

## A fossil *Barycypraea*, and one *Bistolida* subspecies, from the Eastern Seaboard of Southern Africa

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**ABSTRACT** Two Cypraeidae from the Northern Kwazulu-Natal, South Africa, and Southern Mozambique are described. This includes a unique and fascinating fossil cowrie, *Barycypraea iungo*, and a new subspecies, *Bistolida clavicola jangamoensis*.

**KEYWORDS** *Cypraeidae*, *Barycypraea iungo*, *zietsmani*, Pleistocene, *Bistolida clavicola jangamoensis*, Kwazulu-Natal, Richards Bay, Mozambique and South Africa

### INTRODUCTION

The acquisition of an amazing fossil from Richards Bay harbour may represent a potential missing link between other ancestral *Barycypraea*, as well as modern *Barycypraea* and *Zoila*.

A new subspecies of *Bistolida* is described, and positioned in the *clavicola* group, *Bistolida clavicola jangamoensis*.

### ABBREVIATIONS

Coll:	Collection of
NMSA	KwaZulu-Natal Museum, Pietermaritzburg, South Africa
n. sp.	New species
n. ssp.	New subspecies

### MATERIAL AND METHODS

Systematics for this paper is based on the work of F. Lorenz's "Cowries A Guide to the Gastropod Family Cypraeidae", published in 2017.

Specimens for Figures 1 and 2, Plate 1 Figures 1-3, Plate 2 Figures 1-3, Plate 3 Figures 1-3,

Plate 4 Figures 2-5, and Plate 5 Figure 1 and Figures 3-4, were photographed by Mark Page with a Canon 800D utilizing a dedicated photographic table with adjustable overhead arm. Lenses utilized were a Canon 50 mm and Canon 100 mm Macro lenses. White LED photographic lamps were utilized for lighting with customized, in-camera white balance. Darktable elements were utilized to crop and orientate images.

Images for Plate 4 Figure 1 and Plate 5 Figures 5-6 were supplied for incorporation by A. Seccombe.

### SYSTEMATICS

Family Cypraeidae Rafinesque, 1815  
Genus *Barycypraea* Schilder, 1927

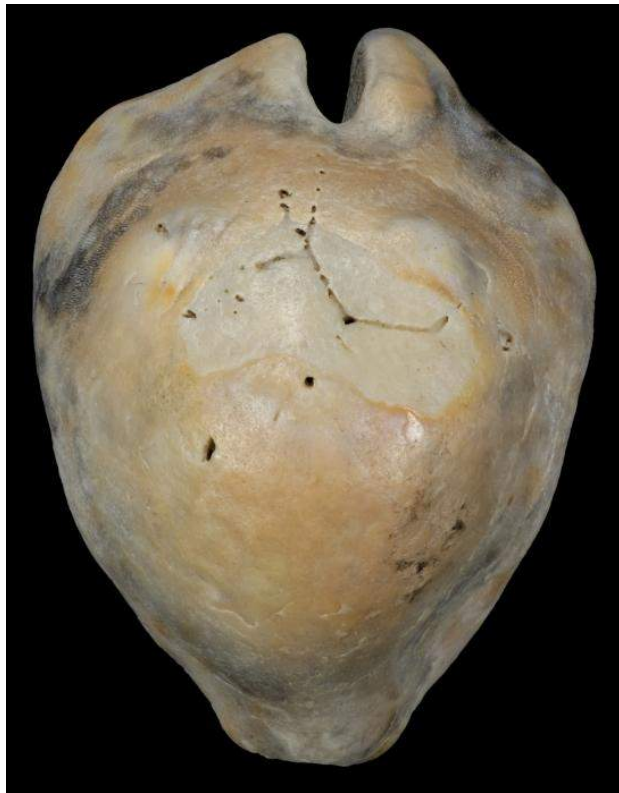
*Barycypraea iungo*

Seccombe and Aiken, n. sp.

(Figure 1, Plate 1.1, Plate 2.1, Plate 3.1)

**Description.** Shell measurements 60.05 x 45.10 mm. Profile humped, broadly pyriform with thick, smooth, rounded margins indented around the shoulder area, with a deeply cut posterior notch. Base (and entire shell) heavily thickened

and relatively flat. Aperture somewhat broad, columella fairly straight with 16 strong, evenly spaced teeth on the inner edge. Flattened, slightly curved labrum with 18 strong teeth, extending to not quite 50% of the labral width. Anterior canal noticeably short. Distinct presence of round brown spots on the margins. Angular, seemingly uniform brown colour present on the anterior third of the dorsum, and less so surrounding a shallow plain mid-dorsal area. Dorsal surface bears two distinct tubercles in the posterior third of the specimen, on either side of the mid-dorsal line. Combined with a ridge at the peak of the hump, this creates the smooth, apparently colourless mid-dorsal window. Faint, small but clear patches of gloss still cover the shell surface.



