

Description of a New Species of *Darioconus* from Mozambique

Roy Aiken

P.O. Box 13126, Northmead, 1511, South Africa

shells@molluscafrica.co.za

ABSTRACT A new species of *Darioconus* from Mozambique is described here, with comparisons to *Darioconus pennaceus* (Born, 1778), *Darioconus magnificus* (Reeve, 1843) and *Darioconus praelatus* (Hwass in Bruguiere, 1792).

KEYWORDS *Darioconus pennaceus*, *D. praelatus*, *D. paramagnificus*, Mozambique

INTRODUCTION

The taxon *Darioconus pennaceus* (Born, 1778) (Plate 2 Figures 5-6), has had a long, varied and convoluted history. Some ‘markers’ that elucidate this journey could begin with the then definitive book entitled Cone Shells (Walls 1979) at a time when species were being lumped together to the degree that he has no less than *D. omaria* (Hwass in Bruguiere, 1792), *D. rubiginosus* (Hwass in Bruguiere, 1792), *D. praelatus* (Hwass in Bruguiere, 1792), *D. episcopus* (Hwass in Bruguiere, 1792), and *D. aureus* (Roding, 1798) all in synonymy under *D. pennaceus*, making “species description” a real challenge. One comment that stands out is: “*Conus magnificus* is very similar to *C. pennaceus* in pattern, protoconch, blunt spire and general appearance”. Many years have passed and there is still confusion and division in the cone world as to whether *pennaceus* and *praelatus*, both assumed to exist in Mozambique, are indeed separate species.

During this time of species agglomeration, Röckel, *et al.* produced the comprehensive Manual of the Living Conidae: Indo Pacific Region. 1995. Plate 63 therein is both revealing, and definitive. Figure 1 shows the lectotype of *pennaceus*, a broad, thick-set shell with a wide shoulder and relatively low spire. Figure 3

shows the Lectotype of *C. pennaceus f. praelatus*, pale, finer tenting, more cylindrical and higher spired. They also include like Walls, the following, in the “*pennaceus* basket”: *D. rubiginosus* (Hwass in Bruguiere, 1792), *D. praelatus* (Hwass in Bruguiere, 1792), *D. episcopus* (Hwass in Bruguiere, 1792), *D. aureus* (Roding, 1798), as well as *D. elisae* (Kiener, 1846), *D. quasimagnificus* (da Motta, 1982), *D. bazarutensis* (Fernando & Montiero, 1988), *D. lohri* (Kilburn, 1972), and *D. ganensis* (Delsaerdt, 1988). These authors are clear on the distribution of *magnificus* (Reeve, 1843) as being from the central Philippines and eastwards. They also opine, that “*magnificus* is very similar to *episcopatus*”. Their illustrations of lectotypes effectively remove previous assumptions of the appearance of *pennaceus* and *praelatus*.

Water flows under the malacological bridge and in 2010, Periera *et al.*, published “*Conus pennaceus*: a Phylogenetic analysis of the Mozambican Molluscan complex” in the African Journal of Marine Science. They mention that the “large morphological variability is exclusive to Mozambique” and Hawaii. They continue this conundrum, saying that it seems specimens co-habit with *Darioconus elisae* (this author agrees that this should be a full species) and *C. praelatus*. Their

Figure 1 illustrates *D. amostra* 22 = *pennaceus*, *pemba*, and *D. amostra* 24 = *praelatus*. Of particular interest is Figure 3 where they introduce *D. episcopatus* (da Motta, 1982) into their phylogenetic derivation, and postulate that *pennaceus* (group), may have derived from *episcopatus*. This makes sense when one looks to the most up to date cone books, that illustrate the very broad/extensive Indo-Pacific range of *episcopatus*, relative to the smaller and totally separated areas occupied by *magnificus* and *pennaceus*. Their two images are in keeping with the continuing conchological paradigm, that *pennaceus* is broad and thick set, *praelatus* more cylindrical with higher spire. Puillandre *et al.* (2014), place as species, *episcopatus*, *magnificus*, and *pennaceus* under *Darioconus* as we head into the “era of species division”. No mention by them is made of *praelatus*.

Xenophora Taxonomy 19 heralds a watershed moment in this journey. No less than Monnier, Tenorio, *et al.* (2018) work on Cones from Madagascar, Deep South. They introduce *D. praelatus* (with *D. vezoi* (Korn, Niederhöfer & Blöcher, 2000)), as full, separate and South Madagascar endemic species, different from *pennaceus*. They qualify the idea that the early author/s would have had access to such material as it is a shallow water species, and Fort Dauphin was en route to, and from Reunion, in the late 18th century.

