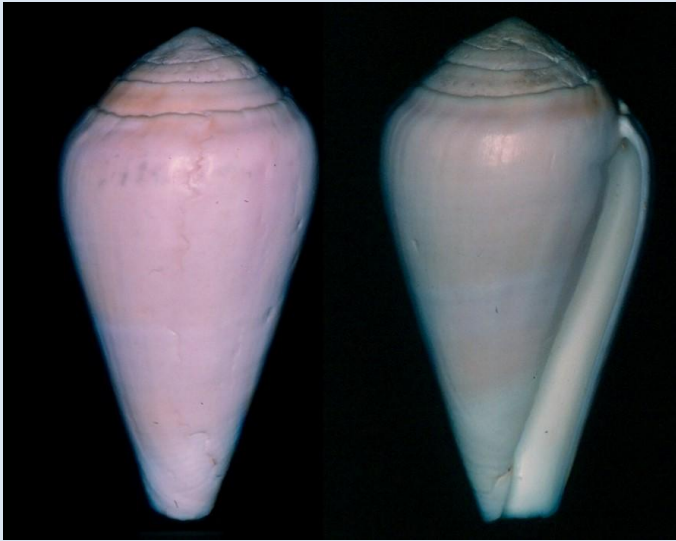


Conus carnalis Sowerby, 1879



CONUS CARNALIS, n. sp. (Plate XLVIII. fig. 2.)

C. testa oblonga, subpyriformi, solida, obtuse angulata, obsolete striata, antice leviter costata; pallide carnea, late pallide fusciscenti bifasciata; spira obtuse exserta; anfractibus 9, laevibus, in medio depressis; apertura modica, carnea tincta.

Long. 50, mm. lat. 25 mm.

Hab.?

A very pale pink, smooth shell, very faintly banded with buff, of the form of *C. scabriusculus*.

A single specimen from the collection of the late Sir E. Belcher, without any note of locality.

Translation. *C* shell oblong, sub-pyriform, solid, obtusely angular, obsolete striate, anterior slightly ribbed; pale flesh coloured, pale with two wide duller bands; spire obtuse; with the 9 whorls, smooth, concave sunken in middle; Aperture small and tinted flesh colour.

Trovão, 1975 described *Conus amethystinus* which is now considered a synonym of *C. carnalis*.

Conus amethystinus Trovão, 1975



DESCRIÇÃO:

Concha (Est.I,fig.1): de perfil direito, com uma coloração exterior normalmente lilaz, apresentando uma banda transversal ligeiramente abaixo do meio da ultima volta, de coloração mais clara. A parte anterior da concha tem estrutura levemente canaliculada, apresentando uma coloração esbranquiçada que forma como que uma segunda banda.

Aparecem, por vezes, exemplares (Est.II,fig.2) de cor vermelha, castanha, laranja, amarela, e, muito raramente, com duas destas cores separadas longitudinalmente, mantendo porem as bandas de tonalidade mais clara. Um dos exemplares vivos capturados, e depois observado em cativeiro, tem a concha completamente branca.

Espira: de perfil ligeiramente convexo com carena pouco profunda e linha de sutura bem marcada. Primeiras voltas post-embrionárias elevadas. Coloração igual à da parte posterior da ultima volta da concha. Por vezes apresenta pequenas flâmulas de cor acastanhada.

Abertura: lábio muito fino, direito e paralelo à columela. Interiormente de coloração branca, tomando por transparência, nas formas escuras, a coloração do exterior da concha, tornando-se mais clara para o interior.

Periostracum: castanho escuro, opaco, espesso, apresentando várias fileiras transversais de pelos que acompanham a estrutura canaliculada da parte anterior da ultima volta da concha, correspondendo à faixa esbranquiçada. O periostracum, pela sua opacidade e espessura não permite saber-se qual a cor da concha, sem o retirar.

Translation

Shell with a normally lilac-colored exterior, with a transverse band slightly below the middle of the last whorl, which is lighter in color. The anterior part of the shell has a slightly canaliculate structure, presenting a whitish coloration that forms as a second band.

Some specimens appear red, orange, yellow, and very rarely, with two of these colors separated longitudinally, while maintaining the bands of lighter hue. One of the live

specimens captured and then observed in captivity, has the shell completely white.

Spire: slightly convex profile with shallow carina and well marked suture line. First post embryonic whorls raised. Colouring same as the posterior of the last whorl of the shell. Sometimes it has small, brownish-coloured flakes.