**Figure 1.** *Barycypraea iungo* Seccombe and Aiken, n. sp.

**Type Material.** The type material of the holotype of *B. iungo* is as follows:

Holotype: 60.05 x 45.10 mm. (Plate 1.1). Coll: NMSA-Mol 0P2009/T4560, Donated by A. Seccombe.

**Distribution.** Beach collected after a break up of fossil banks beds, in Richards Bay for harbour expansion.

**Etymology.** *iungo*, after the Latin verb for join, connect, yoke or bridge.

**Observations re color.** Its sporadic black colouring is most likely influenced by the inclusion of Titanium ore, ilmenite and rutile, plentiful in the sands of the Richards Bay area.

## DISCUSSION

Originally identified as an old dead *B. fultoni* (Sowerby III, 1903), on close inspection it represents a truly amazing find. The specimen seems to combine characteristics of *B. zietsmani* Liltved & Le Roux, 1988 (Plate 1.2), in the south, around Port Elizabeth, as well as members of this Genus to the north, at Java, such as *B. caputviperae* Martin, 1899 and *B. caputavisensis* Beets, 1987. Although Beets, in 1987, in naming *caputavisensis*, felt that it was a predecessor to *Zoila*, he seemed to overlook its potential connection with *Barycypraea*. Lorenz, in his superb recent works on *Cypraea*, spends some time introducing this Genus, and, tellingly, while keeping *Barycypraea* over *Afrozoila*, he most importantly recognizes some common morphology between Javan fossils and extant species such as *B. teuleri* Cazenavette, 1846 and *B. fultoni* (Sowerby III, 1903) (Plate 2 fig. 1-2). The Richards Bay fossil has classic dorsal knobs much like *zietsmani*, but a strong set of columellar teeth, non-existent in *zietsmani*, but way more like the *caputavisensis* illustrated by Lorenz. Lorenz, already in *Schriften zur*

Malakozoologie 4, 1991, pays quite some attention to the development of *Barycypraea*, producing detailed hand drawn illustrations of the posterior tubercles in older members, to *B. luxuriosa* Schilder 1939, where the tubercle development becomes extreme. Although larger, *B. iungo* bears a strong resemblance also, to *B. murisimilis* (K. Martin, 1879) (Plate 1.3) in morphology and dentition. See Lorenz Plate 335 Vol 2, shell #1. The possible likeness to the American *Muracypraea* (such as *heneckeni*), may be coincidental, as Lorenz feels that *Muracypraea* may bear resemblance to *Barycypraea* as a matter of convergence rather than a phylogenetic relationship.

The Pleistocene beds around Zwartkops, Port Elizabeth, also exist in the area around Richards Bay in Northern KZN. (Johan Marais, personal communication).

Could it be that the southern *B. fultoni fultoni* (Plate 2.2) is derived from *zietsmani*, with its noticeable paucity of columellar dentition? The second author has referred to these as nodules, rather than teeth. Their number can be as low as 7 only. *B. iungo* seems to give rise to the *B. amorimi* group (Plate 3 Figures 2-3), off southern Mozambique, that exhibit multiple columella teeth, and the extreme *B. amorimi* (Plate 3 Figure 2) shape with produced marginal calluses.

So, it would seem that *B. iungo* is the first real clue that hints of a past yolkling of ancient *Barycypraea*.

## SYSTEMATICS

Family Cypraeidae Rafinesque, 1815  
Genus *Bistolida* Cossmann, 1920

*Bistolida clavicola jangamoensis*  
Aiken and Seccombe, n. ssp.  
(Figure 2, Plate 4, Plate 5 Figures 1-3)

**Description.** Shell size somewhat variable, ranging from 23 mm to 32 mm. Shells solid, narrow-oval, with extended extremities, creating a rostrate appearance. Posterior terminal blotched on either side, with strong double blotch on each of the produced margins. These are in line with the dorsal blotch. Large dark brown dorsal blotch with few lacunae. Dorsal blotch only rarely connected to marginal blotches. Marginal spotting fine. Dorsal profile flattened, base of shells with relatively narrow aperture, columellar side with teeth extending onto the base only in the posterior half. Labral side has strong teeth that effectively come across the entire base. Background colour olive-grey.

