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CYPRAEIDAE
HELICIDAE
MITRIDAE
MURICIDAE

REGIONEN

WEST-AUSTRALIEN, ST. HELENA, STRASSE VON GIBRALTAR, ROTES MEER, SÜDAFRIKA, JAPAN, OSTAFRIKA, TAHITI

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FOSSILE CEPAEEN MAINZER BECKEN

Conus (*Sciteconus*) *algoensis norpothi* n. ssp., a New Subspecies from Cape Agulhas, South Africa (Gastropoda: Conidae)

By FELIX LORENZ, D-Buseck

With 1 Map and 11 Figures on Plate 1

Keywords

Conidae, *Conus* (*Sciteconus*) *algoensis norpothi*, new subspecies, Cape Agulhas, South Africa

Abstract

Conus (*Sciteconus*) *algoensis norpothi* n. ssp. is described from Cape Agulhas, South Africa. It differs from the other subspecies by a larger shell, more slender shape, straight spire, and darker, more compact color pattern. The spiral ribs towards the anterior are less developed.

Zusammenfassung

Conus (*Sciteconus*) *algoensis norpothi* n. ssp. von Cape Agulhas, Südafrika wird neu beschrieben und unterscheidet sich von den übrigen Unterarten durch ein größeres Gehäuse, schlankere Form, gerade Spira und dunkleres, kompakteres Muster. Die Spiralfurchen über dem Vorderende sind weniger entwickelt.

Abbreviations

FL	Collection FELIX LORENZ, Buseck, Germany
MAM	Molluscan Science Foundation, Collection Dr. MICHAEL A. MONT, Owings Mills, Maryland, USA
MNHN	Museum National d'Histoire Naturelle, Paris
RN	Collection Dr. RAINER NORPOTH, Münster, Germany

Systematics

Family Conidae FLEMING 1822

Genus ***Conus*** LINNAEUS 1758

Subgenus ***Sciteconus*** DA MOTTA 1991

Conus (*Sciteconus*) *algoensis* G. B. SOWERBY I & II 1834 is a variable South African endemic species ranging from the Atlantic side of the Cape Peninsula to Cape Agulhas in the Indian Ocean. The nominate subspecies is restricted to the Atlantic and is rather constant conchologically, whereas in the Indian Ocean, a range of local variations and subspecies are known: *a. simplex* SOWERBY II 1858, *a. scitulus* REEVE 1849, and the color variety *a. scitulus* var. *agulhasi* COOMANS, MOOLENBECK & WILS 1980. Recently, shells more similar to the Atlantic *algoensis algoensis* from Cape Agulhas, at the opposite end of the species' distribution, came to my attention. The newly discovered population of *algoensis* differs in several morphological aspects and is here described as new subspecies.

Conus (*Sciteconus*) *algoensis norpothi* n. ssp.

Material

Four adult specimens, all from the type locality. Holotype: 35.3 mm. MNHN IM-2000-27913; Paratype 1: 48.2 mm. FL; Paratype 2: 41.6 mm. FL; Paratype 3: 38.3 mm. RN

Description

The shell of the holotype is medium sized and lightweight. The last whorl is narrow conical, with straight sides. The aperture is moderately wide, especially anteriorly. The spire is pointed, slightly stepped, the outline straight. The suture is narrow and shallow. The smooth protoconch is large and inflated, paucispiral, consisting of two whorls without transitional line to the postnuclear whorls, of which there are six in total. Five postnuclear whorls show indistinct, yet discernible tubercles. The body whorl has a smooth, acutely angled shoulder. The postnuclear sutural ramps are concave, with faint radial threads. The body whorl is smooth, with several irregular shallow longitudinal bulges and growth-lines basally. There are fine, indistinct spiral ribs towards the anterior canal.

The ground color of the teleoconch is gray-white. There are three dark brown zones covering the dorsum. They are interrupted by paler bands of white blotches of irregular shape. The shoulders of the teleoconch whorls

are ornamented with regular white and dark brown radial blotches. The interior of the shell is purplish brown.

