Mrs. E. Wingard and Mrs. C. Lynn, Polyplacophora became his preferred study items. He got a lot of support from Jos Christiaens (Hasselt, Belgium), who encouraged him to publish articles and who introduced him to his personal card system. In 1968 already, he reluctantly started publishing his first articles in 'Gloria Maris' and 'Informations de la Société belge de Malacologie'. However, he was not able to identify every chiton to the Family-level at that time. This was so frustrating for him, that he decided to accept the challenge to thoroughly study the Polyplacophora as a whole. He met E. Leloup, the eminent scientist who had already published numerous articles on Chitons. He worked together with both the BMNH (London) and the MNHN (Paris) and became a scientific associate in the Royal Belgian Institute for Natural Sciences (RBINS), which gave him access to the extensive library of this institute. Piles of books were processed in his personal card system.

A next milestone was making acquaintance with Piet Kaas (Rijswijk, The Netherlands), at that time already a famous researcher in the field of Chitons. The first contact was only a written one, after Richard had sent him a copy of an article on a taxonomical problem published in 'Informations de la Société belge de Malacologie'. Mr. Kaas wrote him he did not agree with the point of view presented in the article and added he would publish a countering article in 'Basteria' (both authors would later on never fully agree on that specific taxonomical problem!).

Again following an article in 'Informations de la Société belge de Malacologie' (June 1975), Richard received a phone call from P. Kaas early 1976. P. Kaas told him he once again disagreed and that he would like to see Richard's material. Richard could not but accept his opinion, but the visit to Sint-Niklaas had apparently convinced the Dutchman of the level of knowledge, literature and above all study material the Belgian researcher had managed to achieve within a few years. An intensive correspondence, which resulted in a close cooperation and a profound friendship, was thus created.

In the meantime, Richard had developed a fully detailed classification system for the Polyplacophora and this work was published in seven sequels in 'Informations de la Société belge de Malacologie' during the period 1975-1978, followed by an adaptation in 1983.

This system is nowadays still being used and accepted by most chitonologists worldwide.



The '*Catalogue of Living Chitons*' (editions Dr. W. Backhuys, 1980) was the first result of the Dutch-Belgian cooperation in 1981, followed by a revision of the genus *Lepidochitona* Gray, 1821 in Europe, including the description of two new species (*Zool. Verh. Leiden*).

Shortly after this, Piet Kaas proposed to jointly write a complete monograph on all recent chitons on the condition that as many species as possible would be personally studied, described and drawn.

The 'chiton microbe' found new energy in this ultimate challenge. The monograph would consist of ten volumes, of which the final one would contain the complete bibliography on recent chitons. The biggest problem, however, was the financial side. In order to achieve an acceptable price, it was necessary to have a big number of copies printed.

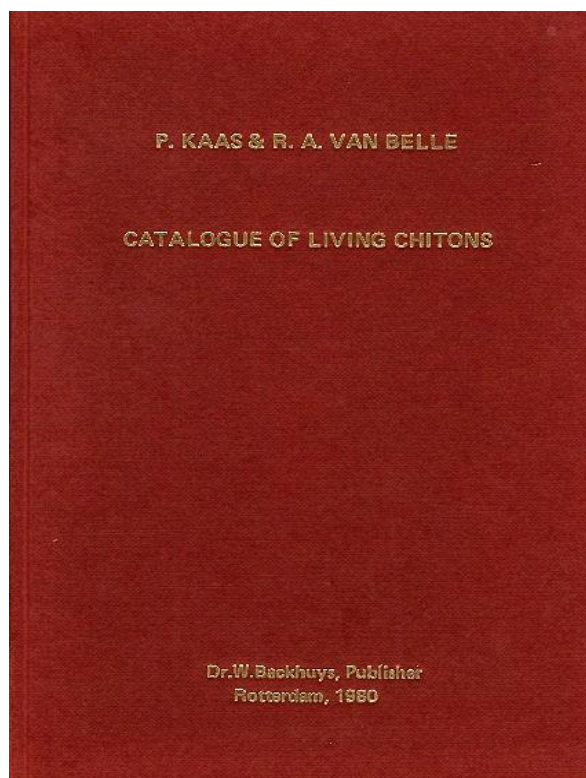
Unfortunately, this was impossible due to the worldwide limited interest in Polyplacophora and therefore the first option had to be abandoned. A choice was made for a more limited edition at a higher price and the number of volumes was reduced to seven. Apart from their separate publications, the two malacologists managed to publish five out of these seven volumes (editions E.L. Brill – W. Backhuys). It was a perfect cooperation and both authors were completely complementary: Piet Kaas was specialized in the lifelike drawing of chitons and Richard mainly took care of the literary study. Richard deemed the latter very important and always made sure all references were thoroughly checked.

For the preparation of the manuscript of the sixth volume, Piet Kaas had already limited the drawings to radulae and girdle elements because of his advanced age. His famous specimen drawings would be replaced by photographs. The sixth volume was already largely ready when Piet Kaas unexpectedly passed away at the age of 80 on 8 June 1996.

Together with Hermann Strack and Jeroen Goud, further attempts would be made to get this volume ready. At that time, Richard himself was also getting older and was suffering from various illnesses, which slowed down work. The volume has not appeared yet, but its publication is to be expected in the nearby future.

In order to describe the last and most difficult group of chitons (*Acanthochitonina*), a cooperation with specialists for various families is being considered (a.o. Dr. H. Saito, Japan and Dr. B. Sirenko, Russia). The beautiful drawings will probably be replaced by black and white- and SEM-photographs whenever original drawings by Piet Kaas are not available.

During his life, Richard was always willing to help whoever asked him and he saw thousands of chitons pass in front of his eyes. He was known worldwide and as a consequence received many letters and identification questions, which he always – even in difficult times - treated with utmost accuracy. By doing so, he was also always presented with specimens and was thus able to build up an enormous collection, which contained more than 60% of all valid species. He lent out publications without any problems, sent copies or was always willing to solve problems with literature. Even during his lingering disease, he tried to pass on his knowledge and considered his collection more a kind of heritage than a personal possession.



In February 2001, Richard decided to donate his collection, the study material, all his personal notes and his library to the RBINS (Brussels, Belgium).

At that time, he was no longer capable of concentrating on the study of his beloved chitons and he wanted to save his life's work for future generations.

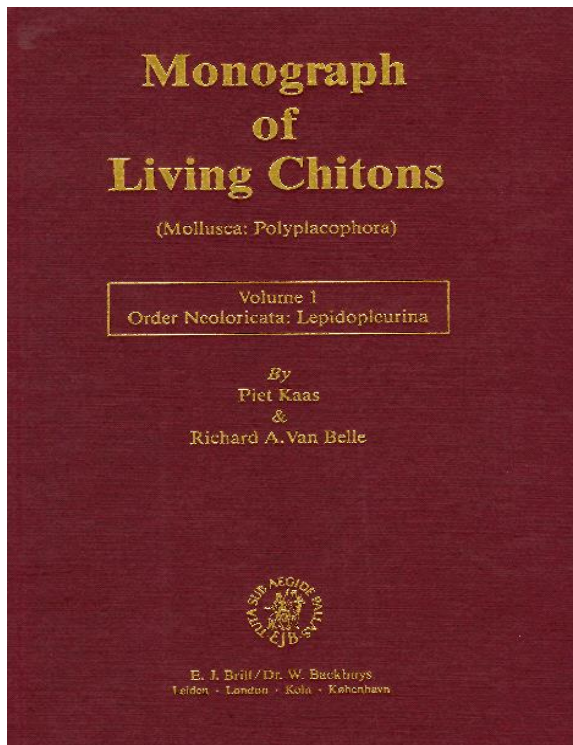
Together with the collection Eugène Leloup, this is the most important collection of Polyplacophora that has ever entered the Brussels' museum.

This lifework contains 10,270 specimens, 534 different species and 30 paratypes. The collection of chitons preserved on alcohol comprises 2,000 specimens belonging to 300 different species.

The fossil chitons are represented by some thousand specimens belonging to 34 species and they likewise include 3 paratypes. On top of this, there are 45 species lots waiting for identification and 500 microscopic slides (radulae and perinotum).

The documentation contains hundreds of slides, photographs and thousands of filing cards, 20 books related to chitons, but above all publications and photocopies, all together forming a 5 metres long collection. The correspondence with Piet Kaas already comprises 8 storage folders.

The collection R.A. Van Belle has found a final resting place in the RBINS and we hope that it will continue to be accessible to other investigators who want to complete Richard's work.



The only thing one could have blamed Richard for is the use of his card system as a 'traditional' tool instead of using modern technologies such as computers, scanners and printers. Yet, twenty, or even only ten years ago, hardware and software were not that accessible to 'laymen'. Moreover, it would have been an almost impossible and even useless task for Richard to process his complete information collection with a computer. At the end of the previous century, he was already fighting some

health problems and his biggest worry was to finish his lifework, the monograph of recent Polyplacophora, together with Piet Kaas.

We have lost a good friend with Richard. After meeting each other for the first time at the 'Diana Pierre shell shop' in Ostend in 1968, a vivid correspondence was established and he regularly came by to study and exchange shells. Thanks to Richard we became member of '*Gloria Maris*', about 40 years ago and went to the meetings in Antwerp almost every month.

He was a kind of godfather who introduced many generations in the secrets of collecting and who taught us the love for shells. The entire 'collection F. Nolf' is the result of his view on collecting. We have never again met another personality that could talk about molluscs with so much patience, attention and knowledge. Richard was a man to look up to. To put it in molluscan language: he belonged to a class of which one can no longer find any specimens in our present society. He did not only look like a British gentleman, he was internally also permeated by a kind of *savoir vivre* from a previous century. Someone with decorum, with etiquette! He was a man whose thoughts and actions were permeated by an exemplary accuracy and precision. His letters, notes and labels were always written with great accuracy and one could always rely on him for a fast identification of his beloved chitons. The following anecdotes are very typical. In his first letter to the late Mrs. Kermarrec-Labisse, we can read: '*je n'ai pas voulu vous importuner chez vous*' and '*afin de vous faciliter les choses, je me suis permis de joindre une enveloppe timbrée et adressée à mon nom*'. He was the man who strictly attended all meetings of the Belgian Society for Conchology in Antwerp and who wrote a letter to apologise when he would exceptionally be absent. One could absolutely be certain he would send a postcard with every journey abroad and on New Year's Day, he was the first one to pass on his wishes. Last year he was exceptionally late, but he managed to hide his problems using his typical pride. However, he had the impression that by donating his chiton collection to the RBINS, a big part of his life had been pledged.

We would like to end here with his family's words:

'Richard, we will always remember you because of your optimism and your passion'.

Acknowledgments: I would like to express my thankfulness towards Bruno Anseeuw and Yves Terryn (both from Ghent, Belgium), not only for additional literary data, but also for the accuracy with which they perused this text. These 'former students' and co-workers clearly

bear the marks of their 'master' R. Van Belle. Johan Verstraeten (Ostend, Belgium) likewise carefully perused the manuscript and David Monsecour (Rillaar, Belgium) carefully translated the Dutch text into an English version.