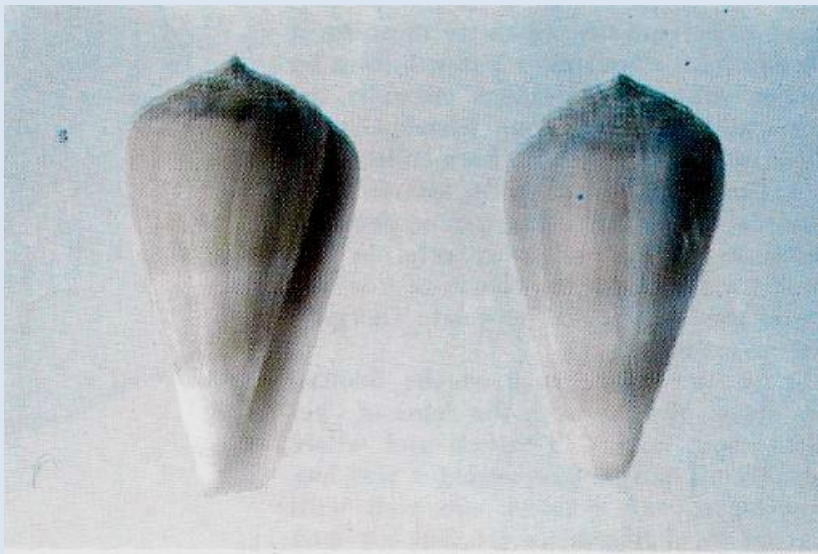
Aperture: lip very fine, straight and parallel to the columella. Inside it is white but in the dark forms, the white areas of colour in the external pattern through into the aperture, where it is superimposed on a lighter colour tone ground colour of the shell.

Periostracum: dark brown, opaque, thick showing several transverse rows of hairs. The periostracum, by its opacity and thickness does not allow one to know the colour of the shell without removing it.

Comment: Trovão's description has many of the features of the shell and periostracum of *C. carnalis*; the holotype has a flatter spire but the whorl tops are oblique with a pronounced wavy suture and a depression near the suture on the later whorl tops. Trovão does not compare *C. amethystinus* with *C. carnalis*.

It should continue to be treated as a synonym of *C. carnalis*.

Fernandes and Röckel 1983



Size of pictured specimens: 35 mm. 32 mm.

14. *Conus carnalis* Sowerby. 1879 (Proceed. Zool. Soc. London. 1878: 796. p1. 48. fig. 2).

Essential characteristics: Moderately heavy: medium sized, conical shell. Sides of body whorl straight, shoulder roundly angled. Spire moderately elevated with almost straight sides, spire whorls concave. Surface smooth and glossy. Pale violet to flesh colour. Inside slightly violet toned.

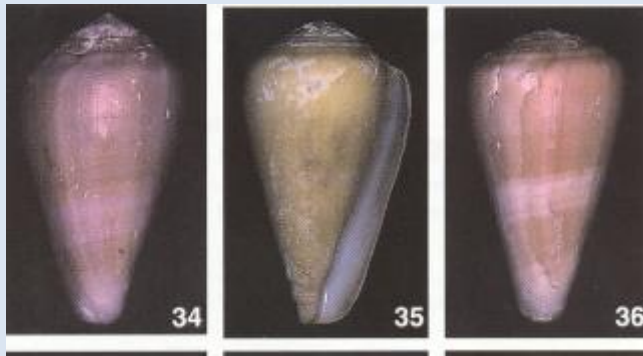
Animal: Color salmon red. Periostracum dark brown, thick and opaque.

Habitat: From 2 m to 15 m depth rocks, attached to the rock.

Locality: From South Benguela to Mossamedes. Rare. Sympatric with *C. ermineus*, *C. pulcher*, *C. variegatus* and *C. fuscolineatus*.

Similar species: *C. tabidus* with dull surface and with flat - instead of concave - spire whorls. *C. ambiguus* with sharply angled shoulder and brown dots on the spire whorls.

Röckel & Rolán, 2000



Type locality: Santa Maria Bay, Angola; designated by COOMANS, MOOLENBEEK & WILS (1983).

Type material: Holotype of *C. carnalis* in NMWZ (48.1 x 25.1 mm). Holotype of *C. amethystinus* in the Laboratory of Malacology of CPAS (34.2 x 19.1 mm).

Other material studied: Limagens; Canoco; St. Maria, Lucira Bay;

Shell description: Moderately small to medium sized, moderately solid. Last whorl ventricosely conical; outline convex at apical third, and straight below. Left side slightly concave basally. Aperture narrow to moderate. Shoulder rounded. Spire of moderate height, outline convex. Teleoconch sutural ramps concave and smooth, sometimes with 2 weak spiral grooves. Periostracum dark brown, thick and opaque

Ground colour white or light purple, last whorl and spire violet, orange or yellow, leaving a light central band. Aperture light and or translucent.

Shell morphometry:

L 35-63 mm

RD 0.62-0.65

RSH 0.10-0.16

PMD 0.74-0.80

RW 0.20 g/mm

Description of animal: Colour salmon red (ROCKEL & FERNANDES, 1982b).

