

A new species of *Crenavolva* (Gastropoda, Ovulidae) from Mozambique

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ABSTRACT A new species of *Crenavolva* Cate, 1973, *C. iris* n. sp., is described from Mozambique. Its distinguishing features are compared with those of the western Indian Ocean representatives of the genus (*C. martini*, *C. traillii*, *C. philippeii*), as well as with several related species from the Pacific and the eastern Indian Ocean (*C. striatula*, *C. marmorata*, *C. guidoi*, *C. janae*, *C. leopardus*, *C. tinctura*, and *C. cruenta*). It is concluded that *C. iris* n. sp. cannot be confused with any species previously reported from East Africa, nor does it correspond to any known Indo-Pacific species whose presence in Mozambique might represent a first record.

KEY WORDS Mollusca, Gastropoda, Ovulidae, *Crenavolva*, *Crenavolva iris*, new species, Mozambique, Indian Ocean.

INTRODUCTION

With approximately 260 to 280 species currently recognized (Wu *et al.*, 2025), the family Ovulidae Fleming, 1822, commonly referred to as “allied cowries” or “false cowries”, remains a challenging group to study for several reasons. On one hand, the very small size of most species, combined with their exceptional camouflage abilities in natural habitats, particularly due to mantle papillae that closely mimic the corals they feed on, makes their collection only occasional, significantly limiting the number of specimens available for detailed study. On the other hand, high levels of intraspecific variability and often subtle morphological differences between genera have historically led to taxonomic confusion, at least until the much-needed revision of the family by Lorenz & Fehse (2009).

Since the publication of this monograph, new species have been continuously reported in the literature, along with newly described genera, both extant and fossil, highlighting the sustained interest in this family, which differs from true cowries in the diversity of shell

morphologies observed across genera. The genus *Crenavolva* Cate, 1973, in particular, is characterized by small-sized shells, typically around one centimeter in length, exhibiting spindle-shaped, rhomboid or sub-rhomboid forms. These shells generally have blunt extremities projecting symmetrically at both anterior and posterior ends, a sub-angular dorsum with a central keel of varying prominence, a narrow aperture, a thickened and crenulated labrum, a strongly developed and crenulated funiculum, and a dorsum marked with fine striations, sometimes deeply incised (Cate, 1973; Lorenz & Fehse, 2009).

This genus is well represented throughout the tropical Indo-Pacific region, from Japan to Australia through China, Malaysia, the Philippines, Indonesia, New Caledonia, and various other Pacific archipelagos. In contrast, it is much less diverse in the western Indian Ocean. Indeed, once excluded species currently assigned to other genera related to *Crenavolva* (such as *Primovula* Iredale, 1930), or previously regarded as subgenera of *Crenavolva* by Cate (1973) (such as *Serratovolva* Cate, 1973 and *Cuspiovolva* Cate,

1973), only three formally recognized species remain in the region: *C. martini* Fehse, 1999, *C. traillii* (A. Adams, 1856), and *C. philippeii* Lorenz & Fehse, 2009. A fourth species is here described, whose morphological features are more reminiscent of Pacific species and which is readily distinguishable from any valid species known from Reunion Island, Madagascar, and the eastern coast of the African continent.

Abbreviations:

ACF: Alain Celzard collection, Epinal, France
 D: shell diameter
 H: shell height
 MNHN: Muséum Nationale d'Histoire Naturelle, Paris, France

MATERIAL EXAMINED

Three specimens, the only ones known to the author, were examined. All originate from Mozambique, were collected together in the year 2000, and were sold under the name *Primovula beckeri* (G. B. Sowerby III, 1900), a designation that clearly does not correspond to them. The excellent condition of the holotype suggests that it was either collected alive or, at worst, fresh dead. Paratype 1, on the other hand, was evidently freshly dead, as indicated by a grain of sand firmly lodged in the aperture, which could not be removed. Paratype 2 was also likely found dead, as it has slightly lost its gloss and shows a somewhat roughened surface.