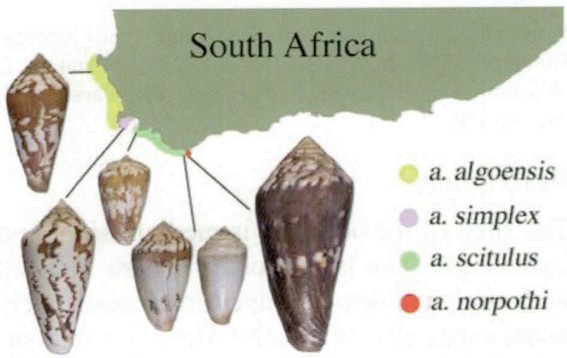
Variability: The paratypes do not retain the protoconch but have a moderately eroded spire, whose height varies slightly. The color pattern in all four shells is basically identical.

The periostracum is thick, grayish brown. The animal characteristics are unknown

Type locality and Distribution

The four type shells of *Conus* (*Sciteconus*) *algoensis norpothi* n. ssp. were found at 23-32 m, on a "solid reef" near Dyer Island, Cape Agulhas. They have been collected by a diver in 1990, together with numbers of *a. scitulus*. They have only recently been discovered in a South African collection.

Only known from the type locality. Most likely endemic to the region of the type locality.



Map 1: Distribution of *Conus* (*Sciteconus*) *algoensis* and its subspecies. Explanations in the text.

Etymology

This new species is named in honour of Dr. RAINER NORPOTH of Münster, Germany, a dear friend and enthusiastic collector of Cone shells.

Discussion

The higher level systematic assignment of the new taxon in the subgenus *Sciteconus* is based on PUILLANDRE et al. (2014). The nominate *a. algoensis* is found from Cape Columbine to Cape Point on the Atlantic side of the Cape Peninsula. It is similar to *a. norpothi* in general shape, but has a more convex outline of the spire, which shows weak spiral threads. These are absent in *a. norpothi* n. ssp., which is narrower, with straighter sides and a more acutely angled shoulder. The pattern of the new taxon is more compact, and uniformly darker. The anterior spiral ribs of *a. algoensis* are rather coarse and distinct, whereas in the new subspecies they are weak or absent. Finally, all four specimens of *a. norpothi* n. ssp. are larger than any specimen of *a. algoensis* from the Atlantic I was able to study.

The geographic gap between the population of *a. algoensis* and the new subspecies is filled by broader, more inflated and more colorful shells. These usually have sparser, transversely oriented darker dashes and a compact, reddish band below the more rounded shoulder. The population that touches the range of *a. algoensis* on the Indian Ocean side of Cape Point is *a. simplex*. It is quite small shelled, with contrasting axial flammules. Further east, in the Simonstown area of False Bay, larger shells of *a. simplex* occur, which are also quite different from *a. algoensis*.

As in many gastropods from this area, the wide sandy False Bay separates the western *a. simplex* from an eastern population, which is known as *a. scitulus*. Its shells from the Bettysbay/Cape Hangklip area can have denser pattern which reminds of the nominate Atlantic population. Such conchologically "intermediate stages" led to the lumping of the various populations to forms of *algoensis* by some authors. However, the geographic component was left out of the consideration (see Map 1). At Cape Agulhas, *a. scitulus* occurs sympatrically with *a. norpothi*. The conchological difference between these is the greatest in the complex, and intermediate forms are not known so far. This observation abrogates the general consensus that the various conchologcially different populations of *algoensis* represent merely "variations", and agrees with the distribution pattern observed in other molluscan families along this part of the South African coast. In the Cypraeid genus *Cypraeovula*, *fuscorubra fuscorubra* (SHAW 1909) occurs along the Atlantic coast. False Bay cuts a wide gap in its distribution, which is occupied by a related, conchologically similar subspecies: *fuscodentata grohorum* LORENZ 2002. At Cape Agulhas, *fuscodentata grohorum* and an eastern subspecies *fuscorubra gondwanalandensis* (BURGESS 1970) occur sympatrically. The Atlantic *Cypraeovula algoensis* (J. E. GRAY 1825) and an undescribed subspecies from Cape Agulhas have a gap in their distributions which is occupied by a sibling species, *mikeharti* LORENZ 1985. The populations along the coastal waters between Cape Agulhas and the Atlantic Cape coast apparently established before