And, so, in the huge and “re-defining “ work of Monnier, Limplaer, *et al.* (2018), the malacological paradigm that has always been that *Darioconus praelatus* is a tented shell, rather more cylindrical than *pennaceus*, and critically, “also occurring in Mozambique”, is properly challenged.

The amazing, commendable and massively comprehensive books of Living Conidae by Monnier, Limplaer, *et al.* (2018) brought in

many changes, some of them sweeping, one of which, on page 955, is their confirmation of detective work that revealed *Darioconus praelatus* as being a native of Madagascar. Their multiple, fresh illustrations of this (full) species are clear, as they compare the once again illustrated lectotype with extremely similar fresher material from around Fort Dauphin, Madagascar. Pointed spire, light orange-brown ‘background’ and no definitive radial threads on the whorls. Their telling comment is that these Madagascan shells are “different from the shells from Mozambique”.

The author has had in his possession for a considerable time, in excess of 17 puzzling shells, probably from the same gene pool, originally labeled as ‘*pennaceus*’, from “Murungulu” (sic), (Morrungulo) “live taken in sand in crevices, 15 feet”, during 1974 and has had the instinctive feeling that these shells do not fit a ‘*pennaceus* mould’, and now, appear to be separate from *praelatus*, a Madagascan endemic. A fortuitous meeting with Manuel Amorim in Antwerp 2023 resulted in the acquisition of shells that are comparable to the “Morrungulo” material. The author surmised that this material bears a strong resemblance to *D. magnificus* as well as *D. episcopatus*, with the domed pink spire, cylinder-like shells, and beautiful pattern of “swirls” of fine tenting.

The logic/information of Monnier *et al.*, is hereby adopted, which means that many of the Mozambique shells that have for decades been referred to as ‘*praelatus*’, require a formal name.

ABBREVIATIONS

Coll:	Collection of
n. sp.	New species
NMSA	KwaZulu Natal Museum

MATERIAL AND METHODS

All specimens were photographed by Mark Page with a Canon 800D utilizing a dedicated photographic table with adjustable overhead arm. Lens utilized was a Canon 100 mm Macro lens. White LED photographic lamps were utilized for lighting with customized, in-camera white balance. Darktable elements were utilized to crop and orientate images.

SYSTEMATICS

Class	Gastropoda Cuvier, 1795
Subclass	Sobreoconcha Ponder & Lindberg, 1997
Order	Prosobranchia Milne-Edwards, 1848
Infraorder	Neogastropoda Wenz, 1938
Superfamily	Conoidea Fleming, 1822
Family	Conidae Fleming, 1822
Subfamily	Puncticulinae Tucker & Tenorio, 2009
Genus	<i>Darioconus</i> Iredale, 1930

Darioconus paramagnificus Aiken, new species
(Figure 1; Plate 1; Plate 2 A-D)



Figure 1. *Darioconus paramagnificus* n.sp. Holotype 46.8 x 22.8 mm. Donated to NMSA. (NMSA P2650/T4621)

Description. Shells range from 41 mm to 56 mm, averaging 49 mm, surface somewhat glossy, shells narrowly ovate with slightly curved sides. Shoulder distinct but not sharp. Spire of average height, fairly straight sided, apex domed, with tiny nipple like protoconch and pink teleoconch whorls. Aperture white within, pattern of whorl is of mainly fine, pale, sometimes bluish tenting set against chocolate to dark chocolate spaces, all in a distinctive "swirling" from suture to base. Dark areas of the whorl are not solid in colour. In some shells, a vague spiral banding may be discerned. Body whorl is not smooth, but consists of a series of close set shallow spiral bands or threads, slightly stronger anteriorly, continuing all the way up to the shoulder. These bands are punctuated by fine white spotting.

Type Material. The type material of the holotype and paratypes of *Darioconus paramagnificus* are as follows:

- Holotype *Darioconus paramagnificus* n. sp. (46.8 x 22.8 mm). (Figure 1, Plate 1A). Coll: NMSA P2650/T4621. Live taken in Memba, Mozambique. Donated by R. Aiken.
- Paratype 1 *D. paramagnificus* n. sp. (54.9 x 24.7 mm). (Plate 1B). Live Memba, Mozambique. Coll: R. Aiken.
- Paratype 2 *D. paramagnificus* n. sp. (49.4 x 22.7 mm). (Plate 1C). Live Memba, Mozambique. Coll: R. Aiken.
- Paratype 3 *D. paramagnificus* n. sp. (56.6 x 27.4 mm). Live Memba, Mozambique. Coll: D. Berschauer.
- Paratype 4 *D. paramagnificus* n. sp. (53.2 x 23.9 mm). (Plate 1D). Live Memba, Mozambique. Coll: R. Aiken.
- Paratype 5 *D. paramagnificus* n. sp. (59.1 x 27.7 mm). (Plate 1E). Live Memba, Mozambique. Coll: R. Aiken.
- Paratype 6 *Darioconus paramagnificus* n. sp. (58.4 x 28.1 mm). Memba, Mozambique. Coll: M. Page.