We hereby add an overview of his most important publications in **chronological order**:

- Van Belle, R.A. 1968. Over anomalieën bij chitons. *Gloria Maris* **8/9**: 123-124.
- Van Belle, R.A. 1968. Kleurvariëteiten bij *Cepaea hortensis* (Müller, 1774). *Gloria Maris* **10**: 155-156.
- Van Belle, R.A. 1969. Specifieke terminologie der Polyplacophora. *Gloria Maris* **7**: 132-134; figs A-C.
- Van Belle, R.A. 1969. Over de verspreiding van *Monacha cartusiana* (Müller, 1774). *Gloria Maris* **10**: 172-173; fig.
- Van Belle, R.A. 1970. De land- en zoetwaterweekdieren van België. Enkele aanvullingen. *Gloria Maris* **5**: 99-102; 3 figs.
- Van Belle, R.A. 1970. *Isognomostoma isognomostoma* (Gmelin, 1790). Een nieuwe landslak voor België. *Gloria Maris* **6**: 117-118; 1 fig.
- Van Belle, R.A. 1971. Een ongekende kleurvorm van een oudgekende schelp. *Pecten maximus* (L.) var. ex col. *albida* nov. var. *Gloria Maris* **6**: 101-102, figs.
- Van Belle, R.A. 1971. Aanvulling betreffende *Pecten maximus albida*. *Gloria Maris* **11**: 188.
- Van Belle, R.A. 1972. Verzamelen en prepareren van keverslakken (Polyplacophora). *Gloria Maris* **3**: 51-57; 1 fig.
- Van Belle, R.A. 1972. Récolte et préparation de chitons + a note on the presence of *Lepidopleurus asellus* (Gmelin, 1791) found alive at Oostende in 1965. *Informations de la Société belge de Malacologie* **1(5)**: 69-74.
- Van Belle, R.A. 1972. De Weekdierenfauna van La Roche en Ardenne. *Informations de la Société belge de Malacologie* **1(6)**: 87-91.
- Van Belle, R.A. 1972. Over de Polyplacophora van Bretagne. *Gloria Maris* **11**: 201-204; figs 1-2.
- Van Belle, R.A. 1974. A propos du genre *Ischnochiton* Gray, 1847 (Polyplacophora). *Informations de la Société belge de Malacologie* **3(2)**: 27-29.
- Van Belle, R.A. 1974. De weekdierenfauna van het Waasland. *Gloria Maris* **5**: 97-104; figs.
- Van Belle, R.A. 1974. Schelpen verzamelen te Puerte de Soller (Mallorca). *Gloria Maris* **7**: 143-146.
- Van Belle, R.A. 1974. Bedenkingen bij het lezen van het hoofdstuk over de weekdieren in "Het leven der dieren", III, Grzimek, 1971, en meer speciaal de klasse der keverslakken. *Bio* **4(6)**: 1-2.
- Van Belle, R.A. 1975. Sur la présence en Méditerranée de *Lepidopleurus alveolus* (Lovèn, 1846) (Mollusca: Polyplacophora). *Informations de la Société belge de Malacologie* **4(3)**: 57-58; figs 1-4.
- Van Belle, R.A. 1975. Schelpen verzamelen te Benidorm (Spanje). *Gloria Maris* **8/9**: 161-165.
- Van Belle, R.A. 1975. Sur la classification des Polyplacophora: **I**. Introduction et classification systématique des Paleoloricata avec la description de *Kindbladochiton* nom. nov. (pour *Eochiton* Smith, 1964). *Informations de la Société belge de Malacologie* **4(5)**: 121-131; 1 pl.
- Van Belle, R.A. 1975. Sur la classification des Polyplacophora: **II**. Classification systématique des Lepidopleurina (Neoloricata), avec la description des Helminthochitoninae nov. subfam. (Lepidopleuridae) et de *Mesochiton* nov. gen. (Helminthochitoninae). *Informations de la Société belge de Malacologie* **4(6)**: 135-145; pls 1-3.
- Van Belle, R.A. 1977. Nota's over minder gekende keverslakken van de Middellandse Zee (Mollusca: Polyplacophora). *Gloria Maris* **16(2)**: 27-35; figs 1-9.
- Van Belle, R.A. 1977. Sur la classification des Polyplacophora: **III**. Classification systématique des Subterenchitonidae et des Ischnochitonidae (Neoloricata: Chitonina). *Informations de la Société belge de Malacologie* **5(2)**: 15-40; pls 4-5.
- Van Belle, R.A. 1978. Sur la classification des Polyplacophora: **IV**. Classification systématique des Mopaliidae (Neoloricata: Chitonina), avec la description de Heterochitoninae nov. subfam. *Informations de la Société belge de Malacologie* **6(1)**: 3-17; pls 6-7.
- Van Belle, R.A. 1978. Sur la classification des Polyplacophora: **V**. Classification systématique des Chitonidae (Neoloricata: Chitonina). *Informations de la Société belge de Malacologie* **6(1)**: 19-27; pl. 8.
- Van Belle, R.A. 1978. Sur la classification des Polyplacophora: **VI**. Classification systématique des Cryptoplacidae (Neoloricata: Chitonina). *Informations de la Société belge de Malacologie* **6(2)**: 35-44; pl. 9.

- Van Belle, R.A. 1978. On the taxonomic status of the genera *Acutoplax* Cotton & Weeding, 1939 and *Eudoxoplax* Iredale & May, 1916 (Mollusca: Polyplacophora). *J. Malac. Soc. Aust.* **4**(1-2): 81-83.
- Van Belle, R.A. 1978. Sur la classification des Polyplacophora: **VII**. Errata, additions et rectifications. Résumé de la classification. Index alphabétique. Informations de la Société belge de Malacologie **6**(3): 65-82.
- Van Belle, R.A. 1978-1982. De Europese Polyplacophora. *Gloria Maris* (41 parts): 1-251; pls 1-35.
- Van Belle, R.A. 1980. On a small collection of chitons from Hong Kong (Mollusca: Polyplacophora). *Proc. first intern. Worksh. Malacofauna Hong Kong and South China*: 33-35, 1 pl.
- Van Belle, R.A. 1980. On two preoccupied names in Polyplacophora (Mollusca). *Basteria* **45**(1-3)
- Kaas, P. & Van Belle, R.A. 1980. Catalogue of the Living Chitons. Dr. W. Backhuys, Publisher. Rotterdam. pp. 144.
- Kaas, P. & Van Belle, R.A. 1980. Catalogue of the Living Chitons (Mollusca: Polyplacophora). Addenda et corrigenda: 1-26.
- Kaas, P. & Van Belle, R.A. 1981. The genus *Lepidochitona* Gray, 1821 (Mollusca: Polyplacophora) in the northeastern Atlantic Ocean, the Mediterranean Sea and the Black Sea. *Zool. Verh. Leiden* **185**: 1-43, figs 1-128.
- Van Belle, R.A. 1981. Preoccupied names in Polyplacophora: addenda. *Basteria* **45**(1-3): 2.
- Van Belle, R.A. 1981. Catalogue of Fossil Chitons. Dr. W. Backhuys, Publisher. Rotterdam: pp. 82.
- Van Belle, R.A. 1982. Supplementary notes on Hong Kong chitons (Mollusca: Polyplacophora). *Proc. first intern. mar. biol. Worksh. Hong Kong*: 469-483, figs 1-5.
- Christiaens, J. & Van Belle, R.A. 1982. A report on the first two international marine biological workshops at Hong Kong. *Newsletter Brit. Shell Coll. Club* **51**: 11-12.
- Van Belle, R.A. 1983. The systematic classification of the chitons (Mollusca: Polyplacophora). *Informations de la Société belge de Malacologie* **11**(1-3): 1-178; 13 pls.
- Van Belle, R.A. 1983. De Europese keverslakken (Polyplacophora). *Vita Marina*, 9-132, figs 1-116.
- Van Belle, R.A. 1983. A propos d'une anomalie exceptionnelle chez *Chaetopleura angulata* (Spengler, 1797) (Mollusca : Polyplacophora). *Basteria* **47**(5-6): 55-57, figs 1-2.
- Van Belle, R.A. 1984. De Polyplacophora van de Canarische Eilanden. *Gloria Maris* **23**(4): 69-78, 1 pl.
- Van Belle, R.A. 1984. De Polyplacophora van de Canarische Eilanden (vervolg). *Gloria Maris* **23**(5): 95-104, pls 2-3.
- Van Belle, R.A. 1984. De Polyplacophora van de Canarische Eilanden (errata et addenda). *Gloria Maris* **23**(6): 135-136, 1 pl.
- Van Belle, R.A. 1984. De Polyplacophora van de Azoren. *Gloria Maris* **23**(10): 223-230, figs 1-15.
- Van Belle, R.A. 1985. De Polyplacophora van Madeira. *Gloria Maris* **24**(4): 73-76, 1 pl.
- Van Belle, R.A. 1985. The systematic classification of the chitons (Mollusca: Polyplacophora). Addenda I (with the description of the genus *Incisiochiton* gen. n.). *Informations de la Société belge de Malacologie* **13**(2): 49-59, figs 1-29.
- Van Belle, R.A. 1985. De Europese Polyplacophora (Aanvullingen I). *Gloria Maris* **24**(6): 125-130, pl. 36.
- Kaas, P. & Van Belle, R.A. 1985. Monograph of Living Chitons (Mollusca: Polyplacophora). **Vol. 1**. Order Neoloricata: Lepidopleurina. E. J. Brill / Dr. W. Backhuys, Publishers. Leiden, London, Köln, København. 1-240, 95 figs, 45 maps.
- Kaas, P. & Van Belle, R.A. 1985. Monograph of Living Chitons (Mollusca: Polyplacophora). **Vol. 2**. Suborder Ischnochitonina, Ischnochitonidae: Schizoplacinae, Callochitoninae & Lepidochitoninae. E. J. Brill / Dr. W. Backhuys, Publishers. Leiden, London, Köln, København. 1-198, 76 figs, 40 maps.
- Van Belle, R.A. 1986. De Europese Polyplacophora (Aanvullingen II). *Gloria Maris* **25**(3): 128-131, pl. 37; **25**(4): 155, pl. 38.
- Kaas, P. & Van Belle, R.A. 1987. Monograph of Living Chitons (Mollusca: Polyplacophora). **Vol. 3**. Suborder Ischnochitonina, Ischnochitonidae: Chaetopleurinae & Ischnochitoninae (pars) Additions to Vols 1 & 2. E. J. Brill / Dr. W. Backhuys, Publishers. Leiden, London, Köln, København. 1-302, 117 figs, 53 maps.
- Kaas, P. & Van Belle, R.A. 1988. Chitons (Mollusca: Polyplacophora) from the coasts of Oman and the Arabian Gulf. *Am. malac. Bull.* **6**(1): 115-130, figs 1-72, tab. 1.
- Van Belle, R.A. 1988. De Europese Polyplacophora (Aanvullingen III). *Gloria Maris* **27**(5)(6): 92-95, pl. 39.
- Dell'Angelo, B., Hong, J.-S. & Van Belle, R.A. 1990. The chiton fauna (Mollusca: Polyplacophora) of Korea. Part I: Suborder Lepidopleurina and Ischnochitonina. *Korean J. Syst. Zool.* **6**(1): 29-56, figs 1-4.

- Dell'Angelo, B. & Van Belle, R.A. 1990. On the rediscovery of *Chaetopleura sowerbyana* (Reeve, 1847) (Mollusca: Polyplacophora). *Boll. Malacologico Milano* **26**(1-4): 61-64, figs 1-2.
- Hong, J.-S., Dell'Angelo, B. & Van Belle, R.A. 1990. The chiton fauna (Mollusca: Polyplacophora) of Korea. Part II: Suborder Acanthochitonina. *Korean J. Zool.* **33**(4): 373-395, figs 1-2, pls 1-9.
- Kaas, P. & Van Belle, R.A. 1990. Monograph of Living Chitons (Mollusca: Polyplacophora). **Vol. 4.** Suborder Ischnochitonina: Ischnochitonidae: Ischnochitoninae (continued). Additions to **Vols 1, 2 & 3.** E. J. Brill / Dr. W. Backhuys, Publishers. Leiden, London, Köln, København. 1-298, 117 figs, 48 maps.
- Van Belle, R.A. & Wranik, W. 1991. Chitons (Mollusca: Polyplacophora) from the coasts of Yemen and Socotra Island. In: *Fauna of Saudi Arabia*, **12**: 367-381, figs 1-27, tab. 1.
- Van Belle, R.A. 1992. De Europese Polyplacophora (Aanvullingen IV). *Gloria Maris* **31**(1-6): 19-22, pl. 40.
- Van Belle, R.A. 1993. On a collection of chitons from Tanegashima Island, Japan, with the description of a new species of *Onithochiton* Gray, 1847 (Mollusca: Polyplacophora). *Gloria Maris* **32**(2): 19-23, fig 1-9.
- Van Belle, R.A. 1994. On the chiton fauna of Bahrain, Arabian Gulf. *Gloria Maris* **33**(1): 1-6, 1 pl., figs 1-6 (+ p. 6b).
- Kaas, P. & Van Belle, R.A. 1994. Monograph of Living Chitons (Mollusca: Polyplacophora). **Vol. 5.** Suborder Ischnochitonina: Ischnochitonidae: Ischnochitoninae (concluded), Callistoplacinae; Mopaliidae. Additions to **Vols 1-4.** E. J. Brill / Dr. W. Backhuys, Publishers. Leiden, London, Köln, København. 1-402.
- Van Belle, R.A. 1997. De Europese Polyplacophora (Aanvullingen V). *Gloria Maris* **36**(3): 50-52, pl. 41.
- Van Belle, R.A. & Dell'Angelo, B. 1998. Description of a new species *Ischnochiton dolii* sp. nov. (Polyplacophora: Ischnochitonidae) from Civitavecchia, Italy. *Apex*, **13**: 77-79, figs 1-5.
- Kaas, P. & Van Belle, R.A. 1998. Catalogue of Living Chitons (Mollusca: Polyplacophora). Dr. W. Backhuys, Publisher. Leiden; Second revised edition, 1-204.
- Van Belle, R.A. 1999. Polyplacophora: Classification and synonymy of recent (sub)genera. *The Festivus* **31**(6): 69-72.
- Van Belle, R.A. 1999. De Europese Polyplacophora (Aanvullingen VI). *Gloria Maris* **38**(1): 17-20, pl. 41 (should have been: 42 !).
- Anseeuw, B., Terryn, Y. & Van Belle, R.A. 2002. De Europese Polyplacophora (Aanvullingen VII). *Gloria Maris* **40**(6): 126-136, pls. 43-45.