the ice ages, when the border between the Atlantic and the Indian Oceans ran further east. When False Bay formed towards the end of the Pleistocene, the distributions got disrupted and a different fauna established in the new formed rocky habitats along the shoreline of False Bay, separated from other populations by the Cape of Good Hope to the west and the wide sandy areas of central False Bay. The colonization dynamics of these intracapsular developers all seem to have followed the same pattern (LORENZ 2002, TESKE et al. 2011).

Is the observed conchological similarity between *a. algoensis* and *a. norpothi* n. ssp., each from an extreme of the species' distribution, a product of such historic relationship? If this is the case, then does the *algoensis*-complex consist of several distinct species, of which one (*simplex*) colonized False Bay? Most likely, when viewed in the phylogeographic context. A final answer, however, cannot be given at this point, but we have a couple of interesting questions for future research.

The holotype of *a. norpothi* n. ssp. also displays characteristics of *Conus* (*Sciteconus*) *pictus* REEVE 1843: a stepped spire with slightly tuberculose postnuclear whorls, a similar color pattern on the shoulder and the body whorl, and the lack of distinct spiral ribs on the shoulder and the anterior end. The western distribution limit of *pictus* is Cape St Francis, which is approximately 500 km to the east of Cape Agulhas. The area inbetween is poorly known, as basically no diving for shells has ever been conducted. It is possible that the assumption made by TENORIO et al. (2008) is true, that *algoensis* and *pictus* are more closely related than the existing material suggests.

Hopefully, further findings can be made to provide DNA data and radulae for a comparison of these mysterious *Conus* from the Cape.

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Address of the author

Dr. FELIX LORENZ
Friedrich-Ebert-Str. 12
D-35418 Buseck, Germany
E-mail: felix.lorenz@t-online.de

Plate 1 (on p. 54)

Fig. 1: *Conus* (*S.*) *algoensis norpothi* n. ssp. 35.3 mm. Cape Agulhas. At 23-32 m. Holotype, MNHN IM-2000-27913.

Fig. 2: *Conus* (*S.*) *algoensis norpothi* n. ssp. 48.2 mm. Cape Agulhas. At 23-32 m. Paratype 1, FL.

Fig. 3: *Conus* (*S.*) *algoensis norpothi* n. ssp. 41.6 mm. Cape Agulhas. At 23-32 m. Paratype 2, FL.

Fig. 4: *Conus* (*S.*) *algoensis norpothi* n. ssp. 38.3 mm. Cape Agulhas. At 23-32 m. Paratype 3, RN.

Fig. 5: *Conus* (*S.*) *algoensis algoensis*. 32.0 mm. Kommetjie, West Coast. Intertidally. MAM.

Fig. 6: *Conus* (*S.*) *algoensis simplex*. 28.2 mm. Buffelsbay, Western False Bay, at 15 m. MAM.

Fig. 7: *Conus* (*S.*) *algoensis simplex*. 42.2 mm. Simonstown, Western False Bay, at 20 m. MAM.

Fig. 8: *Conus* (*S.*) *algoensis scitulus*. 20.5 mm. Bettysbay, east of False Bay, intertidally. MAM.

Fig. 9: *Conus* (*S.*) *algoensis scitulus*. 24.8 mm. Cape Agulhas, at 25 m. MAM.

Fig. 10: *Conus* (*S.*) *algoensis scitulus* 24.0 mm. Cape Agulhas, intertidally. MAM.

Fig. 11: *Conus* (*S.*) *algoensis scitulus* var. *agulhasi*. 22.8 mm. Cape Agulhas, at 25 m. MAM.

Plate 1

Captions on p. 53