Paratype 7 *D. paramagnificus* n. sp. (49.6 x 25.3 mm). (Plate 1F). Morrungulo, Mozambique. Coll: R. Aiken.

Paratype 8 *D. paramagnificus* n. sp. (52.5 x 25.4 mm). (Plate 2A). Morrungulo, Mozambique. Coll: R. Aiken.

Paratype 9 *D. paramagnificus* n. sp. (50.9 x 24.7 mm). (Plate 2B). Morrungulo, Mozambique. Coll: R. Aiken.

Paratype 10 *D. paramagnificus* n. sp. (49.6 x 22.5 mm). (Plate 2C). Morrungulo, Mozambique. Coll: R. Aiken.

Paratype 11 *D. paramagnificus* n. sp. (45.2 x 20.9 mm). (Plate 2D). Morrungulo, Mozambique. Coll: R. Aiken.

Paratype 12 *D. paramagnificus* n. sp. (41.5 x 20.9 mm). (Morrungulo, Mozambique. Coll: R. Aiken.

Paratype 13 *D. paramagnificus* n. sp. (42.2 x 20.4 mm). Morrungulo, Mozambique. Coll: R. Aiken.

Paratype 14 *D. paramagnificus* n. sp. (56.2 x 25.2 mm). Memba, Mozambique. Coll: M. Amorim.

Type Locality. Memba, Mozambique.

Distribution. From Memba southwards to presumably an area around Morrungulo, north of Inhambane.

Etymology. This species has a distinct combination of many of the features seen in *D. magnificus*.

DISCUSSION

A number of authors have alluded to the similarities between what has been called *D. praelatus/pennaceus*, and that of *D. magnificus* and *D. episcopatus*. The information on *praelatus* presented by Monnier, Limplaer, *et al.* (2018) seems conclusive. Add to this, the phylogeny of Periera *et al.* (2010) that *episcopatus* could easily be the ‘parent’ of these

Mozambique shells, and it becomes clear that the above description is warranted.

ACKNOWLEDGEMENTS

Thanks to Mark Page, for photographic images, document preparation and advice, to Nelisiwe Manukuza, KwaZulu-Natal Museum, for prompt supply of accession number. Special thanks to Manuel Amorim for material supplied for this study, and to Edward J. Petuch for his sage wisdom and advice.

LITERATURE CITED

- Monnier, E., M.J. Tenorio, P. Bouchet, & N. Puillandre. 2018.** The cones (Gastropoda) from Madagascar “Deep South”: composition, endemism and new taxa. *Xenophora Taxonomy* number 19, 2018.
- Monnier, E., L. Limpalaër, A. Robin, & C. Roux. 2018.** A Taxonomic Iconography of Living Conidae, two Volumes.
- Pereira, C.M., J. Rosado, S.G. Seabra, F. Pina-Martins, O.S. Paulo, & P.J. Fonseca. 2010.** *Conus pennaceus*: a phylogenetic analysis of the Mozambican molluscan complex. *African Journal of Marine Science* 32(3).
- Puillandre, N., P. Bouchet, T.F. Duda, Jr., S. Kaufenstein, A.J. Kohn, B.M. Olivera, M. Watkins, & C. Meyer, 2014.** Molecular phylogeny and evolution of the cone snails (Gastropoda, Conoidea). *Mol. Phylogenetics & Evolution* 78:290-303.
<http://doi:10.1016/j.ympev.2014.05.023>
- Röckel, D., W. Korn, & A.J. Kohn. 1995.** Manual of the Living Conidae. Indo-Pacific Region. 1995.
- Steyn, D.G. & M. Lussi. 2005.** Offshore Shells of Southern Africa.
- Walls, J.G. 1979.** Cone Shells: A Synopsis of the Living Conidae.