New taxa introduced by Richard A. Van Belle (in chronological order and without taking their present taxonomical status into account):

- 1 *Pecten maximus* (L.) var. ex col. *albida* Van Belle, 1971
- 2 *Simplischnochiton* Van Belle, 1975 – subgenus of *Ischnochiton* Gray, 1847 (type: *I. maorianus* Iredale, 1914)
- 3 *Kindbladochiton* Van Belle, 1975 – nom. nov. pro *Eochiton* Smith, 1964, non Fischer, 1885
- 4 Helminthochitoninae Van Belle, 1975 – subfamily of Lepidopleuridae Pilsbry, 1892
- 5 *Mesochiton* Van Belle, 1975 (type: *Pterygochiton busambrensis* Fucini, 1912)
- 6 Heterochitoninae Van Belle, 1978 – subfamily of Mopaliidae Dall, 1889
- 7 *Chiton conradi* Van Belle, 1980 – nom. nov. pro *Chiton antiquus* Conrad, 1856, non Reeve, 1847
- 8 *Chiton rudelsdorfensis* Van Belle, 1980 – nom. nov. pro *Gymnoplax bohemicus* de Rochebrune, 1883, non *Chiton bohemicus* Barrande, 1867
- 9 *Lepidochitona* (L.) *monterosatoi* Kaas & Van Belle, 1981
- 10 *Lepidochitona* (L.) *iberica* Kaas & Van Belle, 1981
- 11 *Lepidozona* (L.) *christiaensi* Van Belle, 1982
- 12 *Leptochiton* (L.) *gascognensis* Kaas & Van Belle, 1985
- 13 *Leptochiton* (L.) *thalattius* Kaas & Van Belle, 1985
- 14 *Leptochiton* (L.) *geronensis* Kaas & Van Belle, 1985
- 15 *Leptochiton* (L.) *americanus* Kaas & Van Belle, 1985
- 16 *Leptochiton* (*Parachiton*) *ronaldi* Kaas & Van Belle, 1985
- 17 *Leptochiton* (*P.*) *eugenei* Kaas & Van Belle, 1985
- 18 *Leptochiton* (*P.*) *fornix* Kaas & Van Belle, 1985
- 19 *Incisiochiton* Van Belle, 1985 (type: *Chiton baylei* Briart & Cornet, 1887)
- 20 *Callochiton subsulcatus* Kaas & Van Belle, 1985
- 21 *Callochiton clausadeae* Kaas & Van Belle, 1985

- 22 *Callochiton cinnabaris* Kaas & Van Belle, 1985
 23 *Callochiton oligosulcatus* Kaas & Van Belle, 1985
 24 *Chaetopleura* (C.) *benguelensis* Kaas & Van Belle, 1985
 25 *Stenoplax* (S.) *bahamensis* Kaas & Van Belle, 1985
 26 *Lepidozona* (L.) *reevei* Kaas & Van Belle, 1985
 27 *Lepidozona* (L.) *ferreirai* Kaas & Van Belle, 1987
 28 *Lepidozona* (L.) *sorsogonensis* Kaas & Van Belle, 1987
 29 *Acanthochitona woodwardi* Kaas & Van Belle, 1988
 30 *Notoplax* (N.) *arabica* Kaas & Van Belle, 1988
 31 *Leptochiton* (L.) *xanthus* Kaas & Van Belle, 1990
 32 *Leptochiton* (L.) *amsterdamensis* Kaas & Van Belle, 1990
 33 *Leptochiton* (P.) *indecorsus* Kaas & Van Belle, 1990
 34 *Callochiton herberti* Kaas & Van Belle, 1990
 35 *Callochiton neocaledonicus* Kaas & Van Belle, 1990
 36 *Chaetopleura* (C.) *natalensis* Kaas & Van Belle, 1990
 37 *Lepidozona* (L.) *tenuicosta* Kaas & Van Belle, 1990
 38 *Lepidozona* (L.) *sirenko* Kaas & Van Belle, 1990
 39 *Ischnochiton* (I.) *substriatus* Kaas & Van Belle, 1990
 40 *Ischnochiton* (I.) *nicklesi* Kaas & Van Belle, 1990
 41 *Ischnochiton* (I.) *bigranosus* Kaas & Van Belle, 1990
 42 *Ischnochiton* (I.) *chaceorum* Kaas & Van Belle, 1990
 43 *Acanthochitona byungdoni* Hong, Dell'Angelo & Van Belle, 1990
 44 *Notoplax* (N.) *kaasi* Hong, Dell'Angelo & Van Belle, 1990
 45 *Ischnochiton* (I.) *yemenensis* Van Belle & Wranik, 1991
 46 *Onithochiton gotoi* Van Belle, 1993
 47 *Ischnochiton* (*Haploplax*) *poppei* Hong, Dell'Angelo & Van Belle, 1994
 48 *Callistochiton laticostatus* Hong, Dell'Angelo & Van Belle, 1994
 49 *Callistochiton righii* Hong, Dell'Angelo & Van Belle, 1994
 50 *Callistochiton omanensis* Hong, Dell'Angelo & Van Belle, 1994
 51 *Callistochiton belliatus* Kaas & Van Belle, 1994
 52 *Callistochiton biakensis* Kaas & Van Belle, 1994
 53 *Callistochiton squamigerocostatus* Kaas & Van Belle, 1994
 54 *Plaxiphora* (P.) *javanica* Kaas & Van Belle, 1994



***Bolma madagascarensis* (Gastropoda: Turbinoidea: Turbinidae) a new species from the Strait of Mozambique**

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Key words: *Bolma madagascarensis* sp. nov., TURBINIDAE, SW Madagascar, new taxon.

Abstract: *Bolma madagascarensis* sp. nov. from the Strait of Mozambique is described and figured. This species is compared with *Bolma henica* (Watson, 1879) and *Bolma abyssorum* (Schepman, 1908) from the West Pacific Ocean, the latter only being considered as a form of *B. henica*.

Abbreviations:

FN: Private collection of Frank Nolf, Oostende, Belgium.

D.: Diameter

H.: Height.

JV: Private collection of Johan Verstraeten, Oostende, Belgium.

RBINS: Royal Belgian Institute for Natural Sciences, Brussels, Belgium.

MNHN: Muséum national d'Histoire naturelle, Paris.

Introduction: The deep-water fauna of the western and south-western parts of the Indian Ocean remains poorly known, but fishing activities of the last decade along the western coast of the island Madagascar provided many interesting molluscan species, previously only found during oceanographic expeditions in the nineteenth and twentieth century such as the expedition by the 'Valdivia' in 1898-1899 (Martens & Thiele, 1904; Thiele, 1925).

The present paper is based on deep-water material obtained by trawlers off western Madagascar, where intensive commercial shrimp fishery took place around the turn of the 20th century. This deep-water fishery was especially the consequence of the hunt for Crustacea (lobsters, crabs, deep-water shrimps, etc.). Whenever these catches were carried out using tow nets, a number of seashells living sympatrically with these Crustacea were collected. 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 were most often in bad condition and usually showed the typical flaws caused by the presence of hermit crabs.

Especially near Toliara (the former south-western located Tuléar, SW Madagascar), the conditions were rather favourable for deep sea fishing at depths of 600 to 800 metres. Nolf & Verstraeten (2003) published a general account of the most important species obtained through this commercial trawling.

The average amount of molluscan species produced by this type of fishery is estimated at about 70 and a number of newly discovered molluscs still have to be studied by different conchologists. Yet, several new species have already been described in various taxonomical papers: *Calliostoma muriellae* Vilvens, 2001, *Calliostoma madagascarensis* Vilvens, Nolf & Verstraeten, 2004, *Calliotropis pulvinaris* Vilvens, 2005, *Calliotropis velata* Vilvens, 2006, *Bolma sabinae* Alf & Kreipl, 2004, *Fusinus jurgeni* Hadorn & Fraussen, 2002, *Fusinus virginiae* Hadorn & Fraussen, 2002, *Columbarium berthae* Monsecour & Kreipl, 2003, *Latiromitra crosnieri* Bouchet & Kantor, 2000, *Comitas bolognai* Bozzetti, 2001, *Comitas vezo* Bozzetti, 2001 and so on.

Among the shells trawled off Toliara were a number of *Bolma* sp., mostly crabbed or slightly damaged. Further research persuaded us that this species is new to science.

***Bolma madagascarensis* sp. nov.**

(Plate I, Figs 1,2; Plate II, Figs 3,4; Plate III, Figs 5-8; Plate IV, Figs 9-12; Plate V, Figs 13-16; Plate VI, Figs 17-20; Plate XII, Figs 32,33; Plate XV, Fig. 38; Plate XVI, Figs 45,46)

Type material:

Holotype (16.9 x 22.3 mm) RBINS.

Paratypes: 1. H. 17.2 mm D. 22.7 mm (FN)

2. H. 17.9 mm D. 22.8 mm (FN)

3. H. 15.5 mm D. 20.6 mm (JV)

4. H. 19.1 mm D. 24.0 mm (JV)

Type locality: Trawled at 600 m off Toliara, SW Madagascar.

Etymology: '*madagascarensis*' refers to the type locality Madagascar, this species being apparently endemic to the Strait of Mozambique.

Measurements: Height varies between 15.5 and 19.1 mm, diameter between 20.6 and 24.0 mm (spines not included).

Distribution: SW Madagascar.

Description: The shell is trochiform, but rather depressed and imperforate. The whorls (7) have flattened sides and are sculptured with a spinose carina. The sutures are rather deeply channelled. The subsutural ramp is covered by two rows of beads, the first of them may totally be absent or partly fused with the main row, consisting of 26-29 beads. There is a strong, expressed, stellate carina at the periphery, dividing each whorl into two zones. The spines on it, about 8-10 on each whorl, are fairly large and solid, slightly raised upwards or projecting horizontally. Unfortunately they were partly broken off in most studied specimens. The ramp below the periphery is covered by 1-2 rows of smaller beads, 60 in number, rarely traces of a third row are present. Below the carina, the contour-line of the whorls is not perpendicular as in the similar species *Bolma henica* (Watson, 1879), but makes an angle of about 110°-115° instead of 125°-130° in the West Pacific species. The lower part of the last whorl contains 1-2 rows of very small beads, twice as many as those of the upper surface often melting into one another.

The base is covered by 3 rows of elongated beads, generally forming parallel ridges by radial overflow, a typical character for this species. As the shell itself is depressed trochiform, the mouth is not circular but elliptic in its outline, bordered by a columellar pad, expanding from the pillar in the middle of the base, coiling round the pillar with a swollen outer edge and completely overlapping the centre of the base in adult specimens. This porcellanous pad advances outwards to form a blunt tooth, expanding beyond the border of the base in adult specimens. Its colour is creamy-white, yellowish brown at the extremities. The spines are cream-coloured and the whole shell itself is rusty, the upper side of each whorl being darker than the lower side. As all specimens were dead caught, we had no opportunity to study the operculum, nor the animal.

This shell has a strong affinity to the allied species *Bolma henica* (Watson, 1879), described from the Fiji Islands and living between Japan (the Sea of Enshu-nada, Honshu) (Okutani, 2000) and the central West Pacific region; eastern Australia from north Queensland to northern New South Wales, Australia from 130 to 600 m (Wilson, 1993). *Bolma abyssorum* (Schepman, 1908) described as another similar shell is sometimes

considered as a subspecies from the Moluccas, but most authors only regard the latter as synonym or as a form. We hereby publish the original description of both species.

***Bolma henica* (Watson, 1879)**

Synonyms:

Turbo (Calcar) henicus Watson, 1879

Pseudastraliium henicus gloriosum Kuroda et Habe, MS. in Kira, 1959

'Shell: Conical, high, scarcely coloured; whorls flattened, sculptured, with a spinose carina, below which the suture is deeply channelled.

Sculpture

Spirals: Below the suture is a flat shoulder, the edge of which is angulated and bordered by a row of largish, white separate beads; on the flat slope of the last whorl are six rows of smaller separate beads, the highest row being the largest; they are not connected by a thread, and the intervals between the rows are about half the breadth of the beads. At the periphery is a sharp, expressed, stellate carina, the sharp, hollow, compressed spines of which are about twelve in number. Below the carina the whorls are somewhat constricted, and the contour-line here is perpendicular; on it are four rows of fine beads. The edge of the base is sharply angled and defined by a second smaller, sharp, expressed carina, which meets the outer lip; it rises in form thirty-five vaulted scales, which toward the outer lip become like spines. On the flat base are ten very regular rows of separate beads, which are a little stronger toward the middle, and the outermost one of which tends to become scaly. The centre is occupied by a polished, slightly ridged, porcellanous pad.

Longitudinals: Below the suture and between the beads there are many irregular puckerings following the lines of growth.