Radula: Tooth (Fig. 125) of an intermediate form between vermivorous and molluscivorous, and very different from most of the other endemic *Conus* of Angola. Apical portion larger than half DR. Denticles in 1 row in upper part and in 2 in lower part, being elongated, separated from next ones and curved. ABS smaller than 40°. Blade prominent covering only a short part of the apical portion.

Radula morphometry:

(n = 3)

D 30-55; ABS 30-40°; LC/DR 37-53; DR/PA 1.48-1.58

Distribution: From Limagens to Lucira Bay. Sympatric with *C. bulbus*, *C. neoguttatus*, *C. variegatus*, *C. zebroides*, *C. chytreus*, *C. nobrei*, *C. musivus*, *C. naranjus* and *C. albuquerquei*.

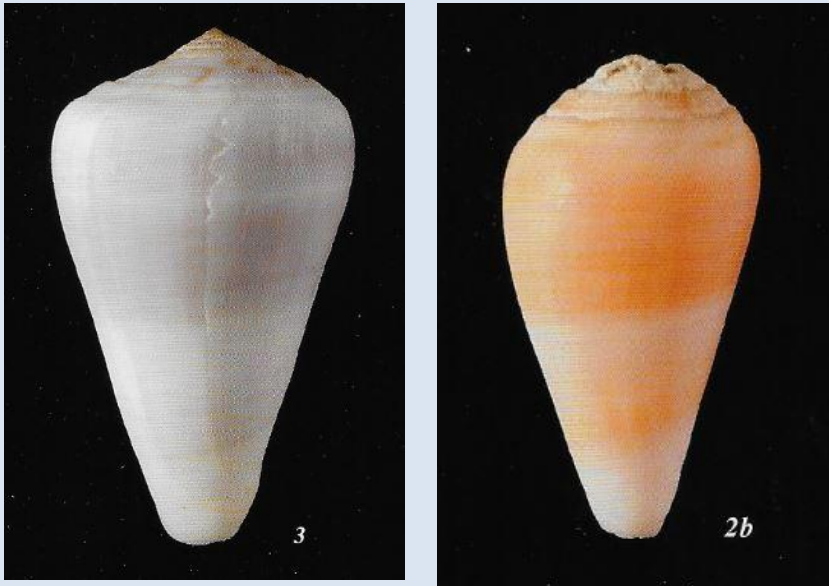
Habitat: From 2 to 15 m, under rocks, often attached to the rocks (ROCKEL & FERNANDES, 1982b).

Discussion: *C. carnalis* is similar to *C. ambiguus* Reeve, 1843, and *C. tabidus* Reeve, 1843. *C. ambiguus* (*C. bellocqae* van Rossum, 1996 is probably a synonym), a deep-water species from Senegal, has a glossy, broadly conical last whorl (RD 0.65-0.70) and a sharply angled shoulder. *C. tabidus* (synonym: *Conus gernanti* Petuch, 1975), sympatrically living with *C. carnalis*, is smaller (L up to 38 mm), more conical in shape (PMD >80) has a dull surface, an angulate to subangulate shoulder and 2-3 spiral grooves on the teleoconch sutural ramps; its colour is white with brown streaks or flecks or -often in juveniles -totally light brown or yellowish brown.

Comment: The description highlights the concave depression on the tops of the whorls. Range Limagens to Lucira. Other colour patterns have been added ie orange, yellow.

Iconography of West African Conidae

The text follows Rolán and Röckel 2000



The illustrations show the wider profile of a large 58mm specimen and an orange specimen. The wide light band at the middle of the whorl is apparent in both specimens.

Tucker & Tenorio Classification, 2009

Tucker and Tenorio describe the genus *Pseudonoduloconus* with *C. carnalis* as the only extant species, based on its wavy suture giving the impression of nodules.

Genus *Pseudonoduloconus* new genus

Type species: *Pseudonoduloconus carnalis* (G. B. Sowerby III 1879). (here designated)

Geological range. Miocene to Pliocene.

Diagnosis

Radular tooth: Tooth is elongated with the anterior section making up two-thirds of the length of the tooth; barb is short and the blade extends for almost one-third of the anterior section of the tooth: a basal spur is present

Shell characters: Whorl tops have false nodules formed by elevations at the junction of the shoulder and major growth lines; the early whorls are not nodulose; the anal notch shallow: the protoconch is paucispiral.