SYSTEMATICS

Class: Gastropoda Cuvier, 1795
 Subclass: Caenogastropoda Cox, 1960
 Order: Littorinimorpha Golikov & Starobogatov, 1975
 Superfamily: Cypraeoidea Rafinesque, 1815

Family: Ovulidae Fleming, 1822
 Subfamily: Prionovolviniae Fehse, 2007
 Genus: *Crenavolva* Cate, 1973
 Type species: *Ovulum striatulum* G.B. Sowerby I, 1828

Crenavolva iris Celzard n. sp.
 (Plate 1A-1C)

Description. Shell small, thick and solid, angularly pyriform with a barely noticeable keel, shouldered on posterior third. Labrum flattened, finely crenulated over two-thirds of its length but more strongly in its posterior half. Entire dorsum finely striated transversely, with incised, almost straight striae. Ventrums rounded, with striae fading under the glaze of the callus. Aperture rather wide for the genus, slightly widening on the anterior quarter. Funiculum produced, poorly crenulated, swollen, thick and triangular. Coloration orange-pink with 7 white, cloudy patches: the largest one on the highest part of the shell and extending towards the anterior collar, the others located near the posterior collar and the base, as well as near the suture and across the labrum, making the latter two-toned by alternating the pink and white colors. Callosities white. Adaxial carinal ridge clearly visible, long, deepening and broadening toward the front. Terminals calloused, pale, blunt, poorly indented posteriorly but not at all at the front.

Type Material.

Holotype: H 8.38 mm, D 3.77 mm; MNHN-IM-2000-29260. Plate 1A

Paratype 1: H 8.36 mm, D 4.23 mm; ACF. Plate 1B

Paratype 2: H 8.33 mm, D 3.98 mm; ACF. Plate 1C

Type Locality. Paidane Beach, Inhambane province, South Mozambique, 20-24 m deep. As the seller of these specimens specializes in shells from East Africa, and Mozambique in particular, there is no doubt regarding their provenance. Located approximately 29 km

south of one of Mozambique's oldest and most historic ports, Inhambane, Paindane is known for its natural reef, which stretches for 1.5 km parallel to the shoreline. This reef hosts a wide variety of tropical fish and coral species, including numerous soft corals that serve as habitats for many Ovulidae species (see Figure 1).

Shell Variation. Paratype 1 is more ovate, stockier, more inflated, with more diffuse - thus less numerous - white patches, extending toward the base in the form of pale and indistinct spiral bands, while having a pink background color. Its posterior tip exhibits

almost no indentation. Paratype 2 is a bit more rhomboid than the other specimens, has the same kind of white patches as the holotype, although with more indistinct contours, but has a yellow-orange background.

Etymology. This species is dedicated to Iris, one of the author's daughters, in recognition of her curiosity and interest in nature and science in general. The name also alludes to the Latin word "iris", meaning rainbow, referring to the varied colors exhibited by specimens of this species.



Figure 1. Location of Paindane Beach, Inhambane Province, South Mozambique (©2025 Airbus, CNES / Airbus, Landsat / Copernicus, Maxar Technologies, Google Cartographic data ©2025).

DISCUSSION

The description of *C. iris* n. sp. leaves no doubt as to its assignment to the genus *Crenavolva*, and therefore there is no need to discuss this point in further detail. However, it is interesting to compare this new species primarily with

those from the broader region, including Reunion Island and Madagascar, as well as the coast of East Africa:

- *C. martini* Fehse, 1999 (see Plate 2A, 2B), known from Reunion Island and Mozambique, is considerably more

slender and elongated than *C. iris* n. sp., with tapered and deeply indented extremities, a very dense dorsal striation, and a paler, diffuse band at the shoulder.

- *C. traillii* (A. Adams, 1856) (Plate 2C), typically Indo-Pacific, is characterized by a rectangularly ovate to almost spindle-shaped, nearly cylindrical morphology, prominent terminals squared at the ends, crescent-shaped at openings, and a much more uniform coloration than *C. iris* n. sp. Cate (1973) described *C. traillii hesperia* from Madagascar based on a geographically isolated population exhibiting shorter, broader and paler shells than *C. traillii* sensu stricto. This subspecies, later synonymized with *C. traillii* by Lorenz & Fehse (2009), also bears little resemblance to *C. iris* n. sp.
- *C. philippeii* Lorenz & Fehse, 2009 (Plate 2D), whose type locality is Reunion Island, has an edentate aperture, a very glossy and minimally, if at all, striated surface, a reduced funiculum, narrow and indented extremities, i.e., features entirely opposite to those of *C. iris* n. sp.
- *C. leopardus* Fehse, 2002 (Plate 2E), widely distributed throughout the Indo-Pacific region and possibly reported from southern Mozambique (Lorenz & Fehse, 2009), differs from *C. iris* n. sp. by having a short and crenulated funiculum, indented extremities with coloration more intense than the rest of the shell, which displays a paler dorsal band. Although these traits are subject to variation, no specimen of this species among the large number examined by the author approaches *C. iris* n. sp., whether in terms of the distinctive criteria mentioned above, general

morphology, coloration or surface striation.