Cite as:

Aiken, R. 2023. Description of a New Species of *Darioconus* from Mozambique. *The Festivus* 55(3):199-204. <http://doi:10.54173/F553199>

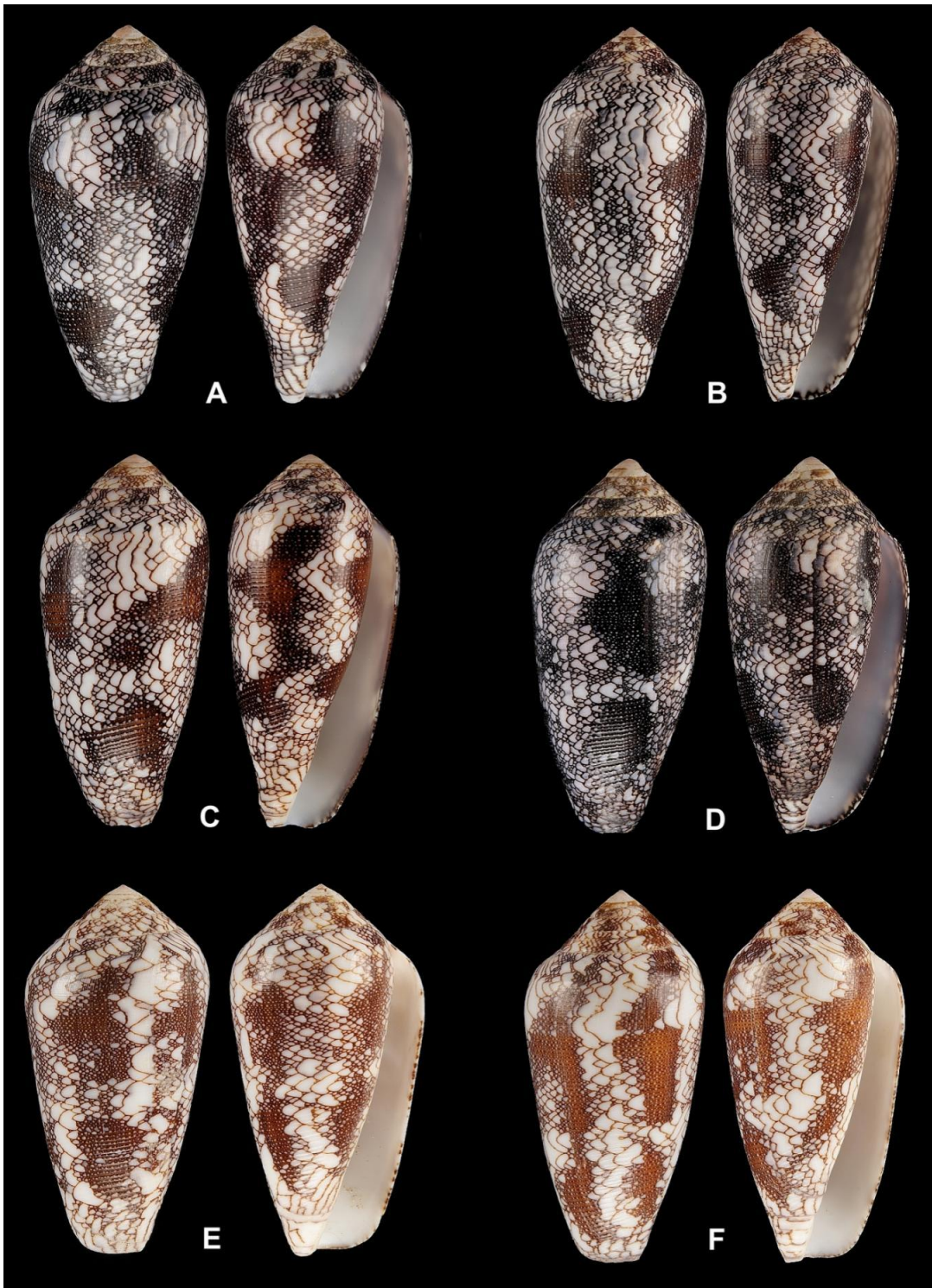


Plate 1. **A=** *Darioconus paramagnificus* n. sp. Holotype (NMSA P2650/T4621) (46.8 x 22.8 mm), Memba, Mozambique. **B=** *Darioconus paramagnificus* n. sp. Paratype 1 (54.9 x 24.7 mm), Memba, Mozambique. **C=** *Darioconus paramagnificus* n. sp. Paratype 2 (49.4 x 22.7 mm), Memba, Mozambique. **D=** *Darioconus paramagnificus* n. sp. Paratype 4 (53.2 x 23.9 mm), Memba, Mozambique. **E=** *Darioconus paramagnificus* n. sp. Paratype 5 (59.1 x 27.7 mm), Memba, Mozambique. **F=** *Darioconus paramagnificus* n. sp. Paratype 7 (49.6 x 25.3 mm), Morrungulo, Mozambique.