Colour: A light yellow ruddy tinge, the base paler than the upper part; the beads are white, and the porcellanous pad round the pillar is dead white, with more of translucency towards the centre; the pillar has a slight ruddy tinge.

Spire: High, perfectly conical.

Apex: Round, the minute embryonic whorl being completely flattened down.

Whorls: 7 to 8, of very regular increase, flattened and angulated. The first three whorls are only radiatingly ribbed.

On the fourth the highest row of beads begins, on the fifth the supracarinal row appears, and only on the sixth does the intermediate space become covered with the sculpture already described; previous to this the whorls have a nacreous gleam.

Suture: Itself linear, it is marginated by the up-lap of the inferior whorl which covers the basal carina, and is very strongly channelled by the square contraction of the superior whorl beneath the stellate carina.

Mouth: Oblique, round, angulated at the basal carina, with an exquisite soft pearly nacre within.

Outer lip: Sharp, thin, with a broad porcellanous edge, and within this a broad flat nacreous callus; it is flat on the base.

Pillar-lip: A broadly expanded porcellanous pad rises in the middle of the base, coils round the pillar with a slightly swollen outer edge, and advances in front into a blunt round tooth. The edge of the lip is a broad, round, slightly ruddy pillar of nacre, which unites itself with the labral callus.

Operculum: Oval, rounded on the outer and straightish on the pillar contour, thick, with steep straight edges, and a very slight flange on its outer lower margin; its outer surface is white, tubercled, rounded; its inner surface is flat, brown, lineated, with one large and very many minute whorls.

H. 0.82 inch. B. 1.0, least 0.81. Penultimate whorl: 0.22. Mouth, height 0.36, breadth 0.39.' The shell described was found by the H.M.S. "Challenge" at Station 173 (19°09'35" S., 179°41'50" E.) - Matuku, Fiji at a depth of 315 fms in coral mud.

***Bolma abyssorum* (Schepman, 1908)**

'Shell trochiform, flattened below, imperforate (except in a very young specimen) whorls 7, the upper ones with flattened sides, the last slightly convex; the sculpture of the upper whorls, consists of a row of small, close-set beads at the suture, being foldlike in the second whorl, they become larger, round and more remote on the next whorls, where they form the only sculpture, till on the ultimate or penultimate whorl, spiral rows of scales make their appearance, beginning with are (sic) single row, above the lower suture, they reach the number of 9 on the last whorl, near the aperture. Of these rows, eight are complete, while the lowest one is interrupted by the spines, which are present on all the whorls, except the embryonic one. These spines amount

to 14 on the last whorl; they vary in length, are depressed, and provided on the upper surface, with radiating lirae. The beads of the upper whorls persist on the last one, where they number 20 or more. The sutures are deep, channelled, bordered above by the spiniferous keel. Young specimens are nacreous and nearly colourless on the upper surface, with only a light flesh-red tint, which is more apparent on the penultimate and ultimate whorls, these two being in a fine specimen (from Station 59) yellow near the suture. Base with a nearly perpendicular zone below the keel, bearing about 4 rows of scales, similar to those of the upper surface, then flat, with radiating, riblike and nine concentric lirae, which are scaly near the periphery and beaded towards the centre. Colour of the base yellowish, its centre covered by a rounded, porcellanous pad, which spreads in the most adult specimen over a large space of the base, being more circumscribed towards the aperture (especially in younger specimens) where it ends in an obuse (sic), toothlike angle. Aperture squarely oval, upper part of the outer margin curved, thin, nacreous, columellar margin thick, rounded, basal part thin and slightly expanded. Interior of the aperture nacreous, but not strongly iridescent, smooth; the margin only slightly crenulated by the spiral lirae. In one very young specimen, a small umbilical slit is distinctly present, it is surrounded by a row of white beads, which seem to be covered as soon as the callous pad becomes more developed. Operculum oval, thick, its outer surface white, convex near the margins, slightly impressed near the centre, where it is also slightly tuberculiferous. Its inner surface is flat, brown, with two broad and about ten narrower whorls, around a subcentral nucleus.

Lat. (without spines) 24 mm, alt. 17 mm. apert. alt.: 8 mm, aperture lat. 11 mm.

This species varies more or less in the altitude of the spire, even in specimens of about the same diameter, in the place where the spiral rows of scales appear and in the length of the spines. I have hesitated in erecting a new subgenus for it, but I could not locate it in any of the existing subgenera. It has somewhat the appearance of *Guildfordia*, but differs in its suture being spiniferous in the upper whorls; the callous pad of the base is not provided with a pit as in *Guildfordia*. The subgenus may be characterised by the slender spines and the space of the porcellanous pad.

I think its nearest ally is *Turbo (Calcar) henicus* Watson (*Challenger Exp. part 62, p. 130, Pl. 6, fig. 11*) the description agreeing in many particulars, but it may be distinguished at once, by that species being beaded instead of scaly as in the new species. The operculum has many features in common. The radula of one of the smaller specimens, has given only an imperfect result, by its great brittleness; in cleaning it, it fell in pieces. As far as I can judge, it has much affinity with that of *Bolma*.

Several living and broken shells were found by the Siboga-expedition in the Moluccas in depths varying from 289 m to 520 m, in mud and sand or among stones and coral or coarse sand.

Discussion:

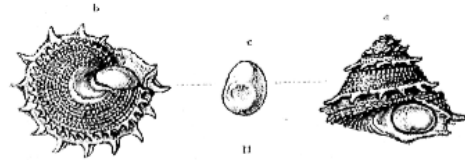
First of all we consider *Bolma henica* and *Bolma abyssorum* conspecific. The differences between both are too negligible and we can at best retain *B. abyssorum* as a form. Some authors mention the latter as a subspecies of the nominal species, but as both described localities (the Moluccas and Fiji) are very close, it may be wise to leave that way of thinking. In Tables I and II we compare different parameters in specimens of both shells from Japan and New Caledonia. Besides a small difference in the number of rows of small beads on the ultimate whorl, the only main difference lies in the structure of the base. The nominal species has about 11 circular rows of tiny scales instead of 7-9 rows of tiny beads in *B. abyssorum*.

On the other hand *B. madagascarensis* has a consistent number of characteristics by which it differs from both *B. henica* and *B. abyssorum*.

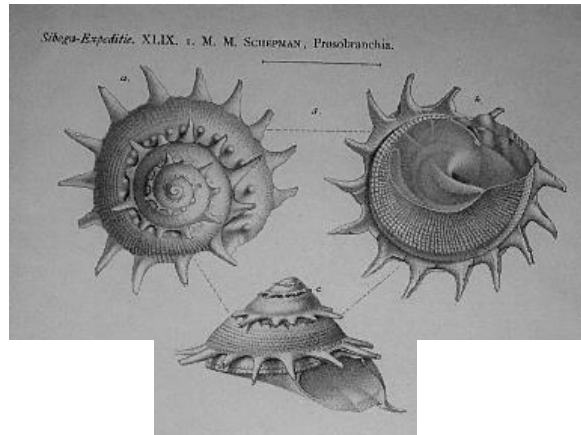
The most striking difference is the smaller number of spines on the carina, 8-10 instead of 12-14 in the similar species. The spines are slightly raised upwards or at least projecting horizontally, unlike the downward-pointing spines in *B. henica* and *B. abyssorum*.

Other main differences are the H/D-value (0.77 instead of 0.84) and the according angle of 110°-115° (compared to 125°-130°) between the upper and lower ramp of the last whorl. *B. madagascarensis* has a rusty-coloured shell; the colour of the upper ramp (above the carina) is darker than the pinkish white lower ramp. *B. henica* is greyish or creamy-white. The ornamentation of the granulated rows is also very different in these similar species, especially the only row of beads just above the base in *B. madagascarensis*, compared to the average of 4 rows in the other species. In *B. madagascarensis* the aperture is elliptic in its outline and it is surrounded by a flaring porcellanous pad extending out of the base and completely covering the centre of the base in adult

specimens. The complex of differences is important enough to decide this shell is a separate species and not merely a subspecies living in the west of the Indian Ocean. It can not be confused with other species from the western Indian Ocean such as *Bolma andersoni* (Smith, 1902), *B. somaliensis* Beu & Ponder, 1979, *B. guttata* (Adams, 1963), *B. tayloriana* (Smith, 1880) and *B. sabiniae* Alf & Kreipl, 2004.

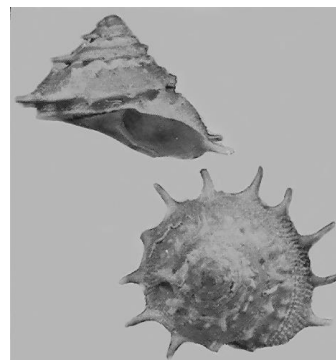


Turbo (Calcar) henicus Watson, R.B., 1879. Mollusca of H.M.S. 'Challenger' Expedition. IV. Trochidae continued ... and the Turbinidae. *Journal of the Linnaean Society of London.*, 14: 692-716. Pl. VI, Figs 11, a, b & c.



Astralium (Pseudastralium) abyssorum Schepman, M.M., 1908.

The Prosobranchia of the Siboga Expedition. Part I. Rhipidiglossa and Docoglossa. – Siboga-Expeditie, (49a): 1-107, Pl. II, Figs 1, a, b & c.



Bolma henica forma '*abyssorum*' (Schepman, 1908)

From Sally Diana Kaicher's *Card Catalogue of World-Wide Shells – pack 52: Turbinidae I.* 1988. Card number 5343.

	Sculpture of base	Spines on ultimate whorl	Sculpture of upper part of ultimate whorl	Sculpture of lower part of ultimate whorl
<i>Bolma henica</i> (Japan)	11 rows of tiny scales	12-14 in number, delicate; downward-pointing	1 row of small beads + 1 row of very small beads + 7 rows of small scales	5-6 rows of tiny scales
' <i>Bolma abyssorum</i> ' (New Caledonia)	7-9 rows of tiny beads	12-14 in number, delicate; downward-pointing	1 row of small beads + 5 rows of tiny beads	3-5 rows of tiny beads
<i>Bolma madagascarensis</i> (SW Madagascar)	3 rows of elongated diffuse beads fading into parallel radial ridges	8-10 in number, relatively long and heavy; slightly raised upwards	1 row of large beads + 1-2 rows of smaller beads, rarely traces of a 3 rd row	1-2 rows of very small elongated beads

Table I: Comparison of a few characteristics in the similar species *B. madagascarensis*, *B. henica* and the form '*abyssorum*'

	H/D (mean value)	Colour	Outline of aperture	Angle between upper and lower part of the whorls (calculated from the carina)
<i>Bolma henica</i> (Japan)	0.840	creamish yellow	circular	125°-130°
' <i>Bolma abyssorum</i> ' (New Caledonia)	0.847	greyish white	circular	125°-130°
<i>Bolma madagascarensis</i> (SW Madagascar)	0.769	rusty; upper side darker than the pinkish white lower side	oval with an expanding porcellanous pad	110°-115°

Table II: Comparison of a few parameters in the similar species *B. madagascarensis*, *B. henica* and the form '*abyssorum*'

Acknowledgements: We would like to thank David Monsecour (Rillaar, Belgium) for carefully controlling the English text.