**Type material.** The type material of the holotype and paratypes of *B. clavicola jangamoensis* are as follows:

- Holotype: 23.3 x 14.9 mm. (Figure 2), Jangamo, Mozambique. NMSA Mol 0M0585/T4561. Donated by R. Aiken.
- Paratype 1: 28.1 mm. (Plate 4.1), Jangamo, Mozambique. Coll: A. Seccombe.
- Paratype 2: 29.3 x 17.0 mm. (Plate 4.2), Snorkel, Jangamo, 1973. Coll: R. Aiken.
- Paratype 3: 26 mm. Coll: (Plate 5.2), A. Seccombe
- Paratype 4: 28.1 mm. Coll: A. Seccombe
- Paratype 5: 22.4 x 12.7 mm. (Plate 4.3), Sodwana Bay, SCUBA, 30 m. Coll: R. Aiken.
- Paratype 6: 21.6 x 15.7 mm. (Plate 4.5), Jangamo, Mozambique. Coll: R. Aiken.
- Paratype 7: 31.9 x 19.3 mm. (Plate 4.4), Jangamo, Mozambique. Coll: R. Aiken.
- Paratype 8: 24.7 x 14.7 mm. (Plate 5.1), Inhambane, Southern Mozambique. Coll: R. Aiken.
- Paratype 9: 27.8 x 16.0 mm. (Plate 5.3), Port Durnford, Kwazulu-Natal. Coll: R. Aiken.
- Paratype 10: 25.1 x 15.4 mm. Jangamo, Mozambique. Coll: R. Aiken.
- Paratype 11: 25.3 x 14.4 mm Jangamo, Mozambique. Coll: R. Aiken.



**Figure 2.** *Bistolida clavicola jangamoensis* Aiken and Seccombe, n. ssp.

**Distribution.** In shallow water from Inhambane, Southern Mozambique, southwards to at least Kosi Bay / Port Durnford / Sodwana, with a seeming concentration in the Jangamo reef area, Southern Mozambique.

**Etymology.** Named after the pretty horseshoe reef at Jangamo, Southern Mozambique.

## DISCUSSION

This more southern subspecies of *B. clavicola* came to the attention of the second author fairly recently. The more northern *B. clavicola clavicola* Lorenz, 1998 (Plate 5, fig 4) has a blue-grey background, is markedly oval, and has shorter extremities. Although uncommonly available as “*B. diauges uvongoensis* Massier, 2004”, these shells are also not like the true *uvongoensis* type specimens shown by Massier, and belong more in the *clavicola* group, not *diauges*. They fit the *clavicola* profile, being more oval, profile flattened, teeth configuration like *clavicola*, (very short on anterior of columella), and have an olive-grey background, as opposed to Massier’s ‘olive-beige’, and Lorenz pale orange for *uvongoensis*. *B. diauges*

*uvongoensis* (Plate 5 fig 5-6) is a more elongate shell.

In 2005, Ronnie Watt produced a comprehensive dissertation on the *Bistolida* complex. In it, he mentions “integrades between *diauges* and *clavicola*” off East Africa. (PL 24.) Lorenz, however, in 2017 maintains that there is always a distinction between the two, even when found sympatrically. The Watt ‘integrades’ are *B. clavicola jangamoensis*, with their more oval profile and olive-grey background.

