

Notes on the distribution and morphology of the *Strombus terebellatus*-complex (Gastropoda, Strombidae)

by

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Abbott (1960: 87-88, pl. 62) has published data on the distribution of the *Strombus (Canarium) terebellatus*-complex in the Indo-Pacific. He divided this species into two geographical races: *Strombus terebellatus terebellatus* Sowerby, 1842, from the Western Pacific, and a new subspecies *S. terebellatus afrobellatus* Abbott, 1960, from the east coast of Africa. The two subspecies can be distinguished on the following characters:

S. t. terebellatus (figs. 1-3, 6)
 spire one third to half the length of the shell;
 fine irregular brown spiral lines inside the aperture;
 aperture without a posterior canal

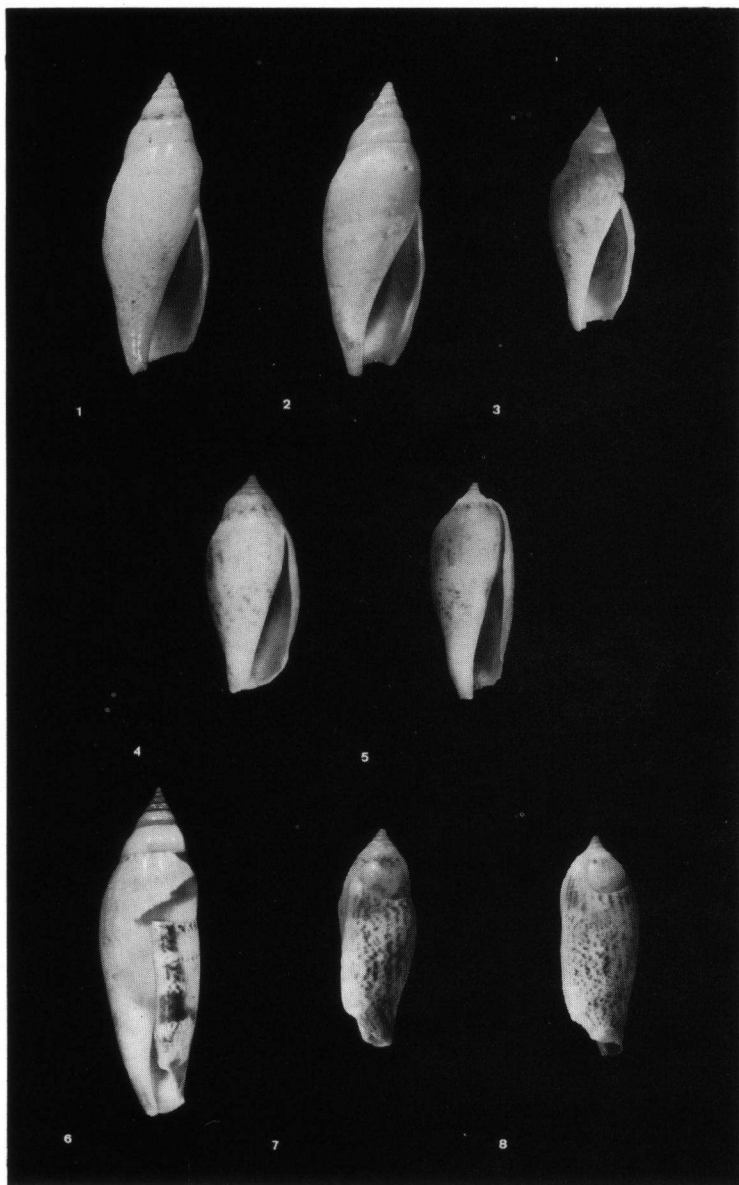
S. t. afrobellatus (figs. 4-5, 7-8)
 spire one fourth to one third of the length of the shell;
 no spiral lines inside the aperture;
 the last whorl forms more or less a posterior canal, sometimes completely covering the penultimate whorl

Recently the Zoölogisch Museum, Amsterdam, received three shells of *Strombus terebellatus* from the Red Sea; these were live collected by Mrs. Mora Williams. The specimens were taken near Obhur, 47 km north of Jeddah, Saudi Arabia, in sand over a mucky to muddy bottom, in water from 2-5 feet depth. One specimen was supplied with the operculum. In these specimens the fine, irregular, brown spiral lines inside the aperture are present. The ratio total length/spire length of these specimens corresponds to that given for *S. t. terebellatus*. The measurements in mm are:

total length	length spire	width	number of whorls
26.8	11.5	11.4	8
29.6	11.9	11.1	8
28.8	13.8	10.2	8

So we must conclude that *S. t. terebellatus* lives in the Red Sea.