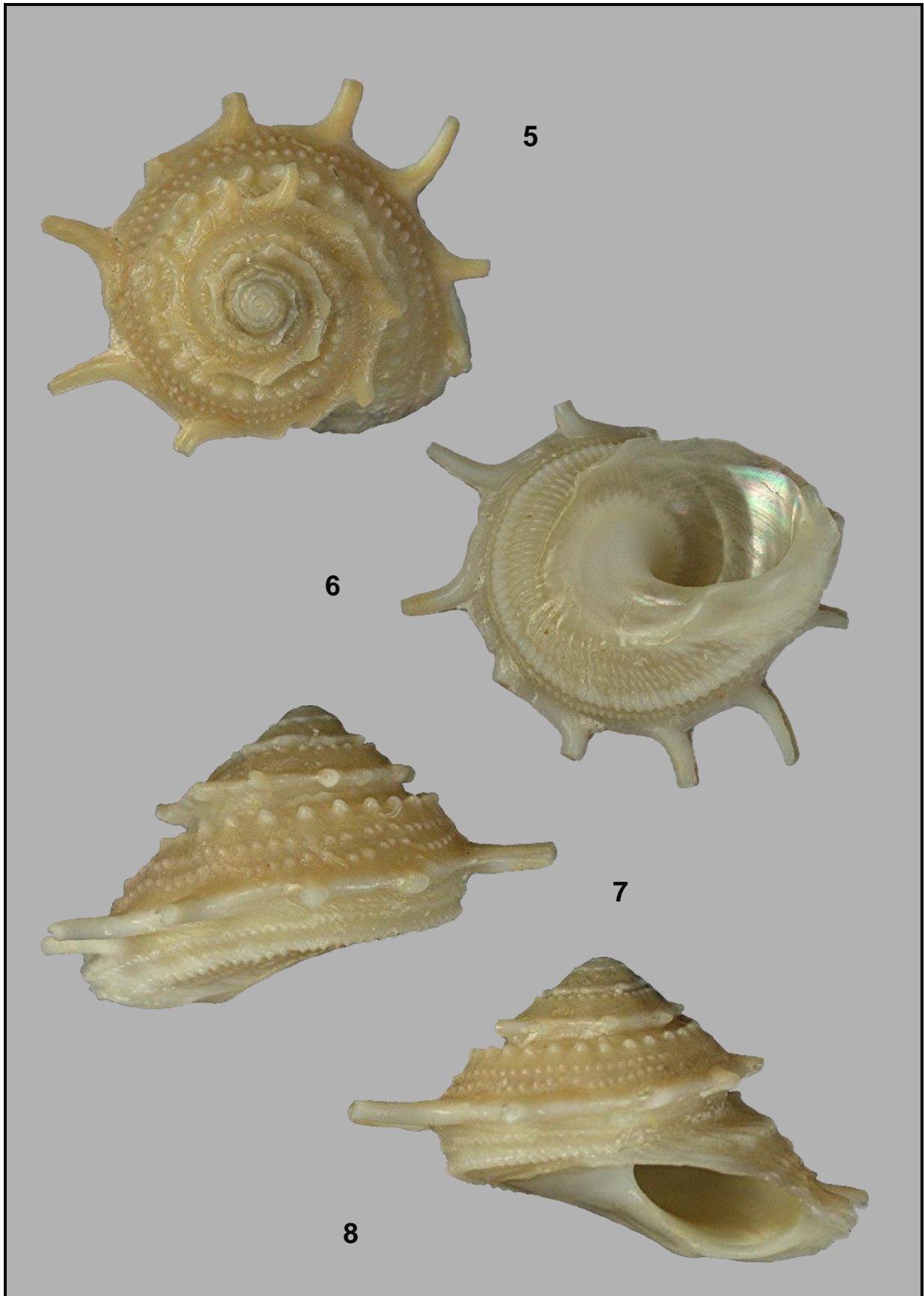
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**Plate II. Figs 3 & 4. *Bolma madagascarensis*.
Holotype (RBINS; 16.9 mm x 22.3 mm).
Trawled off Toliara, SW Madagascar at 600 m – 2002.**



**Plate III. Figs 5, 6, 7 & 8. *Bolma madagascarensis*.
Paratype 1 (collection FN; 17.2 mm x 22.7 mm).
Trawled off Toliara, SW Madagascar at 600 m – 2002.**

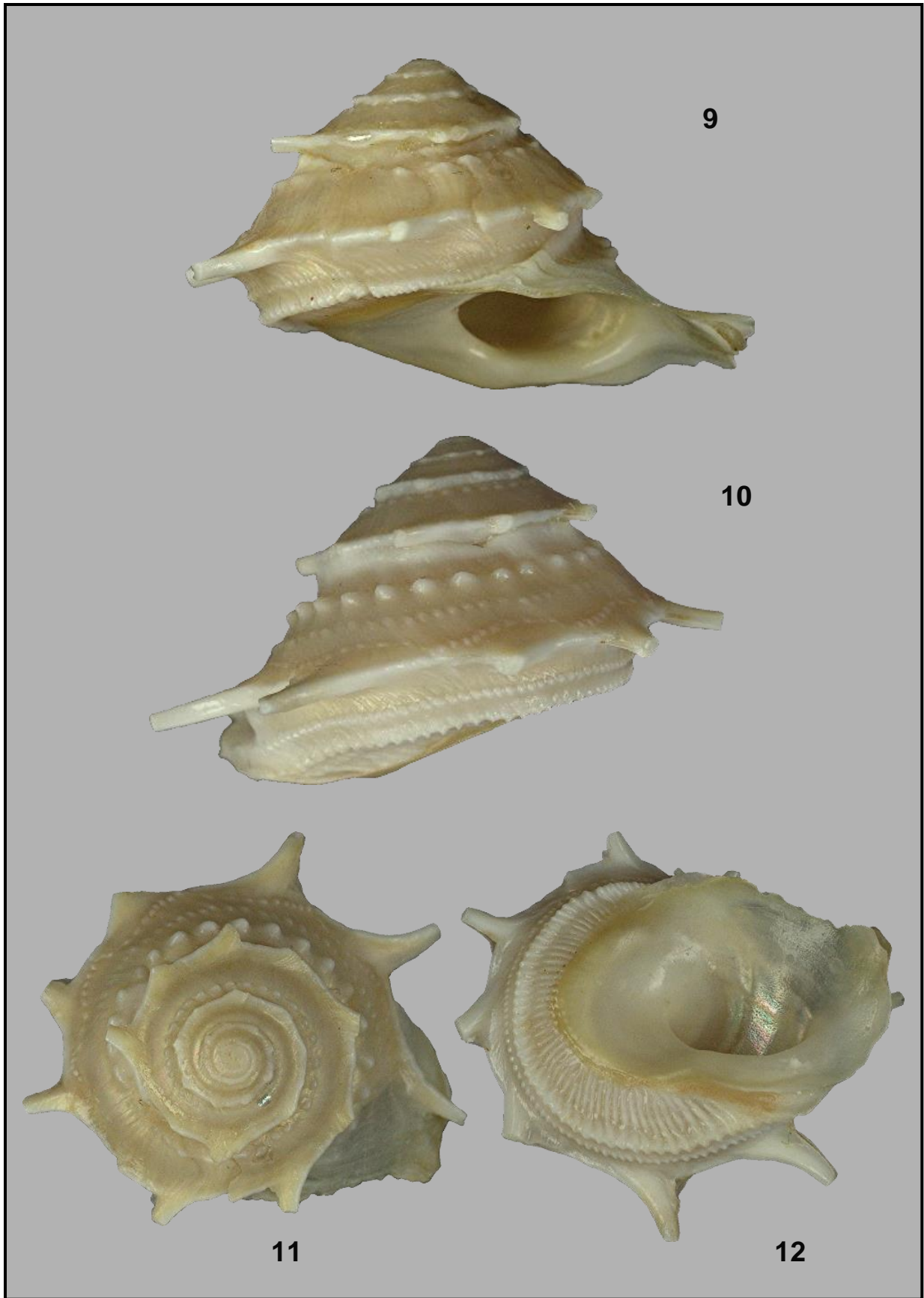


Plate IV. Figs 9, 10, 11 & 12. *Bolma madagascarensis*.
Paratype 2 (collection FN; 17.2 mm x 22.7 mm).
Trawled off Toliara, SW Madagascar at 600 m – 2002.

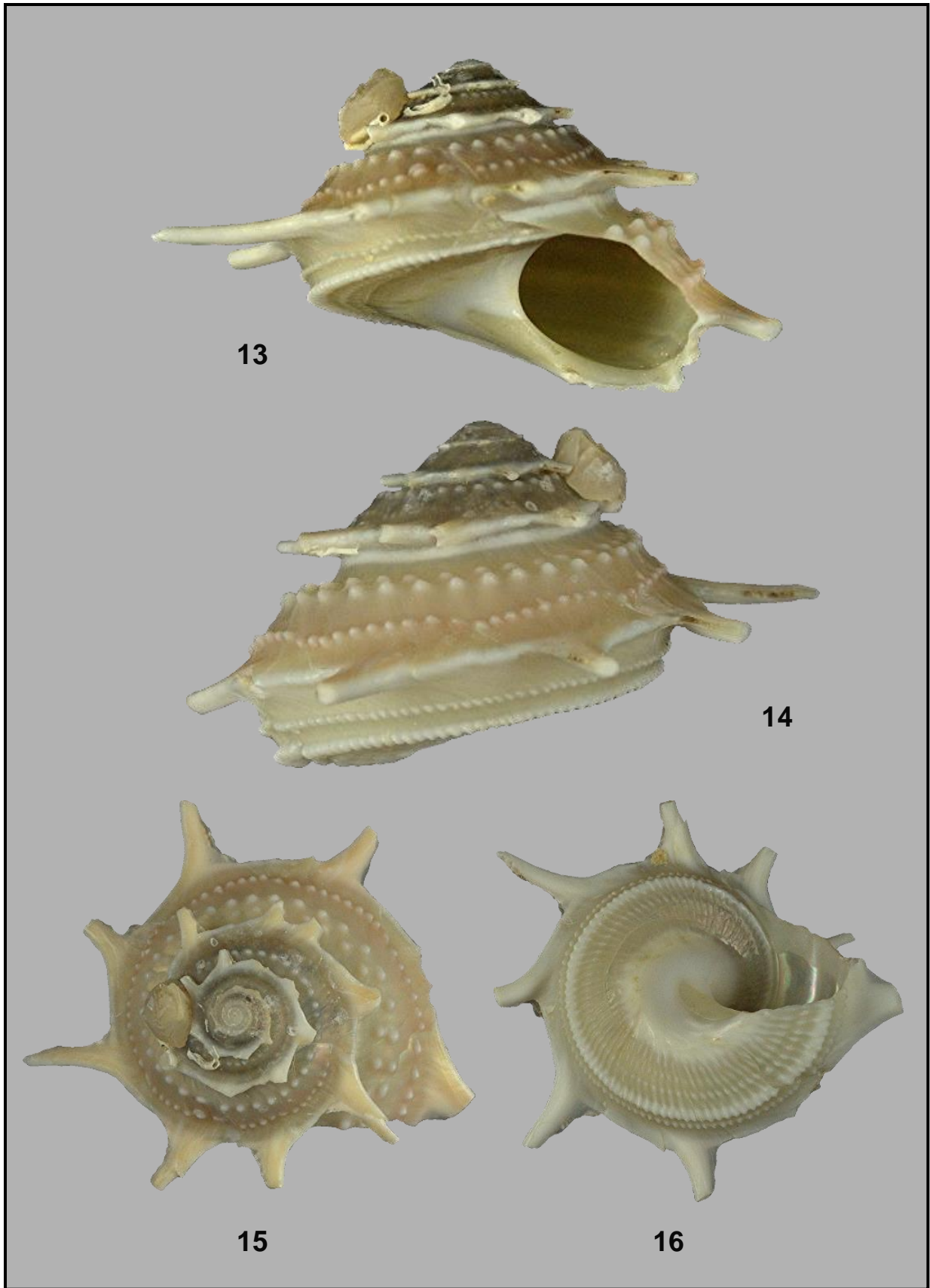


Plate V. Figs 13, 14, 15 & 16. *Bolma madagascarensis*.
Paratype 3 (collection JV; 15.5 mm x 20.6 mm).
Trawled off Toliara, SW Madagascar at 600 m – 2002.