## ACKNOWLEDGEMENTS

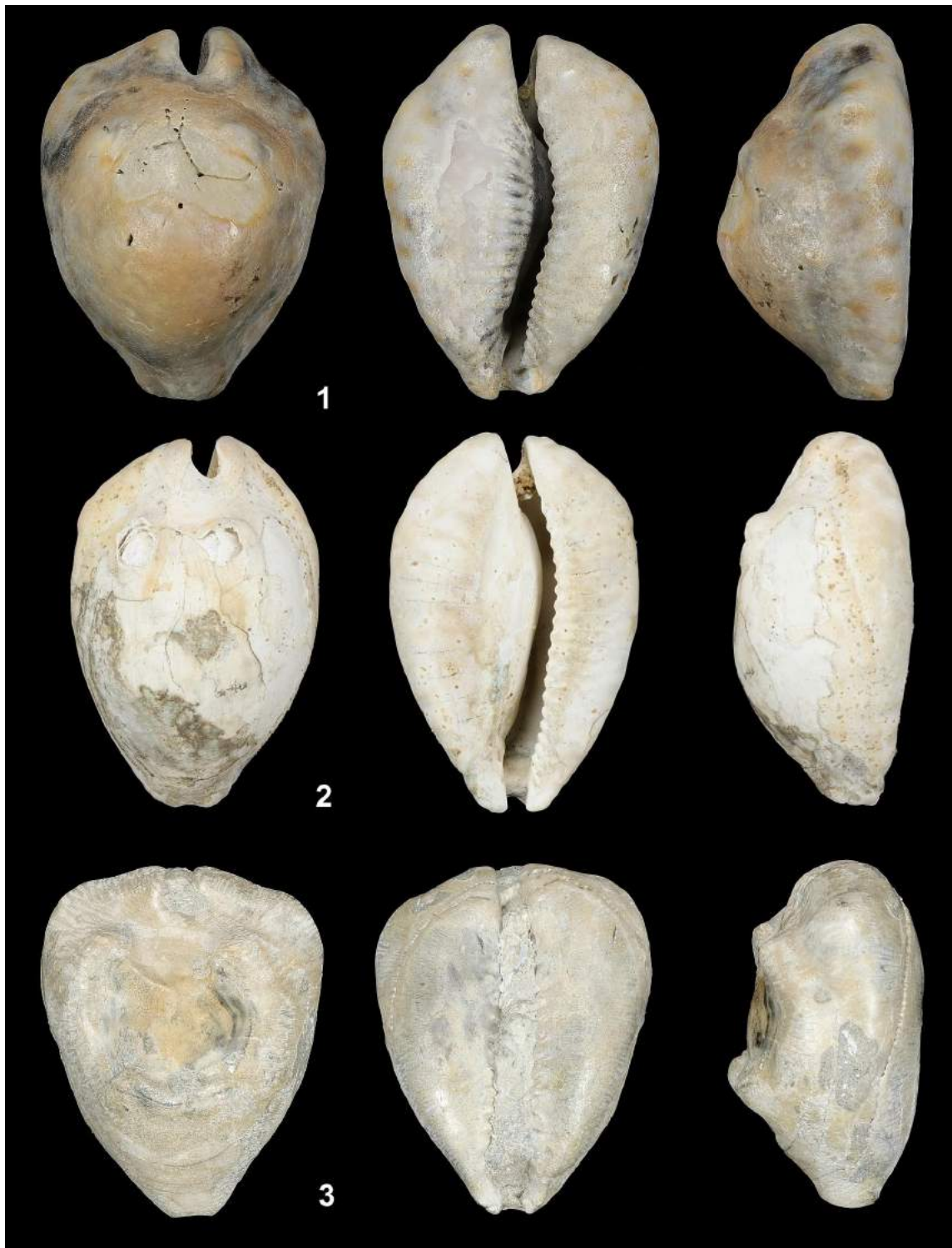
We thank Mark Page for photography of images, collation of photos, proof reading and layout, Johan ‘Smiley’ Marais, for advice on Fossil history in Richards Bay, and, Elodie Heys-Veale for kindly supplying museum accession numbers.