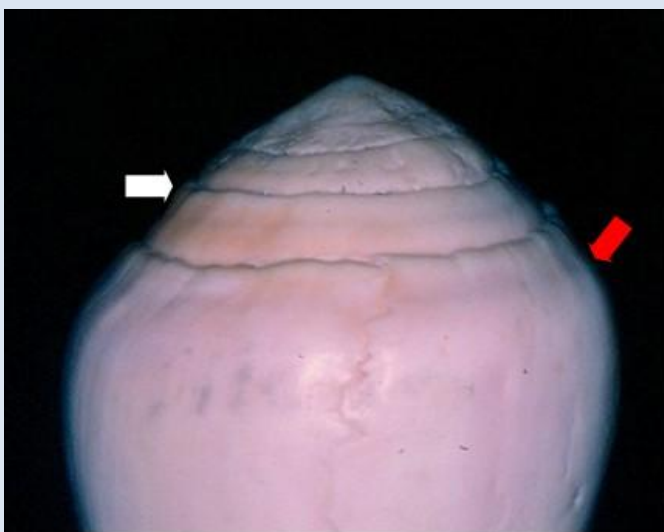
Geographic distribution: The Recent species included in the genus occur in Angola; the extinct species occur in the European region.

Comparison: Species included in *Pseudonoduloconus* possess a feature not found in any other group of West African species. These species appear to be nodulose. However, close examination of the early whorls shows that they are not nodulose. The nodule-like structures along the shoulders appear only in the outer whorls and are associated with major growth markings. Such false nodules occasionally are found in specimens of *P. carnalis*. The species included in this genus would otherwise resemble species included in *Monteiroconus* in having a rather low conical spire profile.

Assessment

Most specimens are of a purple colour, and match closely to the description, with some variations in the height of the spire.

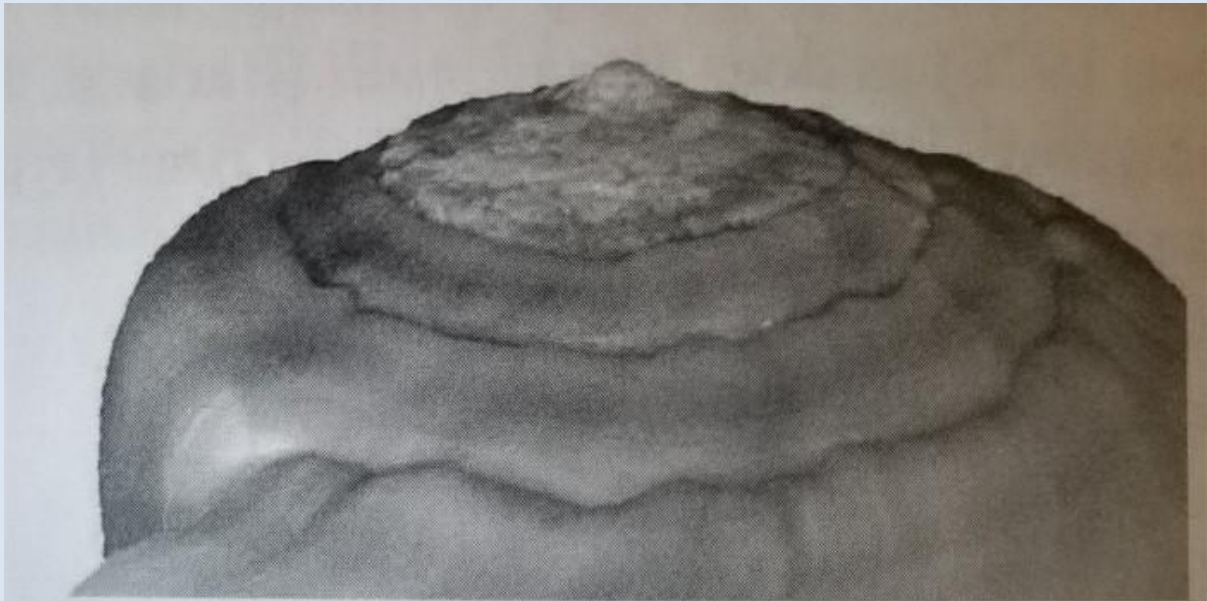
The structure of the spire is one key identifier



Type specimen

The white arrow indicates the open suture which is wavy and rough giving an impression of weak nodules. The whorl tops are obliquely angled and give the impression of overlapping.

The red arrow indicates the concave depression in the whorl tops which is referenced in description.



In the classification of the genus *Pseudonoduloconus* genus , Tucker & Tenorio illustrate a specimen with flatter spire profile. (above)

The genus *Pseudonoduloconus* is accepted as a subgenus in WORMS 2018

Other specimens



The large specimen(right) at 63mm shows the concept of nodules on the suture. However, the left specimen(57mm) has a slightly smoother spire with a brown pattern, similar to the shell described as *C. amethystinus*.

DNA reports. No specimens are recorded in GenBank.

Page last updated 15 May 2019.