Since no species from the western Indian Ocean corresponds to *C. iris* n. sp., even partially, it is useful to examine Indo-Pacific species to ensure that the discovery reported here does not simply represent an extension of the known range of an already described species. Cases of very broad distributions are indeed known, such as *C. philippeii*, reported from the Loyalty Islands, approximately 11,300 km in a straight line from Reunion Island.

- *C. striatula* (G. B. Sowerby I, 1828) (see Plate 3A, 3B) is probably the species most similar to *C. iris* n. sp. This species is well known from the Western Pacific, but the holotype, now lost, was labeled “Hab. ad littora Oceani Indici” (Sowerby I, 1828), suggesting it was collected from the shores of the Indian Ocean, without further specification. However, G.B. Sowerby II (1848) illustrated an indeterminate species of *Primovula* Thiele, 1925 to represent it; *Primovula* has representatives on the east coast of Africa, but this does not imply that *C. striatula* sensu stricto occurs there, and to the author’s knowledge, no specimens of this species have ever been reported from this region. *C. striatula* resembles *C. iris* n. sp. in terms of coloration and striation. Being a highly variable species, specimens range from dark red to pale yellow, with a whitish band along the dorsal hump, white patches near the terminal collars, and irregular spots on the labrum. However, *C. striatula* has a well-marked angular dorsal keel, a strongly crenulated funiculum, indented terminal tips, sometimes multiple and quite

pronounced, with sharp denticles also found along the outer labral margin. Furthermore, the terminal tips of *C. striatula* are more intensely colored than the rest of the shell, which is exactly the opposite in *C. iris* n. sp.

- *C. marmorata* Fehse, 2007 (Plate 3C), distributed from Australia to the Solomon Islands and New Caledonia, also exhibits unevenly distributed white patches on the dorsum but has never been observed in pink coloration. It is also keeled, very elongated, and bears prominent denticles on the extremities and the posterior part of the labrum.
- *C. guidoi* Fehse, 2002 (Plate 3D), from the central Indo-Pacific, is a very small species with an elliptical shape. It exhibits intermediate characteristics between *C. traillii* and *C. leopardus*, both discussed above, and whose combined traits do not correspond to *C. iris* n. sp.
- *C. tinctura* (Garrard, 1963) (Plate 3E), typically Australian but also reported from the Philippines, has calloused, broad, and generally dark orange extremities, and a wider aperture than most other *Crenavolva* species.
- *C. cruenta* Gowlett-Holmes & Holmes, 1989 (Plate 3F), known from Australia to Japan through Indonesia, is variable in color but shows white dorsal clouding, bright orange-red extremities, a white labrum, and an anal canal twisted to the right, all features absent in *C. iris* n. sp.
- *C. janae* Lorenz & Fehse, 2009 (Plate 3G), typically Australian, has, like *C. striatula*, a certain resemblance to *C. iris* n. sp. Indeed, *C. janae* is rather inflated and evenly rounded, with white patches on a darker background. However, these patches have fixed

positions and number nine, whereas they are much more variable in *C. iris* n. sp. Specimens of *C. janae* are also less angular and clearly more elongated; their extremities are rostrate and red, whereas those of *C. iris* n. sp. are short, thickened and pale. Finally, the labrum of *C. janae* is much more crenulated than in *C. iris* n. sp.

Other *Crenavolva* species (such as *C. aureola* (Fehse, 2002), *C. grovesi* Lorenz & Fehse, 2009, *C. matsumiyai* Azuma, 1974, *C. tokuoi* Azuma, 1989, *C. virgo* (Azuma & Cate, 1971), and *C. vitrea* (Omi & Iino, 2005)) were not considered here due to significant morphological differences that would make any comparison with *C. iris* n. sp. irrelevant.