## LITERATURE CITED

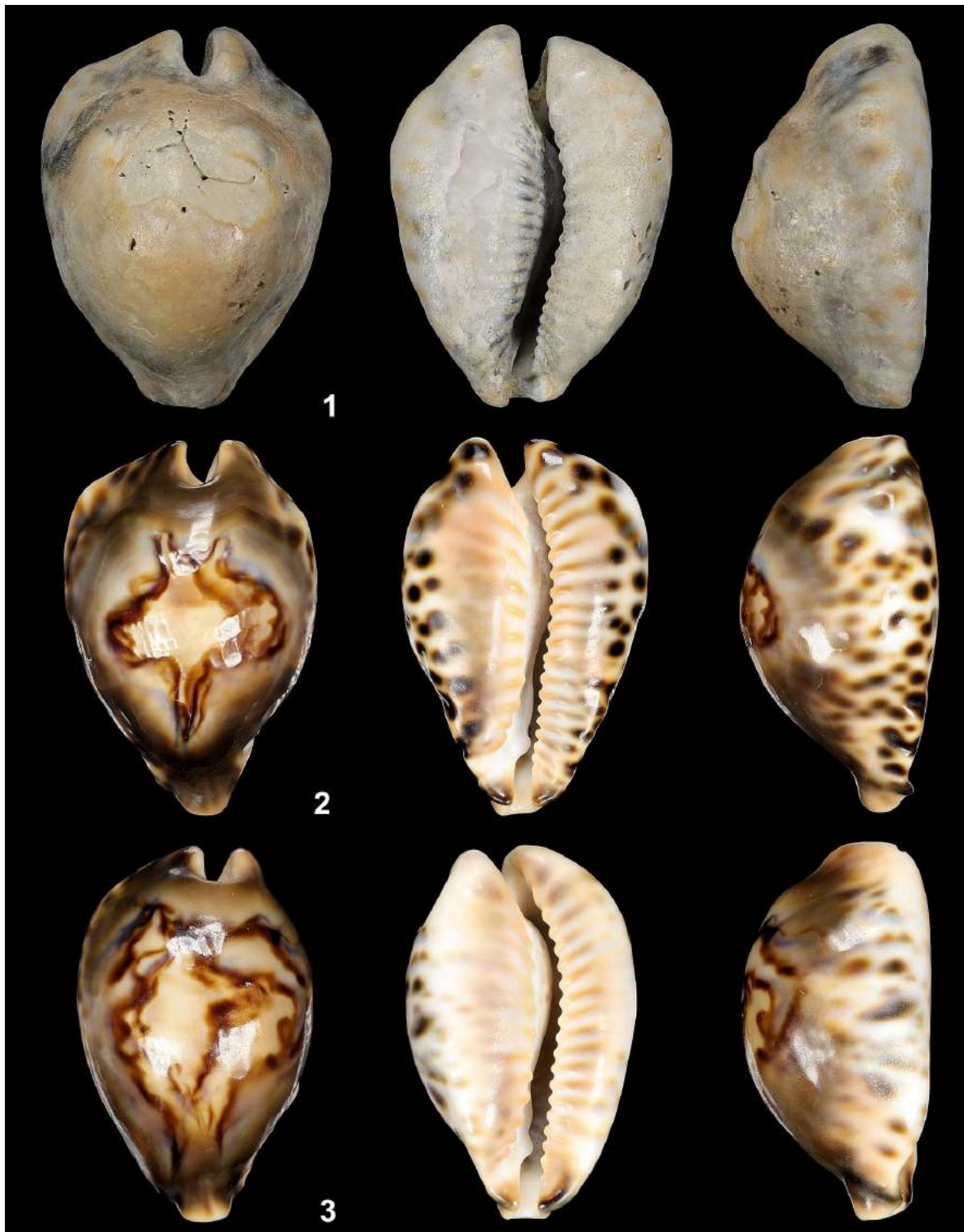