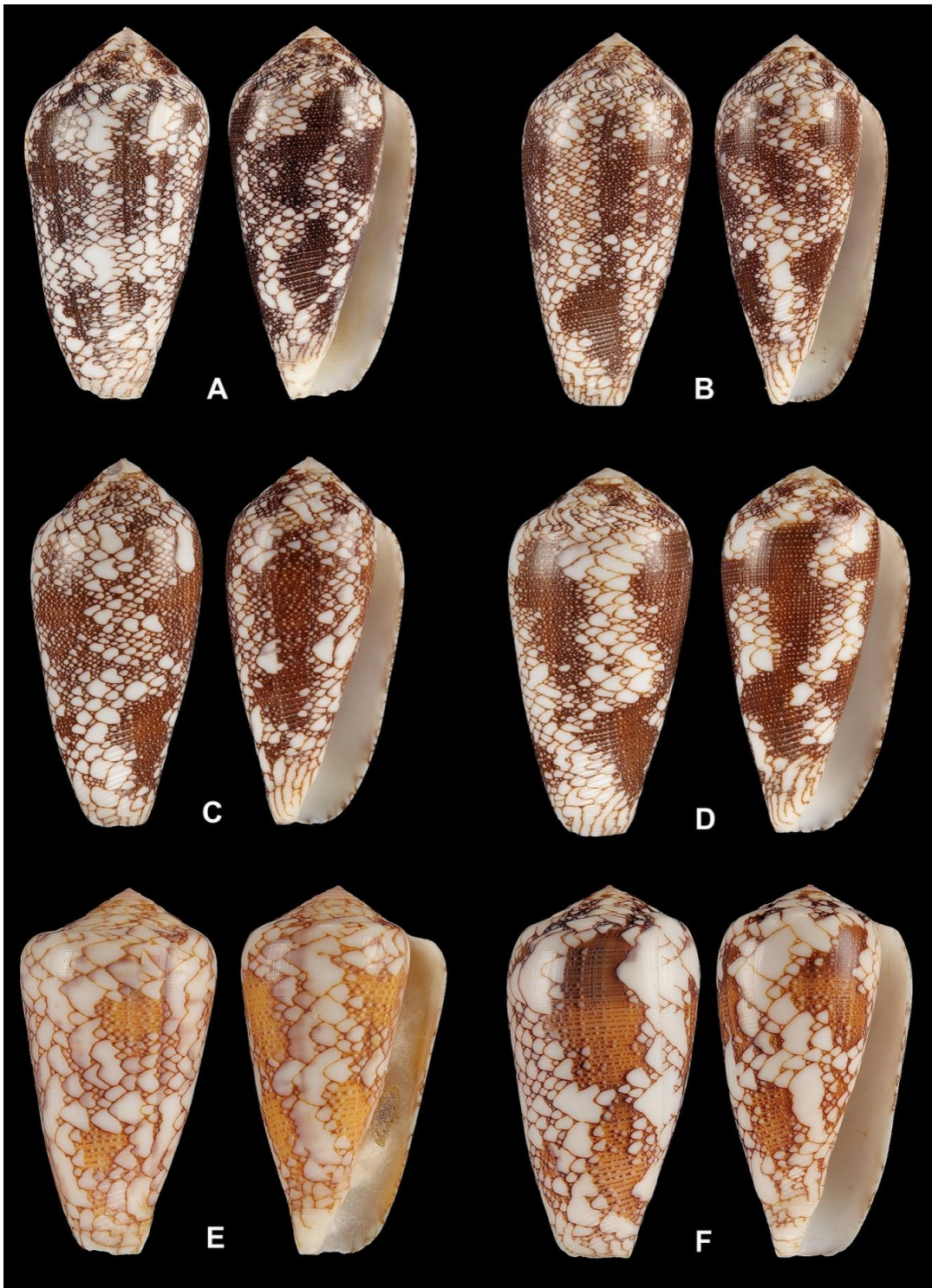


Plate 2. **A=** *Darioconus paramagnificus* n. sp. Paratype 8 (52.5 x 25.4 mm), Morrungulo, Mozambique. **B=** *Darioconus paramagnificus* n. sp. Paratype 9 (50.9 x 24.7 mm), Morrungulo, Mozambique. **C=** *Darioconus paramagnificus* n. sp. Paratype 10 (49.6 x 22.5 mm), Morrungulo, Mozambique. **D=** *Darioconus paramagnificus* n. sp. Paratype 11 (45.2 x 20.9 mm), Morrungulo, Mozambique. **E=** *Darioconus pennaceus* (45.6 x 23.2 mm), Mozambique, Coll: R. Aiken. **F=** *Darioconus pennaceus* (37.2 x 20.4 mm), Mozambique, Coll: R. Aiken.