In conclusion, *Crenavolva iris* n. sp. exhibits a combination of characters that distinguish it from all other species, notably its lack of denticles on the extremities and labrum, its pyriform, stout, and barely keeled shape, a very weak posterior notch absent anteriorly, a labrum bearing irregular white spots and weak dentition along two-thirds of its length, and paler extremities, whereas all other related *Crenavolva* species described above have extremities more intensely colored than the rest of the shell.

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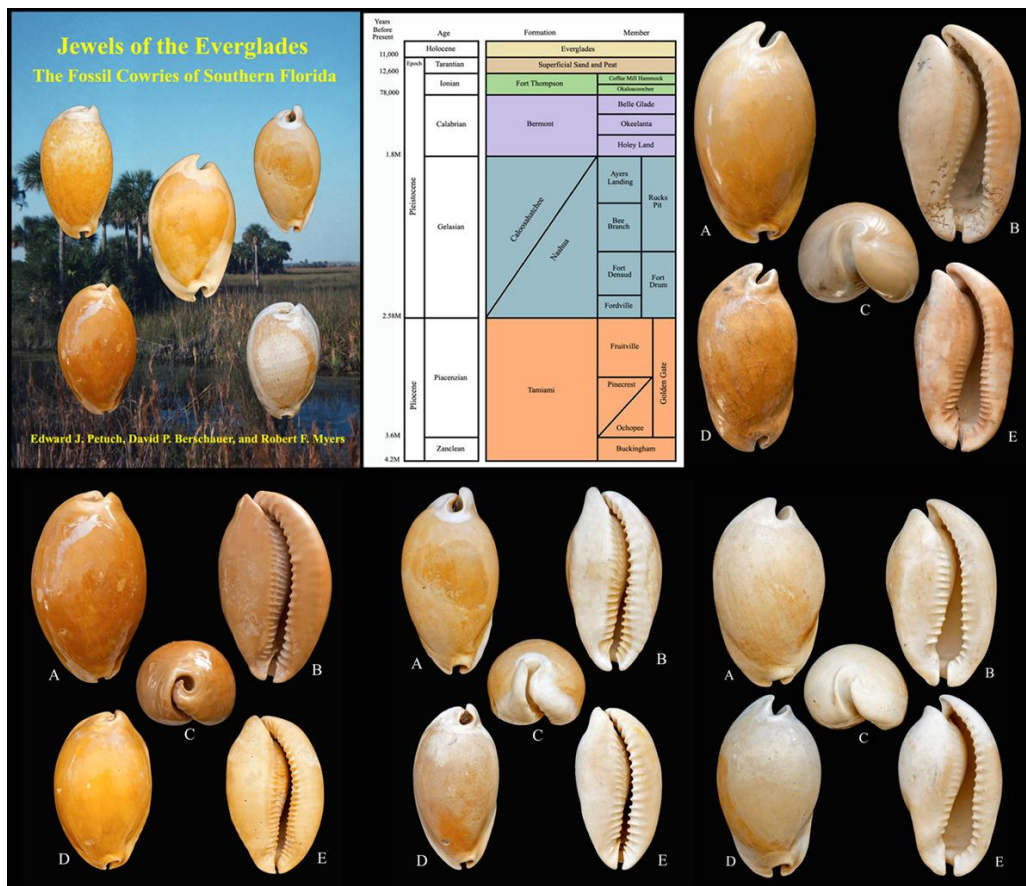
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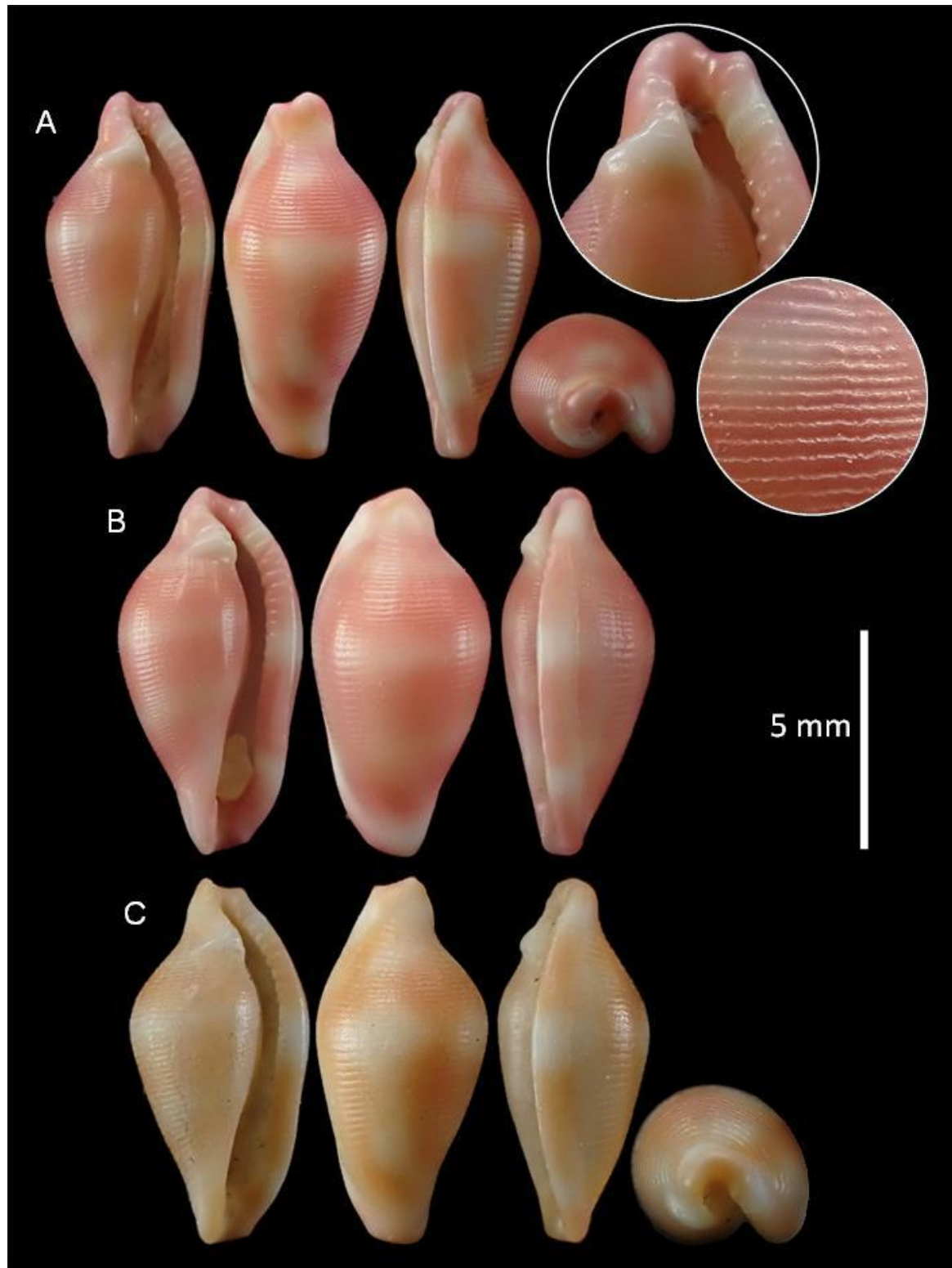