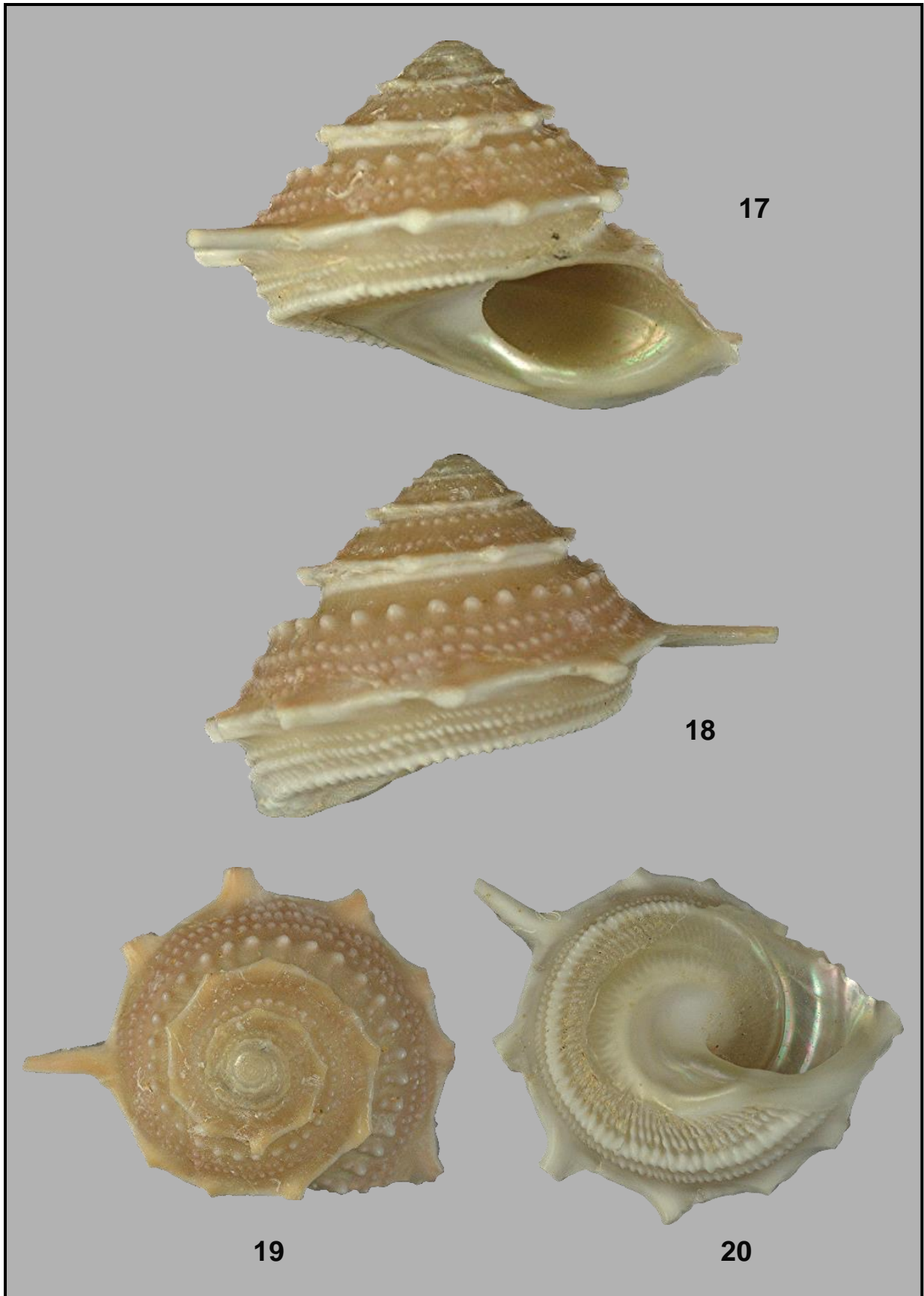
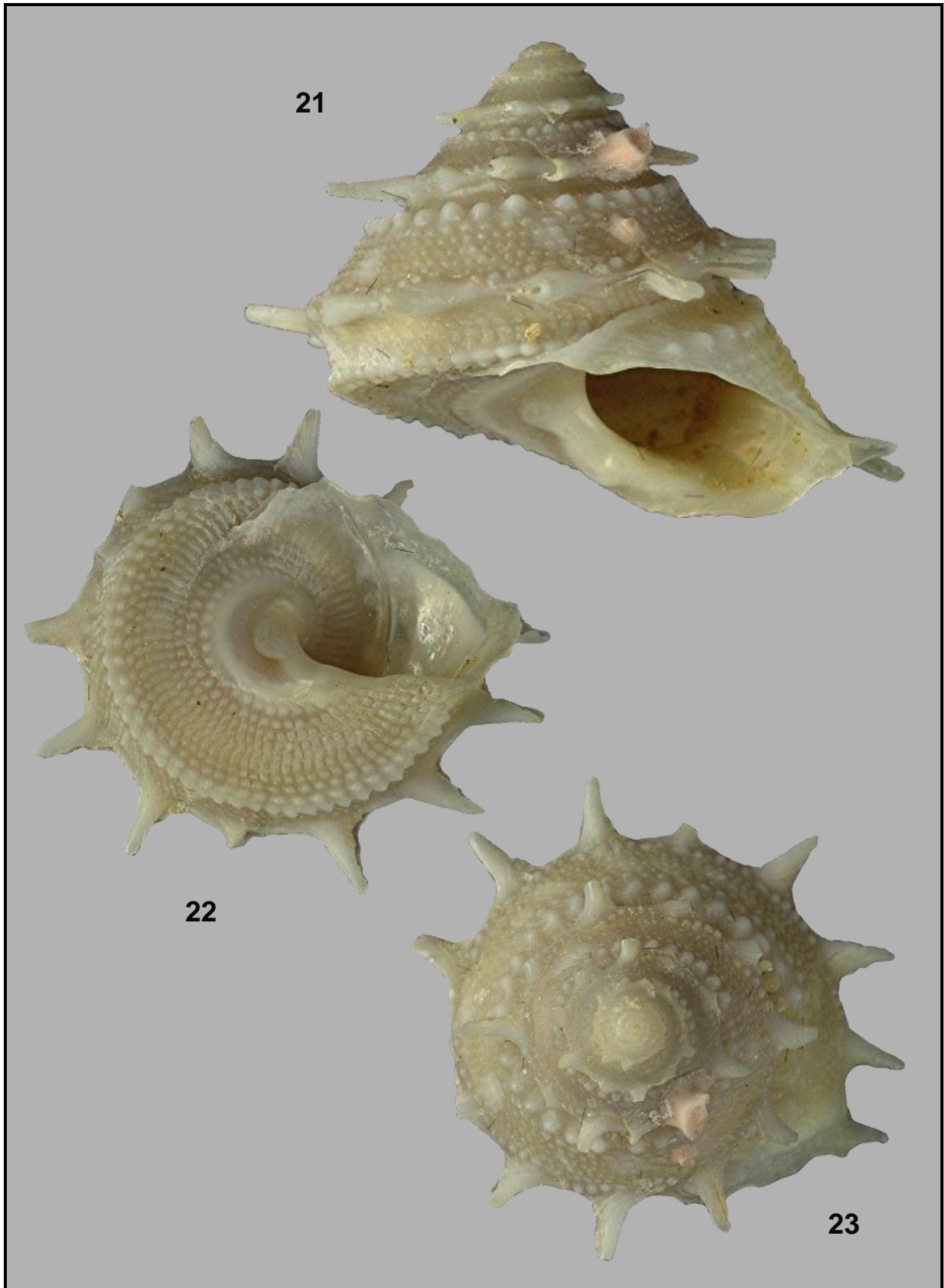


Plate VI. Figs 17, 18, 19 & 20. *Bolma madagascarensis*.
Paratype 4 (collection JV; 17.2 mm x 22.7 mm).
Trawled off Toliara, SW Madagascar at 600 m – 2002.



**Plate VII. Figs 21, 22 & 23. *Bolma henica* (Watson, 1879).
Collection JV; 17.0 mm x 19.4 mm.
North Belep Islands, Grand Passage, New Caledonia.
Dredged at 400-450 m. 2003.**

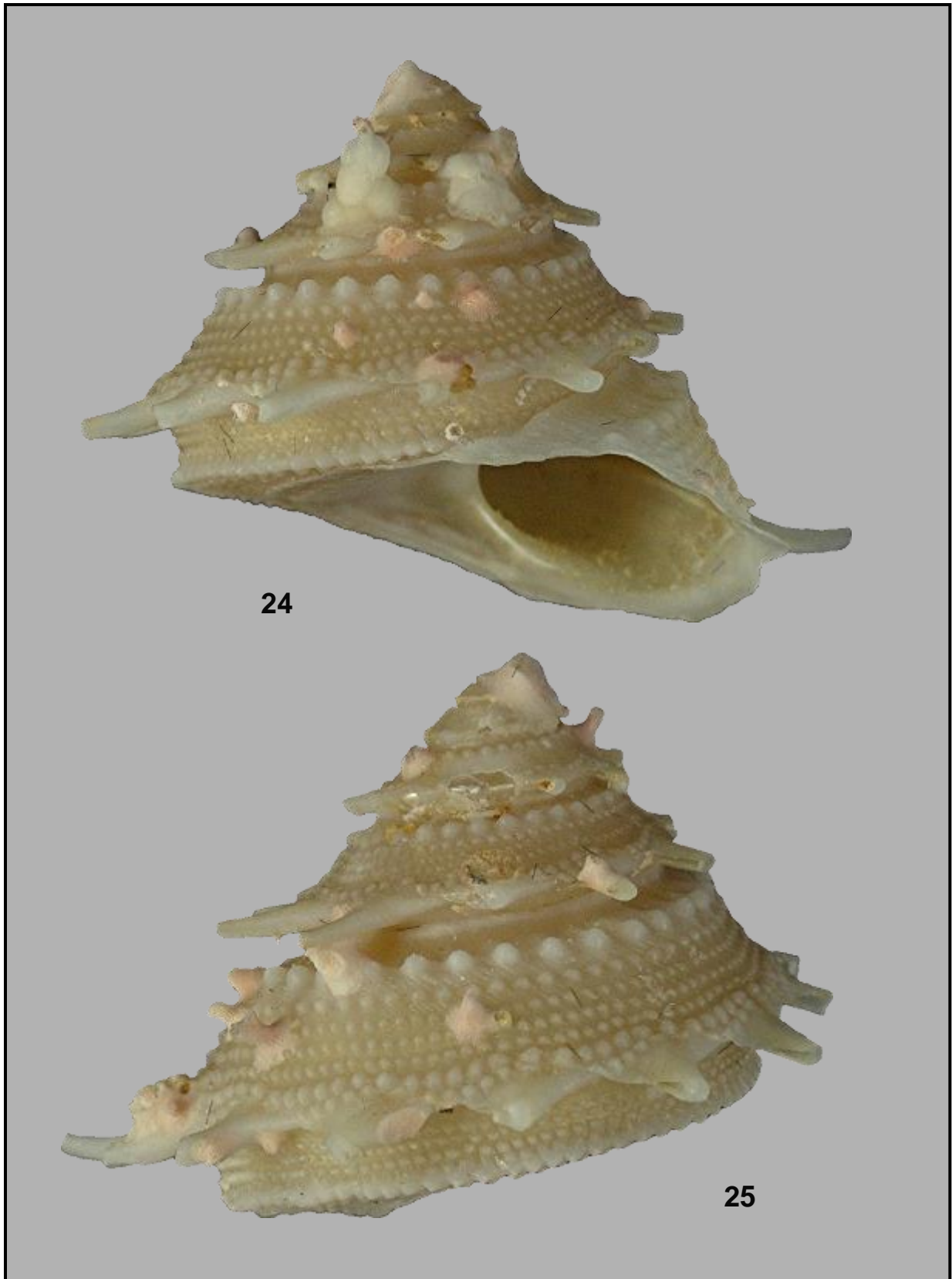
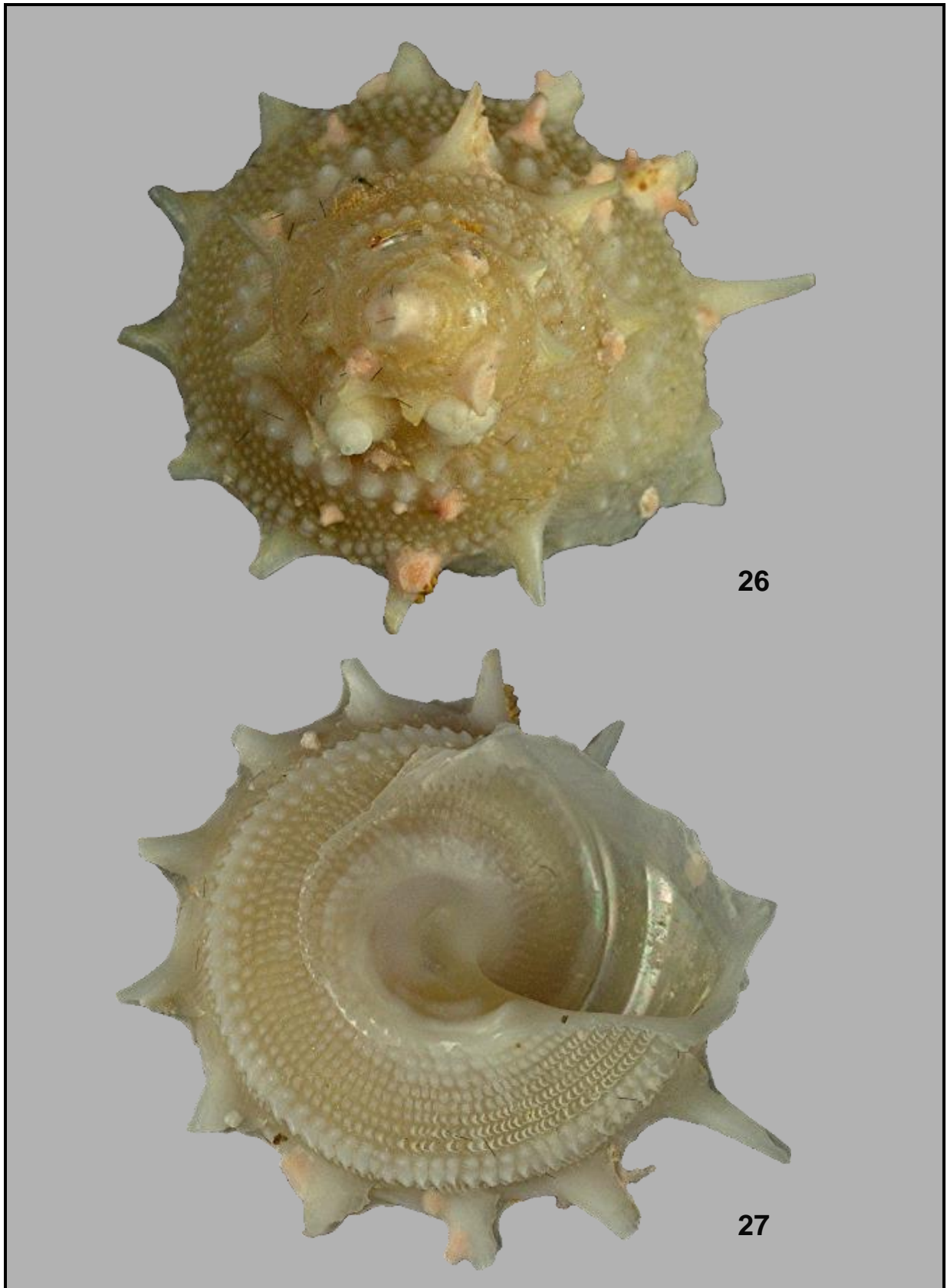


Plate VIII. Figs 24 & 25. *Bolma henica* (Watson, 1879).
Collection JV; 18.6 mm x 21.0 mm.
North Belep Islands, Grand Passage, New Caledonia.
Dredged at 400-450 m. 2003.



