

***Conus zebroides* Kiener, 1848**



Lectotype fig designated by Rolán & Röckel, 2000

Turbinated shell, broad and swollen towards its upper part, attenuated at its base which presents a slight indentation. The spire is convex and low; there are six smooth, rounded towers; the spiral angle of which is very obtuse; its entire surface is smooth except for its base which offers a dozen oblique streaks slightly marked. The coloring, very elegant, consists of a light yellow base, on which stand out brown longitudinal lines, a little flexuous, streaking across the extent of the last whorl; The spire has the same lines, but they are thinner. Length=45mm.

Fernandes & Röckel, 1982

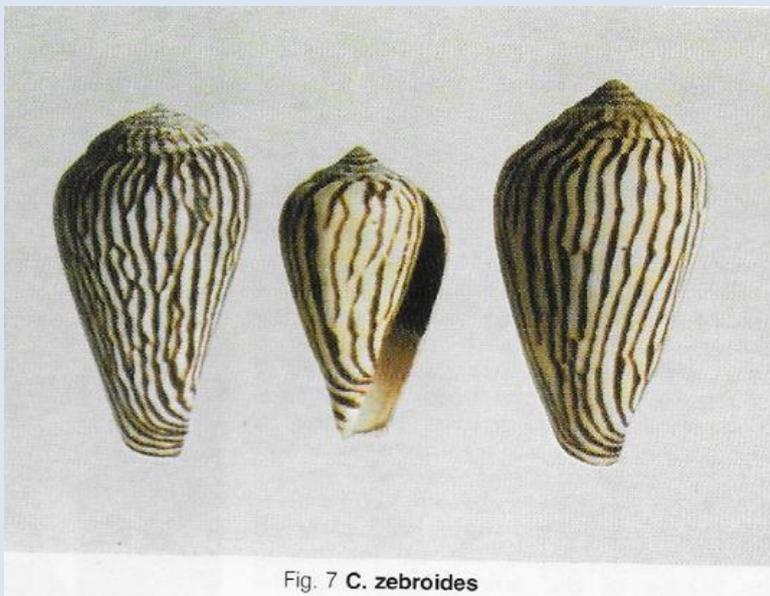


Fig. 7 *C. zebroides*

Size of pictured specimens: from left 36.5 mm, 31 mm, 39,5 mm.

7. *Conus zebroides* Kiener, 1845 (Species Gén. Et Icon. d. coqu. Viv., p. 257, pl. 105. 1.5)

Conus angolensis Paes da Franca, 1957

Essential characteristics: Moderately heavy, medium sized, conical, spire whorls convex. Spire moderately elevated, sides of spire slightly convex. Surface smooth but not glossy. Colour milky or greenish white. Covered from apex to base with strong brown or blackish axial lines sometimes branching out near shoulder. Inside white or slightly violet toned.

Animal: Colour creamy grey with black dots and small blotches. Proboscis dark due to many black dots. Periostracum yellow and transparent.

Habitat: 1- 2 m deep buried in fine sand under rocks. Generally found in pairs of the same size.

Locality: From Lucira to Lobito and probably more to the North. Sympatric with *C. bulbus*, *C. naranjus*, *C. lucirensis*, *C. fuscolineatus*, *C. guttatus*, *C. tabidus*, *C. carnalis* and *C. bocagei*. Uncommon.

Similar species: *C. bulbus* is smaller and rather pyriform. Axial lines, if present, irregular and not continuous.