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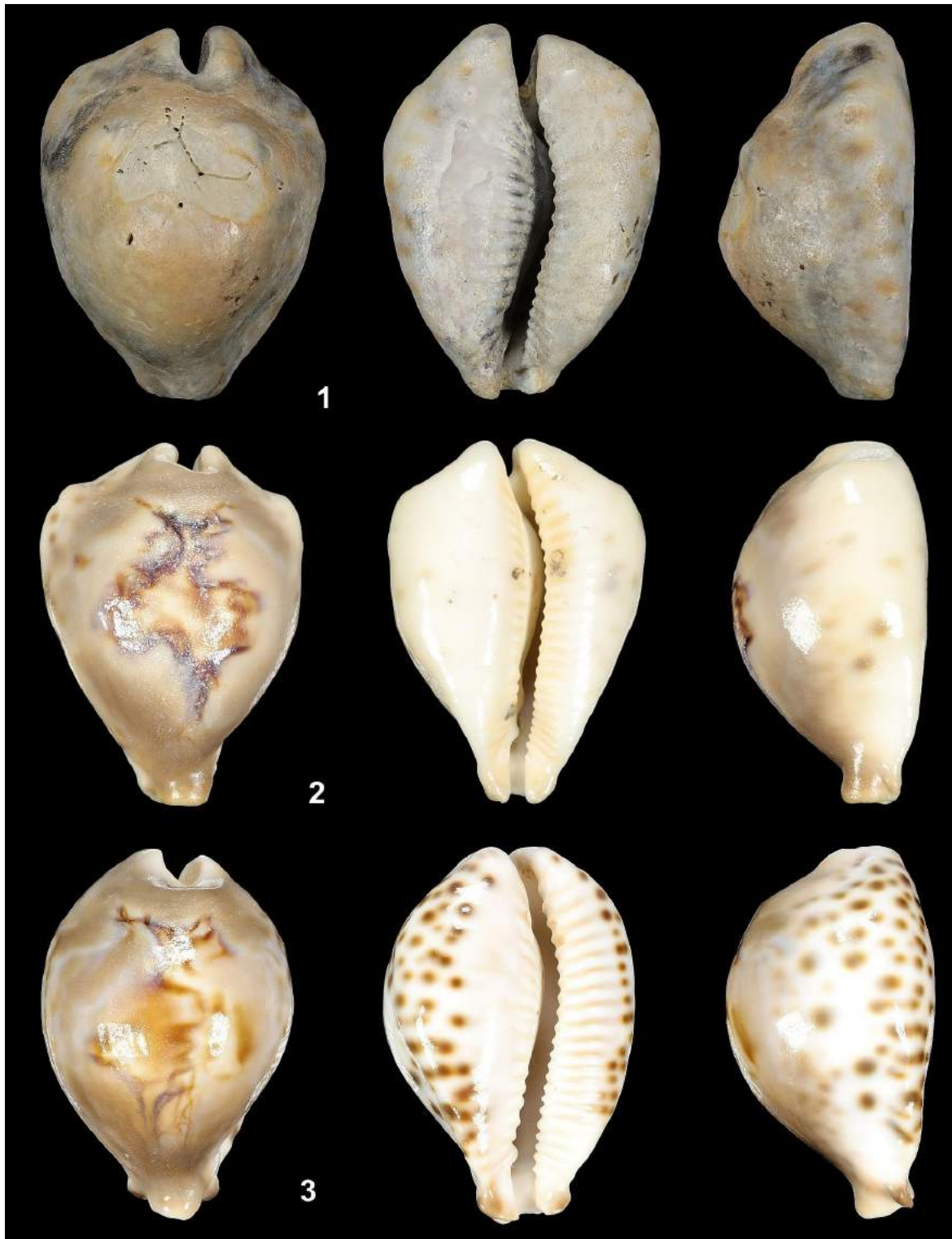