**Plate IX. Figs 26 & 27. *Bolma henica* (Watson, 1879).
Collection JV; 17.0 mm x 19.4 mm.
North Belep Islands, Grand Passage, New Caledonia.
Dredged at 400-450 m. 2003.**



Plate X. Figs 28 & 29. *Bolma henica* forma 'abyssorum' (Schepman, 1908).
Collection FN; 21.8 mm x 25.6 mm.
Tosa Bay, Japan – dredged at a depth of 250 m.

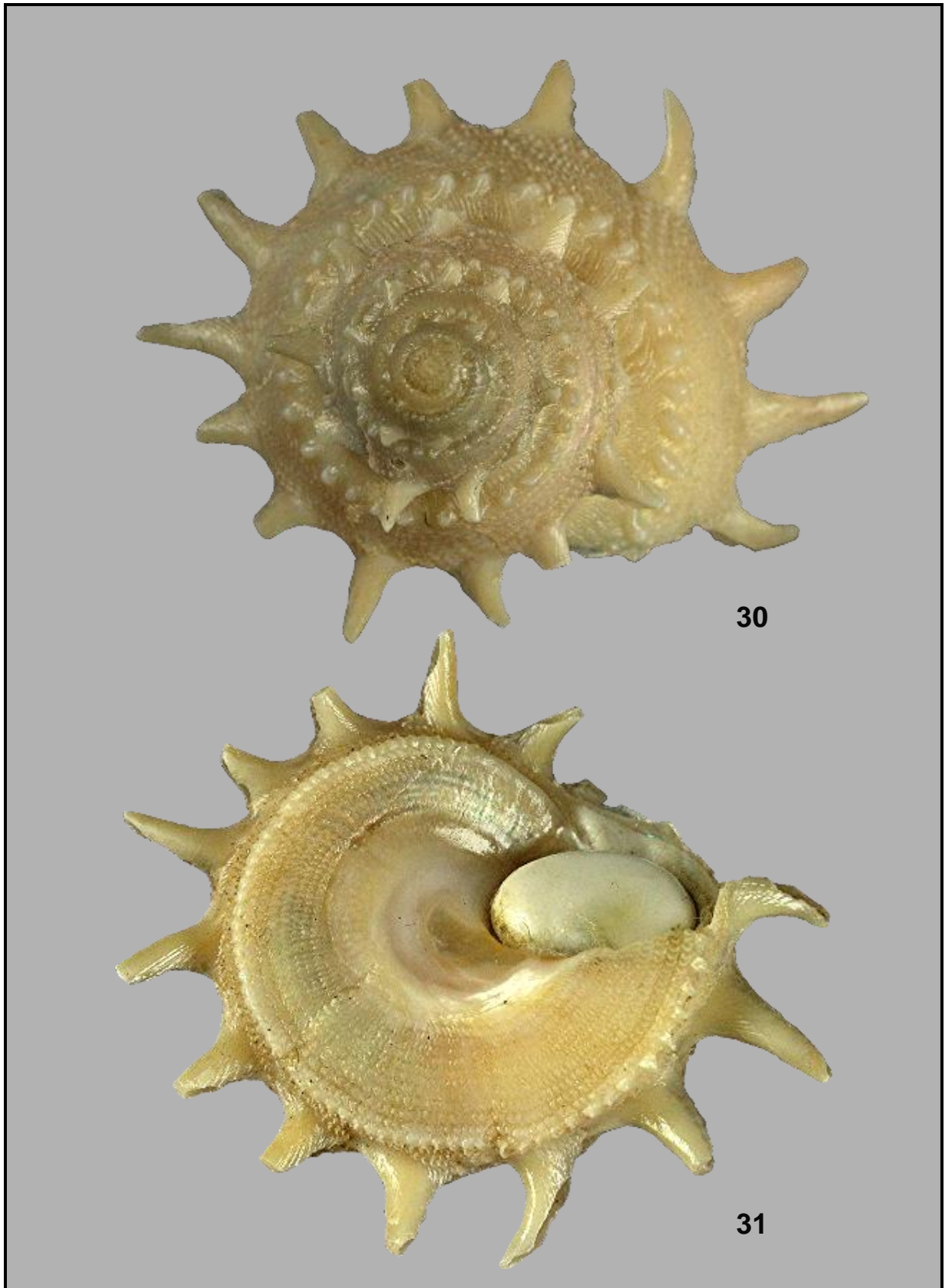
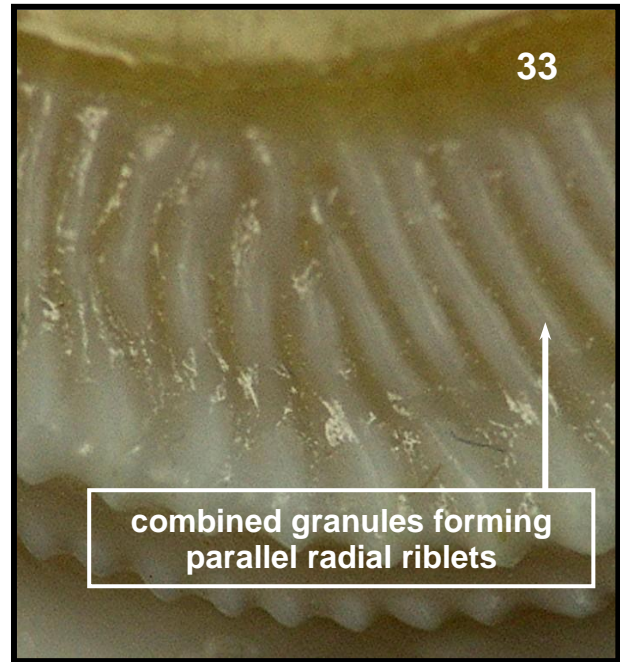
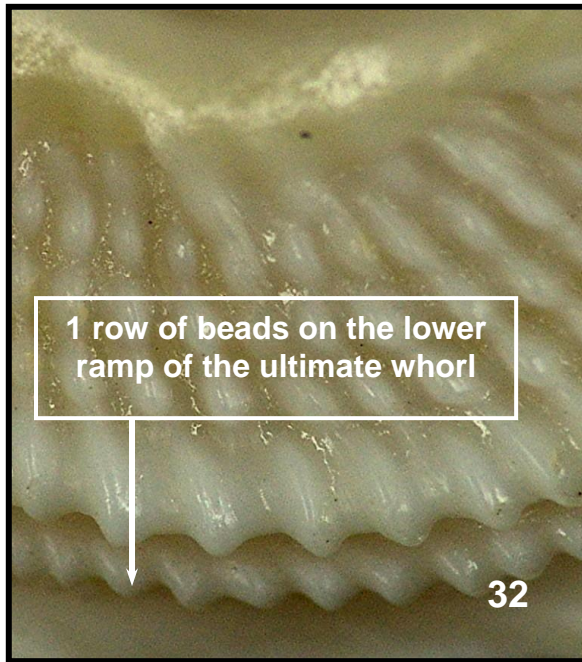
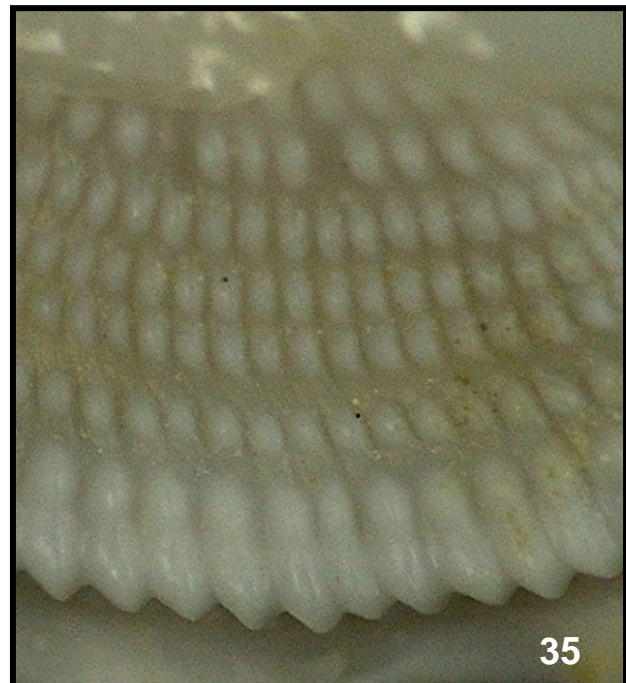
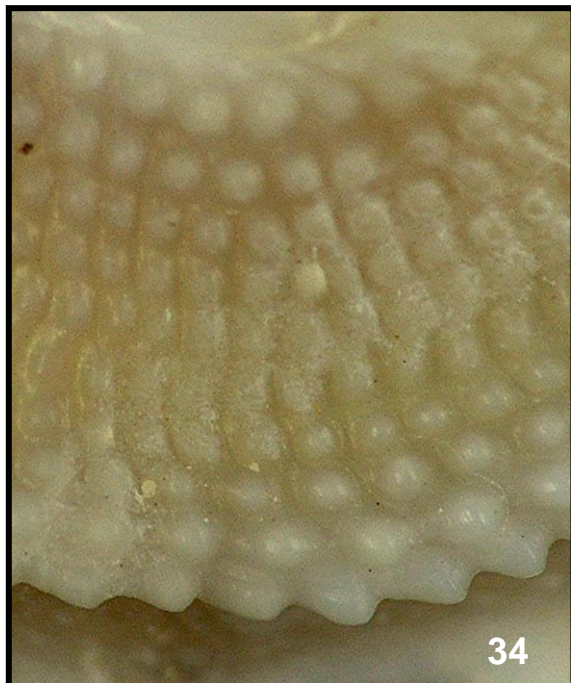


Plate XI. Figs 30 & 31. *Bolma henica* forma '*abyssorum*' (Schepman, 1908).
Collection FN; 21.8 mm x 25.6 mm.
Tosa Bay, Japan – dredged at a depth of 250 m.