C. angolensis Paes de Franca, 1957 is considered a synonym of *C. zebroides*.



C. angolensis Paes de Franca, 1957 Holotype. 28mm
Specimen probably with periostracum.

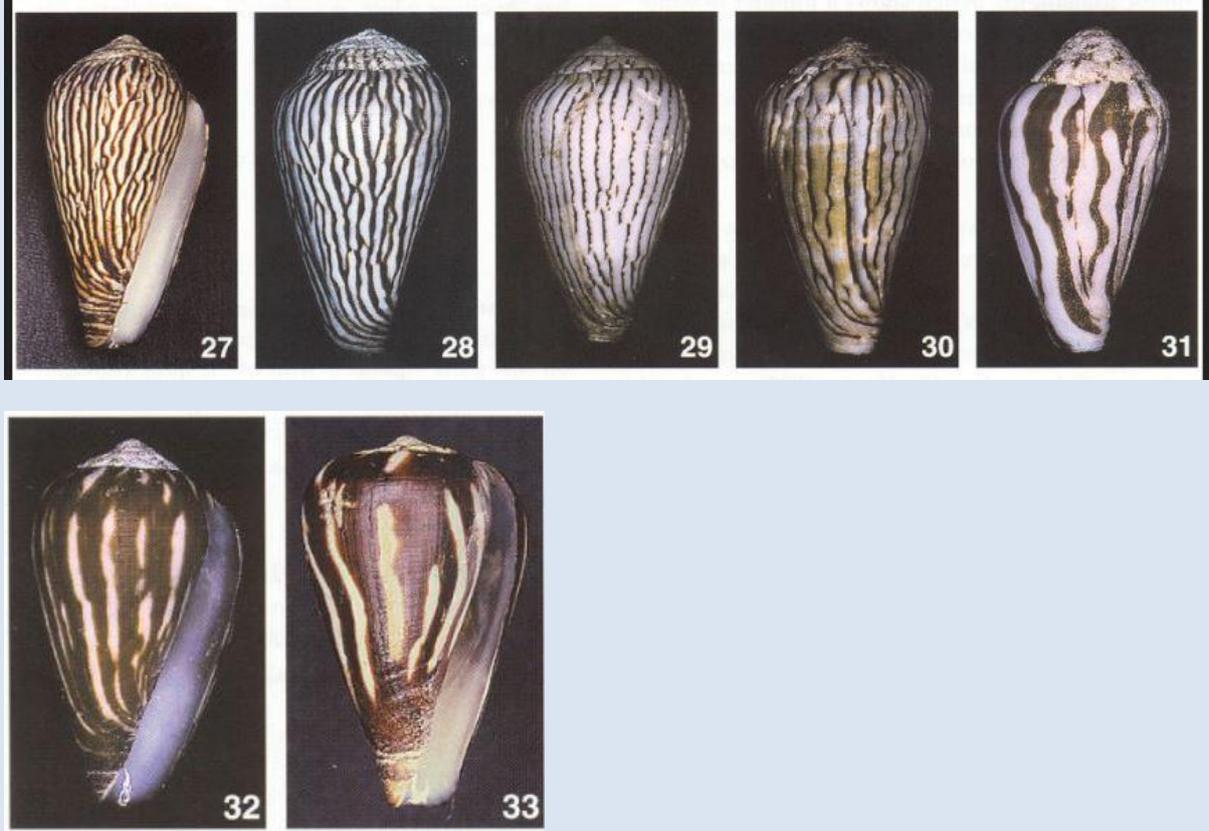
Original Description: *Conus angolensis* translated

Shell 29mm with the top of the last whorl sharply separated from the spire. Spire a little elevated, consisting of 5 whorls, the last two very visible, markedly convex. Aperture long, wider towards bottom. Lip straight at base. Pattern consisting of wavy vertical streaks of reddish-brown on white background which converge towards the columella,. Some oblique grooves at the base of the shell. Interior bright violet, stained brown next to the lip which is also bordered internally by brown. Periostracum opaque, olive.

Holotype from Baia Lucira 28mm plus one paratype at 17mm

Rolán & Röckel, 2000

C. zebroides. **27**: Bissonga. 51.2mm; **28-29**: Caota. 35.8 and 47.7 mm ; **30** shell with periostracum, Caota, 28.5 mm ; **31**: Limagens, 30.0 mm ; **32**: S. Nicolau, 31.0 mm; **33**: Chapeu Armado, 29.0 mm



Conus zebroides, Kiener, 1845

Conus zebroides Kiener, 1845. Coq. Vivant., 2: pl. 104, fig. 2. 1949: 260.