This is, however, contrary to the opinion of Abbott (1960: 88), who includes the Red Sea in the distribution area of *Strombus*



terebellatus afrobellatus. Since his opinion was only based on a single literature record (Issel & Tapparone Canefri, 1876: 354) we presume that *S. terebellatus afrobellatus* has a more southward distribution along the east coast of Africa.

The operculum of *S. t. terebellatus*, which was so far unknown, is wing-like, slightly bent, in length less than half the height of the aperture, transparent light-brown, and has six well-developed, sharp serrations (fig. 9). It is similar to that of *S. t. afrobellatus*. The only



Fig. 9. Operculum of *Strombus t. terebellatus* Sow. after specimen from Obhur, Saudi Arabia, length 6.5 mm (ZMA).

difference is in the number of serrations, which in *S. t. afrobellatus* amounts to five (Abbott, 1960: 88). However, it is known that the number of serrations on the operculum of several species of Strombidae is variable. Cernohorsky (1966: 276-277) found 7-9 serrations in *Strombus (Canarium) rugosus* Sowerby and 7-10 in *Strombus (Dolomena) minimus* Linnaeus. Therefore the difference in number of serrations is too insignificant to be of subspecific value.

The following data can now be added to the known distribution

Figs. 1-8. *Strombus terebellatus*. Figs. 1-3, *S. t. terebellatus* Sow., 1: Celebes, Gajoe Ragi, Post-Tertiary, length 38.2 mm; 2: "Moluccas", length 37.5 mm; 3: Saudi Arabia, Obhur, length 29.6 mm. Figs. 4-5, *S. t. afrobellatus* Abbott, 4: Andaman Islands, length 28.1 mm; 5: ibidem, length 28.2 mm, with extremely long posterior canal. Fig. 6, *S. t. terebellatus* Sow., "Moluccas", length 48.3 mm, with horizontal suture. Figs. 7-8, *S. t. afrobellatus* Abbott, Andaman Islands, length 28.1 and 28.2 mm respectively; note raised and extremely raised sutures. All specimens in ZMA. Photographs L.R. Hafkamp, Zoölogisch Museum, Amsterdam.

records of *S. t. terebellatus* and *S. terebellatus afrobellatus*. All records are based on material in the collections of the Zoölogisch Museum, Amsterdam (ZMA), the Rijksmuseum van Natuurlijke Historie, Leiden (RNHL), the Natuurhistorisch Museum, Enschede (NME) and the private collection of Mrs. T. Whitehead, Cairns (TWC).

Strombus (Canarium) terebellatus terebellatus Sowerby, 1842

RECENT RECORDS. RED SEA: Saudi Arabia, Obhur, 47 km north of Jeddah, leg. Mrs. Mora Williams, 7 February 1969 (ZMA, 2); *ibidem*, without exact date (ZMA, 1). INDONESIA: Wetar Id., leg. K. Schädler, 1898 (RNHL, 1); Ambon, leg. D. S. Hoedt (RNHL, 3); *ibidem*, leg. W.G.N. van der Sleen (NME, 1); *ibidem*, leg. E.F. Jochim (RNHL, 1); Ternate, leg. E.F. Jochim (RNHL, 1); New Guinea, Manokwari, Pasirputih, leg. D. Smits, 1958 (ZMA, 3); *ibidem*, leg. Mrs. E.A. Snackey, 1954-1960 (ZMA, 4); *ibidem*, Doreh Bay, leg. E.F. Jochim, (RNHL, 1); *ibidem*, leg. J.P.L. Everaadt, December 1959 - June 1962 (RNHL, 1); Doreh Bay, leg. E.F. Jochim (RNHL, 10); Schouten Id., Biak, leg. C.M. van Diemen, 1955 (ZMA, 1). FIJI ISLANDS: Fiji (TWC, 1).