Bolma madagascarensis Nolf & Verstraeten, 2006



Bolma henica forma '*abyssorum*' (Schepman, 1908)

Plate XII. Figs 32, 33, 34 & 35. Comparison between the structure of the base in *B. madagascarensis* and *B. henica* forma '*abyssorum*'

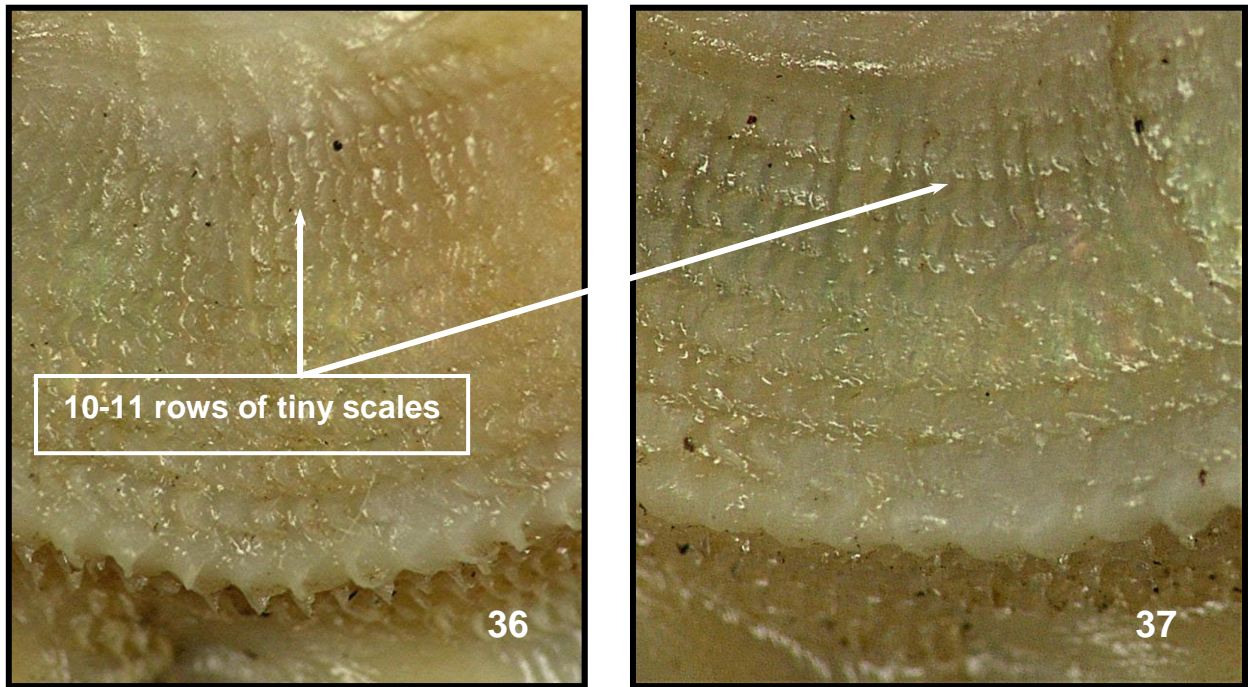


Plate XIII. Figs 36 & 37. Structure of the base in *Bolma henica* (Watson, 1879)

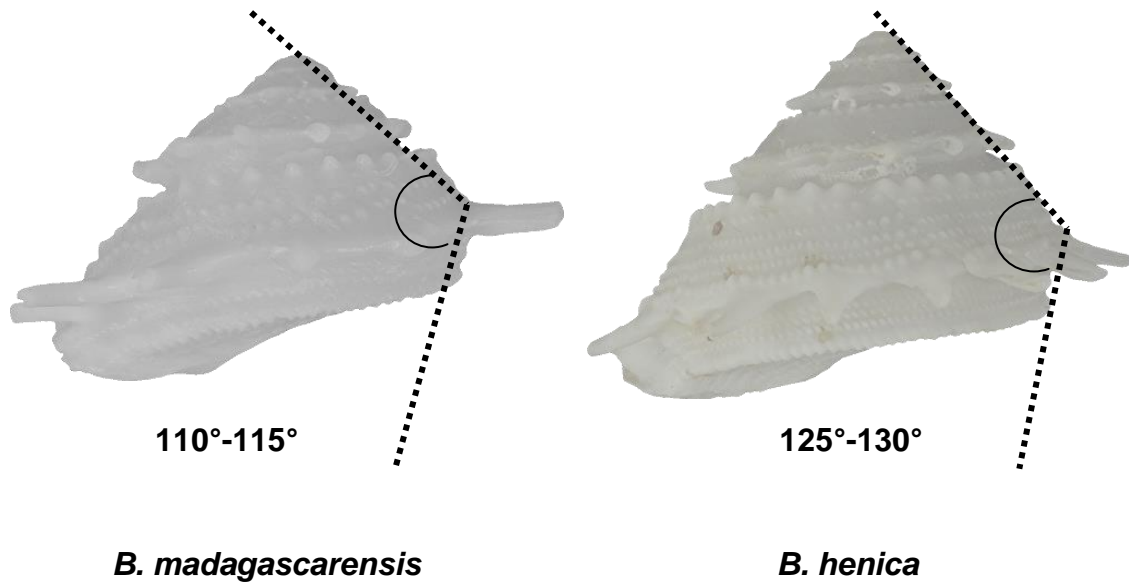


Plate XIV. Comparison of the angle between upper and lower ramp of the ultimate whorl

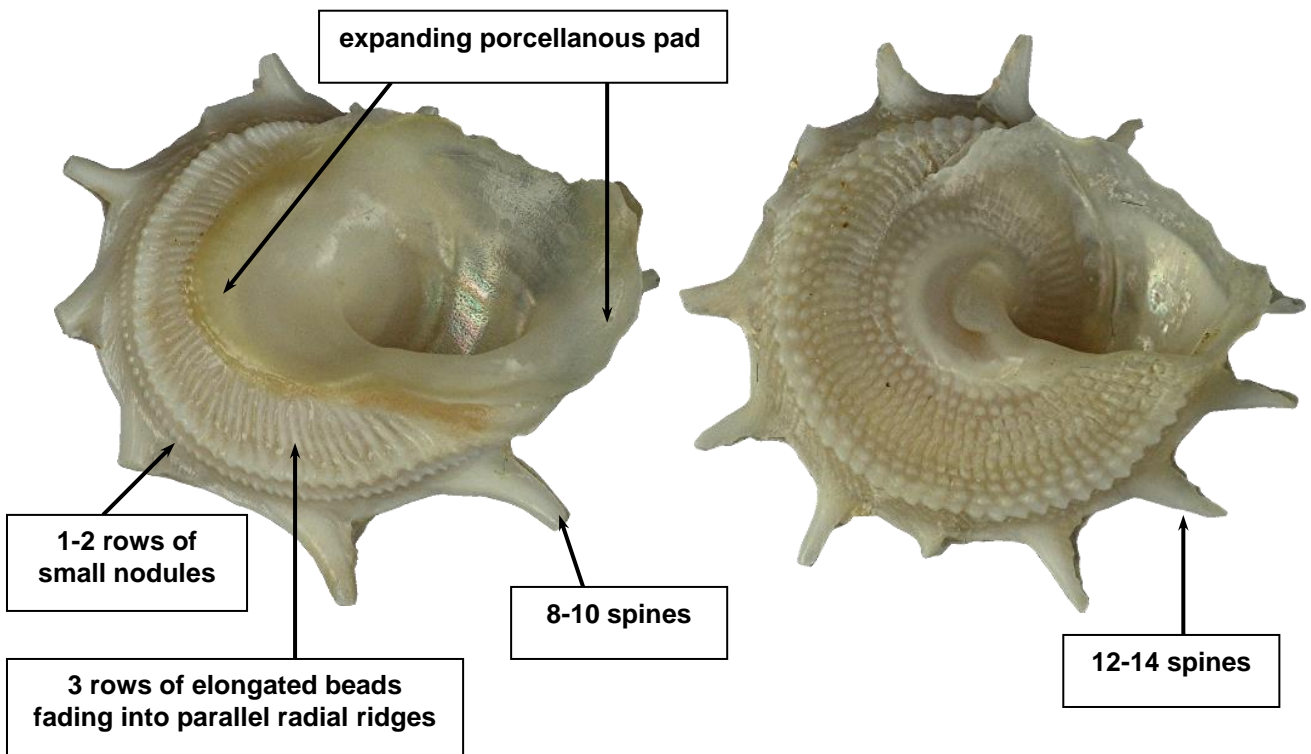


Fig. 38. *B. madagascarensis*

Fig. 39. *B. henica*

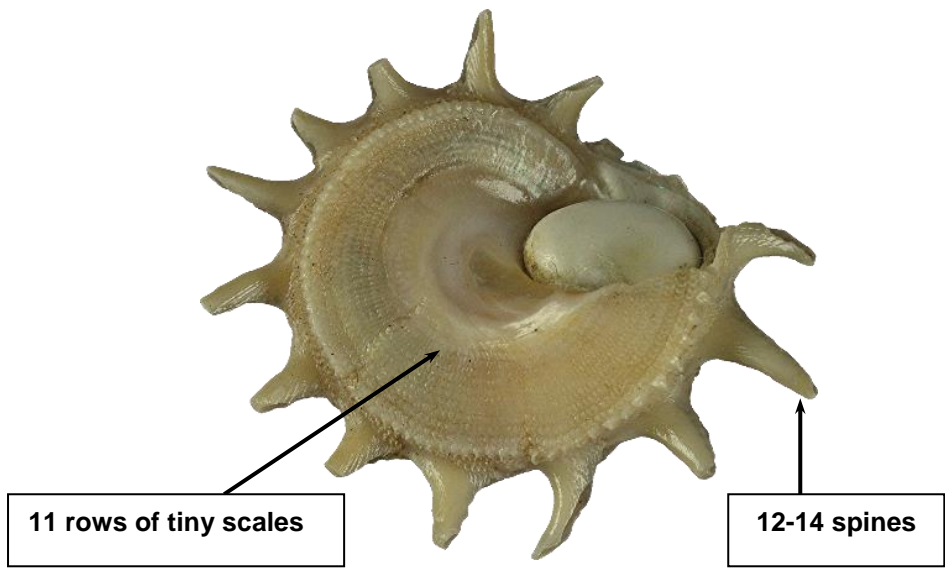
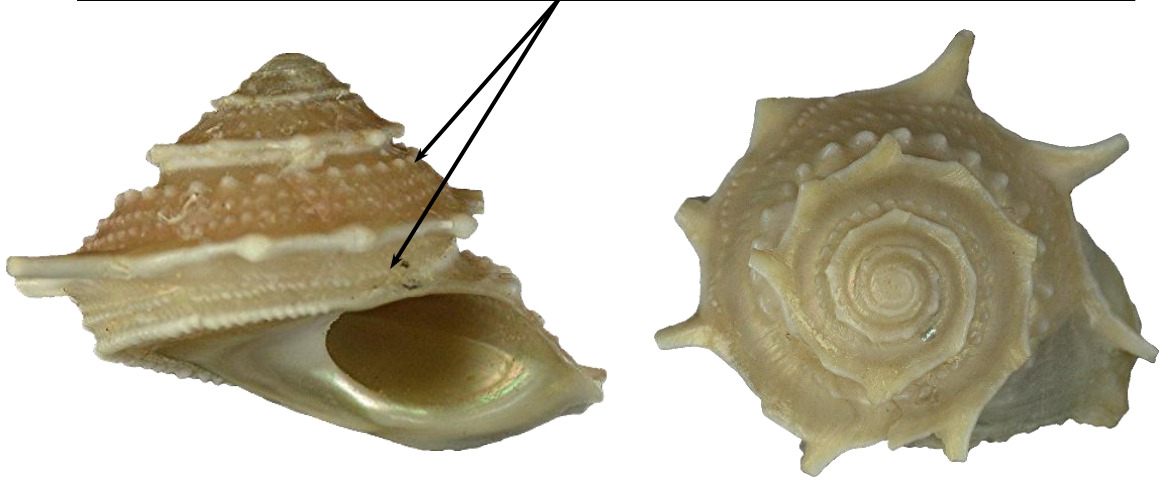


Fig. 40. *B. henica* forma '*abyssorum*'

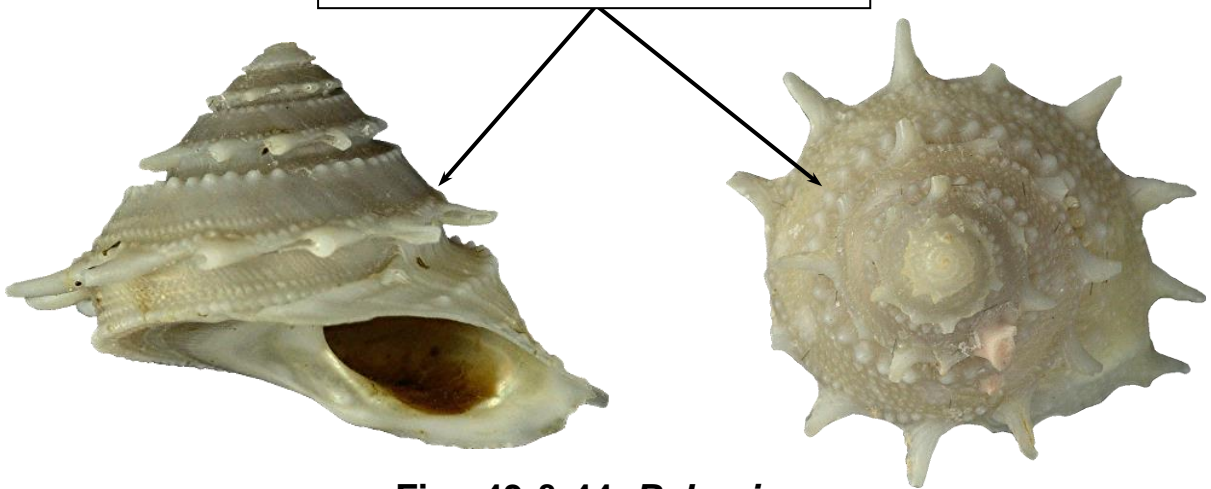
Plate XV. Comparison between the bases of the similar species

two different colours: higher ramp of each whorl rusty, lower side creamy white



Figs 41 & 42. *B. madagascarensis*

uniform creamy or greyish white colour



Figs 43 & 44. *B. henica*



Figs 45 & 46. *B. henica* forma '*abyssorum*'

Plate XVI. Comparison between the two similar species