Conus angolensis Paes da Franca, 1957. Trab. Miss.Bioi. Marit., 13: 80, pl. 1, figs. 7, 8, pl. 2.

Type material: Representation of the holotype of *C. zebroides*, figure in KIENER (1845) (25 x 46 mm).

Holotype of *C. angolensis* in Museu Zoologico da Faculdade de Ciencias, University of Lisbon (28 x 18mm).

Other material studied: Typical form: Caota Bay; Baia Azul, Campeona; Limagens, Baia Binga; , Meva; Canoco, Santa Maria, Bissonga; Lucira Bay; Doca, Lucira; Capato; Sao Nicolau; Chapeu Armado.

Dark form: S. Nicolau;, Chapeu Armado;

Type locality: *C. zebroides*: Unknown; *C. angolensis*: Lucira Bay. As *C. angolensis* is a junior synonym of *C. zebroides*, Lucira Bay, Angola, is considered the type locality of *C. zebroides*.

Shell description: Moderately small to medium sized, moderately solid to solid. Last whorl ventricosely conical; outline convex at ad apical half and more or less straight below.

Shoulder rounded, Spire of low to moderate height, outline convex, straight, or sigmoid. Larval shell of about 1.5 whorls. Teleoconch sutural ramps convex, smooth or with very fine spiral striae.

Last whorl smooth and dull, with some spaced spiral ribs at base.

Ground colour white. Spire and last whorl with brown, evenly spaced axial streaks. The axial lines are generally hair-like and irregularly branching (Santa Lucira, Santa Maria, Bissonga), more spaces (Caota) and broader(often coalescing to a more spaced form) streaks sometimes only in the middle of last whorl in Sao Nicolau; here shells with previously mentioned pattern co-occurring with all intergradations. Aperture with a bluish-brown shade or white in larger specimens. Shells from S. Nicolau with a purple blotch in adapical aperture.

Shell Morphometry

L 28-51 mm

RD 0.64-0.70

RSH 0.07-0.17

PMD 0.74-0.80

RW 0.15-0.45g/mm

Description of animal (Fig. 103): Foot creamy-grey, with black dots and spots more dense on the rostrum, which is almost blackish (ROCKEL & FERNANDES, 1982a). Penis short, white and curved. Rostrum small. Venom bulb small (5x3x1 mm) in a specimen of L 41.7 mm from S. Nicolau. Operculum small.

Radula with surprisingly variable number of teeth (55-118). Tooth (Figs. 119,124) of vermivorous type, figured in ROLAN (1993). Tooth elongated, relatively small, with very small denticles in saw, with 1-2 rows adapically and always 2 in the rest, disappearing in the lower part. No F appreciable and attenuated, cephalic tentacles short and thin.

Radula morphometry: {n = 16}

D 10-27

ABS 40-60

LC/DR 51-97

DR/PA 2.0-3.6

Distribution: From Lobito to Sao Nicolau and Chapeu Armado (Fig. 148) .Sympatrically living with *C. bulbus*, *C. neoguttatus*, *C. variegatus*, *C. carnalis*, *C. chytreus*, *C. nobrei*, *C. musivus*, *C. naranjus*, *C. albuquerquei*, and *C. bocagei*.

Habitat: Buried in fine sand under rocks, in 1-2 m.(ROCKEL & FERNANDES, 1982a).

Discussion: Shells from S. Nicolau are provisionally considered conspecific in spite of its distinct pattern (see above): dark brown, with more spaced and coalescing streaks, sometimes completely brown, leaving a central band with white axial streaks. All intergradations are seen. The radula teeth only differ slightly in the relation DR/PA and LC/DR, notably by the influence of spire erosion.