**Plate 1.** 1 = *Barycypraea iungo* (60.05 x 45.10 mm) – Holotype; fossil banks beds, Richards Bay, Kwazulu-Natal. Coll: A. Seccombe. 2 = *Barycypraea zietsmani* (69.2 x 43.9 mm); Eastern Cape. Coll: R. Aiken. 3 = *Barycypraea murisimilis* (41.4 x 33.1 mm); Nyalindung, Java Is. Coll: R. Aiken.

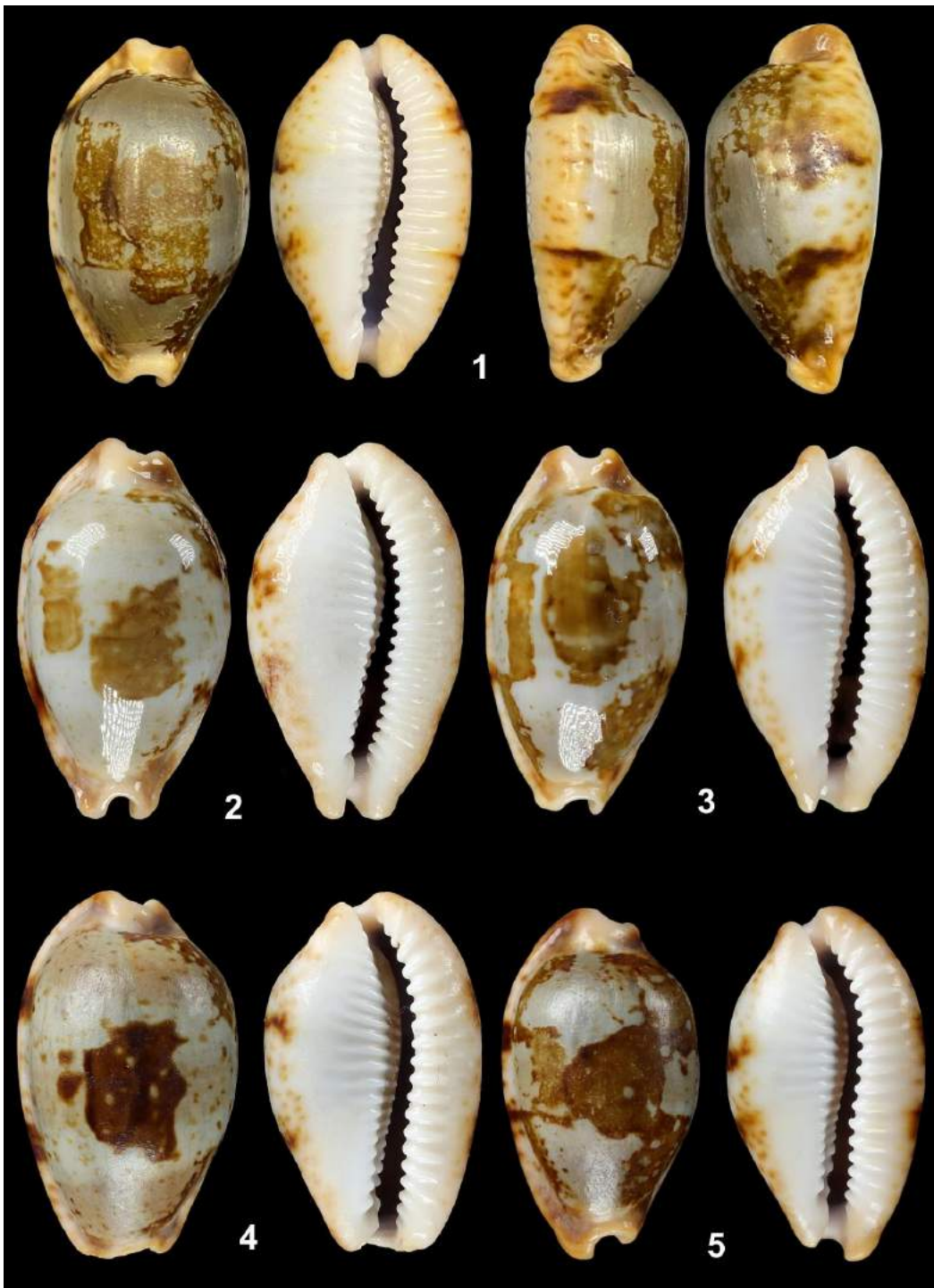


**Plate 2.** 1 = *Barycypraea iungo* (60.05 x 45.10 mm) – Holotype; fossil banks beds, Richards Bay, Kwazulu-Natal. Coll: A. Seccombe. 2 = *Barycypraea fultoni fultoni* (66.5 x 44.7 mm); 75 metres, Off Southern Kwazulu-Natal. Coll: R. Aiken. 3 = *Barycypraea fultoni fultoni* [*miniatra*] (55.2 x 34.5 mm); Southern Kwazulu-Natal. Coll: R. Aiken.