Plate 1. *Crenavolva iris* n. sp. **A.** Holotype MNHN-IM-2000-29260, H 8.38 mm, South Mozambique, with zoomed views of the funiculus and dorsal striation. **B.** Paratype 1, H 8.36 mm, South Mozambique (ACF). **C.** Paratype 2, H 8.33 mm, South Mozambique (ACF).



Plate 2. Specimens of *Crenavolva* whose species are – or can be – found in the western Indian Ocean: **A.** *C. martini*, H 12.64 mm, Reunion Island (ACF). **B.** *C. martini*, H 11.89 mm, South Mozambique (ACF). **C.** *C. traillii*, H 12.96 mm, Somalia (ACF). **D.** *C. philippeii*, H 8.20 mm, Reunion Island, holotype MNHN-IM-2000-21238, © Manuel Caballer 2020, [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/). **E.** *C. leopardus*, H 10.17 mm, Philippines (ACF).

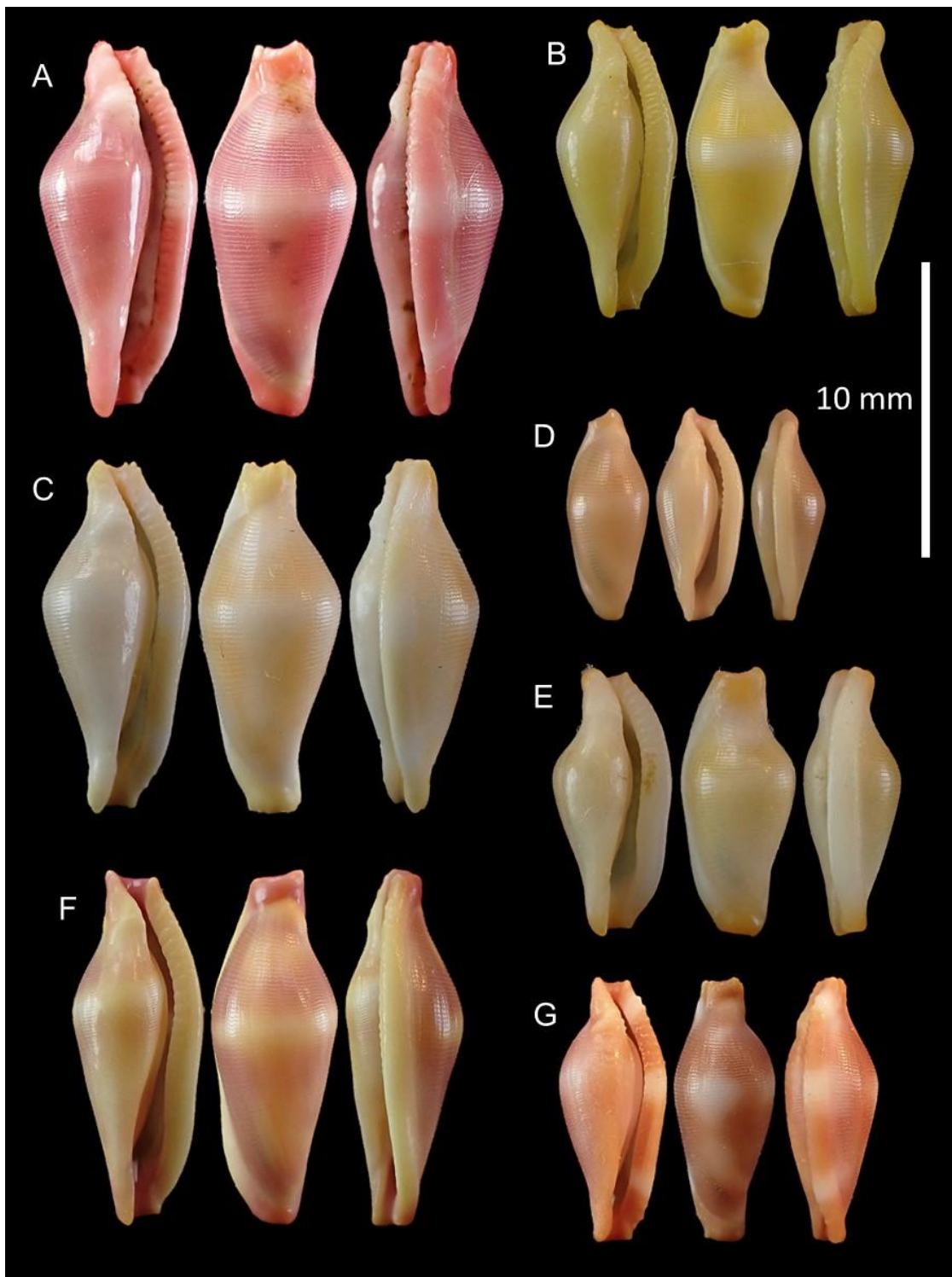


Plate 3. Specimens of *Crenavolva* whose species are related to *C. iris* n. sp., but absent from the western Indian Ocean: **A.** *C. striatula*, red form, H 12.54 mm, Philippines (ACF). **B.** *C. striatula*, yellow form, H 9.84 mm, Philippines (ACF). **C.** *C. marmorata*, H 11.77 mm, New Caledonia (ACF). **D.** *C. guidoi*, H 7.07 mm, Papua New Guinea (ACF). **E.** *C. tinctura*, H 8.95 mm, northeastern Australia (ACF). **F.** *C. cruenta*, H 11.88 mm, northwestern Australia (ACF). **G.** *C. janae*, H 8.88 mm, western Australia (ACF).