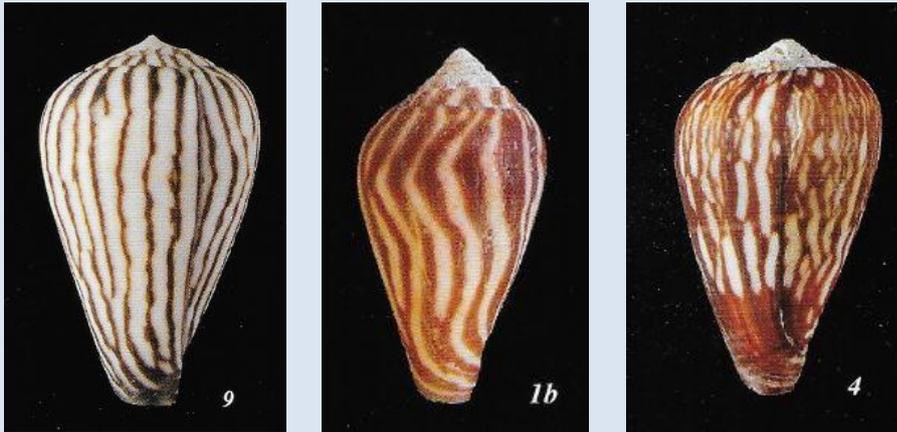
C. zebroides resembles sometimes *C. bulbus* in pattern, particularly specimens from Baia Binga, which can hardly be differentiated except by size: *C. bulbus* is a small shell (up to L 25 mm), *C. zebroides* is middle-sized (L 28-48 mm). But the radula teeth are different enough

to justify species separation: *C. bulbus* has a bigger tooth, less in number in radula, the denticles in the apical part of the row are bigger and has an evident blade (not so in *C. zebroides*).

Similar in shell shape and occasionally in pattern may be *C. trovaoi*.

Iconography of West African Conidae.

Monteiro et al illustrate some of the unusual populations. All specimens are of adult size. The right specimen(4) would need today careful comparison with *C. petuchi*.



Shells of the species tend to have a white background colour and white aperture. However specimens have been found at Meva recently, which are more difficult to separate from *C. tenuilineatus* or *C. cepasi*, with a background of shades of yellow and green(without periostracum), a concentrated pattern and a purple aperture in adults.



Meva CS 2018.

Equimina CS 2017

Lucira 25mm GM

DNA Analysis

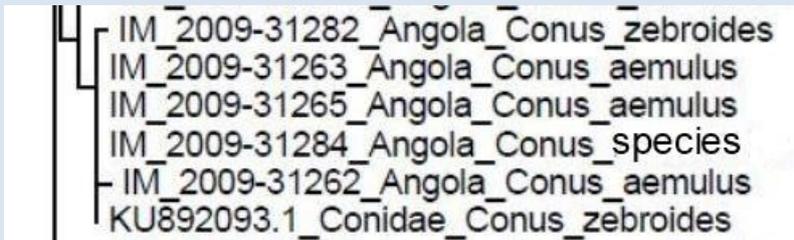


MNCN KU892093 Sao Nicolau

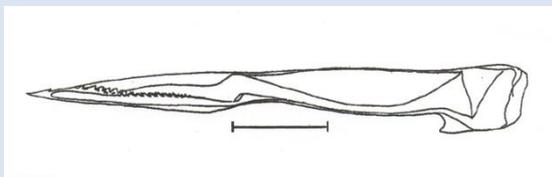


MNHN 31282 Bonfim

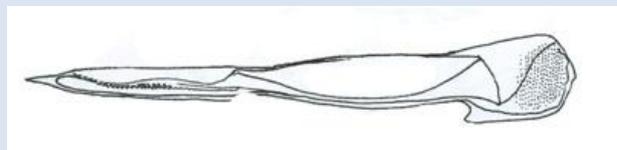
Specimens recorded in GenBank 2018.



The COI tree raises some fundamental questions given the close genetic affinity between specimens of *C. zebroides* and *C. aemulus*. The phenotypes of these species are very different and there is also significant geographical separation, *C. aemulus* being from Luanda in the north and *C. zebroides* from Benguela and Namibe in the south.



aemulus radula



zebroides radula