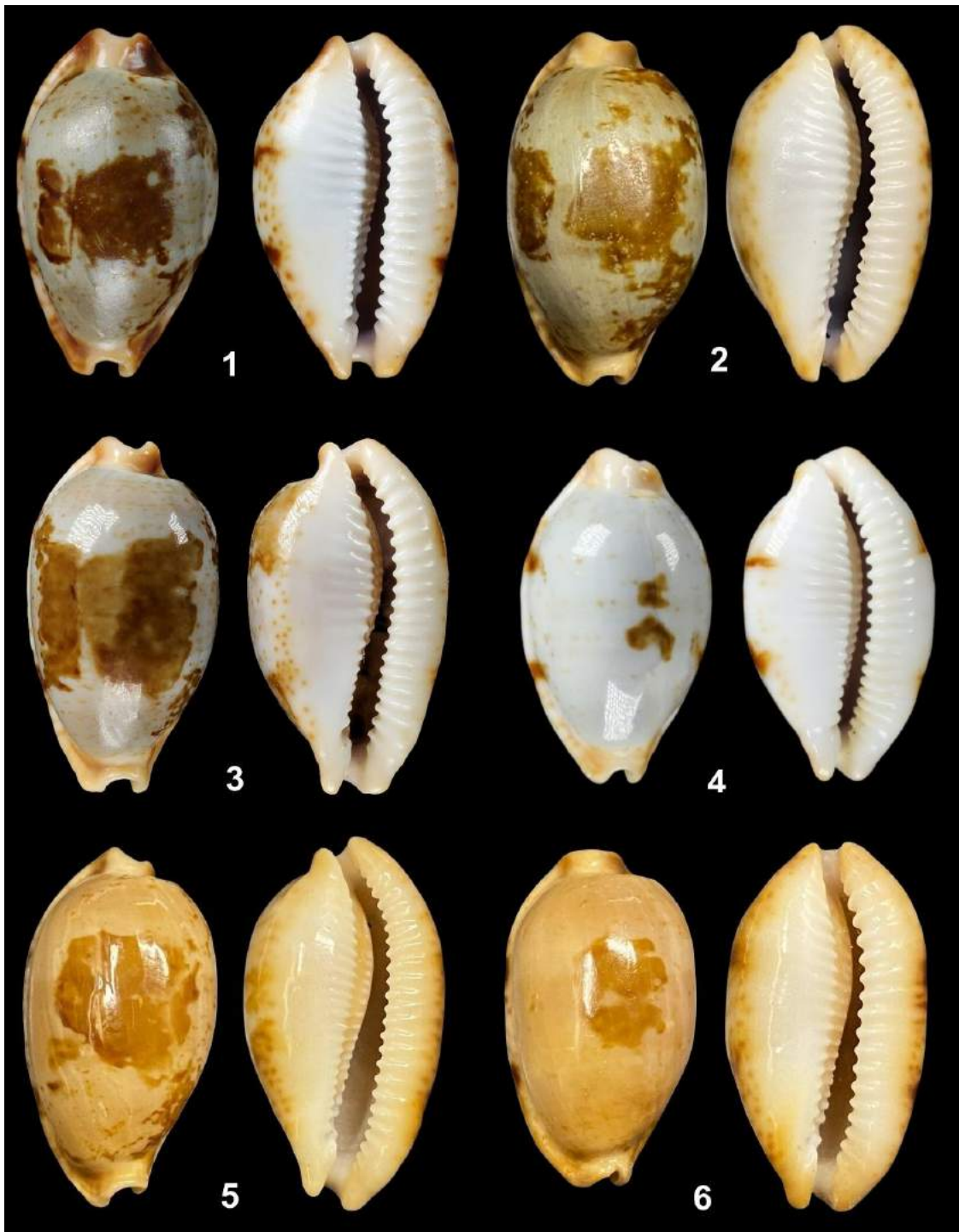


**Plate 3.** **1** = *Barycypraea iungo* (60.05 x 45.10 mm) – Holotype; fossil banks beds, Richards Bay, Kwazulu-Natal. Coll: A. Seccombe. **2** = *Barycypraea fultoni amorimi* (72.4 x 52.8 mm); Mozambique. Coll: R. Aiken. **3** = *Barycypraea fultoni amorimi* [*mozambicana*] (73.2 x 48.8 mm); Mozambique. Coll: R. Aiken.



**Plate 4.** 1 = *Bistolida clavicola jangamoensis* (28.1 mm) – Paratype 1; Inhambane, Southern Mozambique. Coll: A. Seccombe. 2 = *Bistolida clavicola jangamoensis* (29.3 x 17 mm) – Paratype 2; Jangamo Beach, Snorkel, Southern Mozambique. Coll: R. Aiken. 3 = *Bistolida clavicola jangamoensis* (22.4 x 12.7 mm) – Paratype 5; Scuba - 30 m, Sodwana Bay, South Africa. Coll: R. Aiken. 4 = *Bistolida clavicola jangamoensis* (31.9 x 19.3 mm) – Paratype 7; Jangamo, Southern Mozambique. Coll: R. Aiken. 5 = *Bistolida clavicola jangamoensis* (21.6 x 15.7 mm) – Paratype 6; Jangamo, Southern Mozambique. Coll: R. Aiken.





**Plate 5.** 1 = *Bistolida clavicola jangamoensis* (24.7 x 14.7 mm) – Paratype 8; Inhambane, Southern Mozambique. Coll: R. Aiken. 2 = *Bistolida clavicola jangamoensis* (26.0 mm) – Paratype 3; Inhambane, Southern Mozambique. Coll: A. Seccombe. 3 = *Bistolida clavicola jangamoensis* (27.8 x 16.0 mm) – Paratype 9; Port Durnford, Kwazulu-Natal. Coll: R. Aiken. 4 = *Bistolida clavicola clavicola* (22.9 x 13.3 mm); Kikambala, Kenya. Coll: R. Aiken. 5 = *Bistolida diauges uvongoensis* (29.5 mm); Pumula, Kwazulu-Natal. Coll: A. Seccombe. 6 = *Bistolida diauges uvongoensis* (27.5 mm); Kwazulu-Natal. Coll: A. Seccombe.