FOSSIL RECORD. INDONESIA: Celebes, Gajoe Ragi, Post-Tertiary, leg. R. Fennema (ZMA, 3). These shells, already mentioned by Schepman (1907: 186) and Abbott (1960: 88) actually do belong to this subspecies.

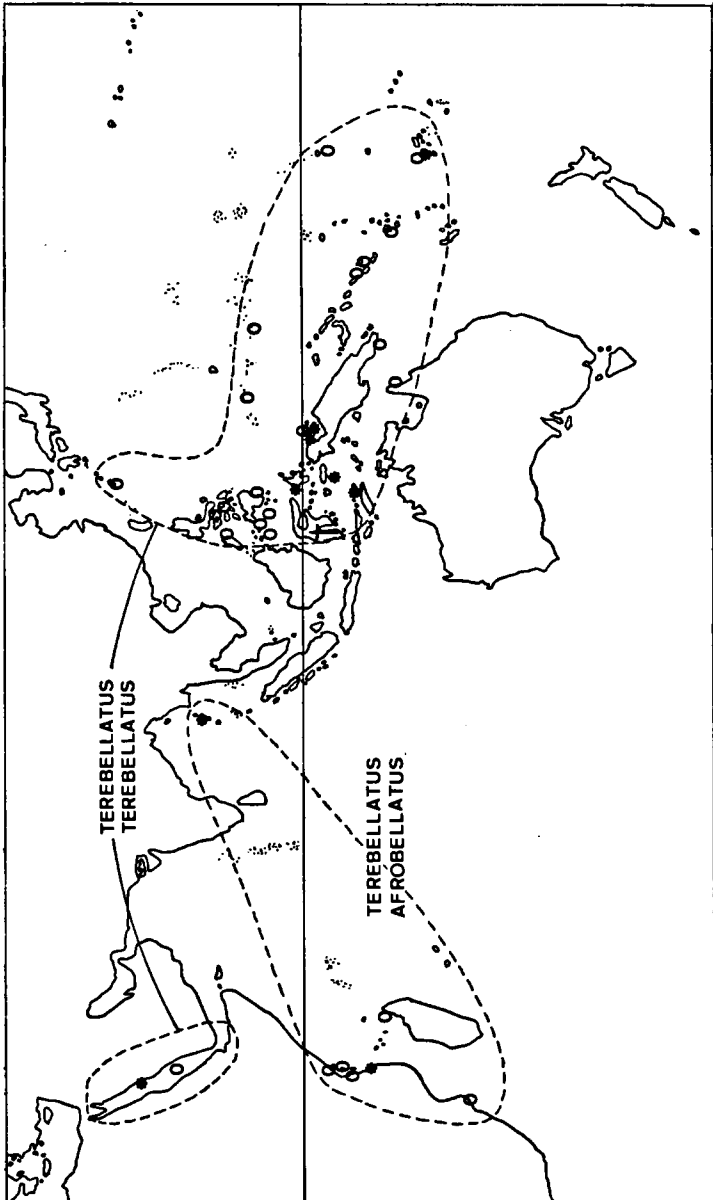
Strombus (Canarium) terebellatus afrobellatus Abbott, 1960.

RECENT RECORDS. EAST AFRICA: Tanzania, Ras Sanga Mkou, Mtwara, leg. Mrs. Thora Whitehead, 1963 (TWC, 3). ANDAMAN ISLANDS: Andaman Is. (ZMA, 2). These specimens are from an old collection, and there might be some doubt concerning the locality.

In fig. 10 the distribution of the *S. (C.) terebellatus*-complex in the Indo-Pacific is given. The discontinuous range of *S. t. terebellatus* is most striking: the Red Sea and the Western Pacific. In the range of another stromboid taxon, *Lambis (Lambis) truncata sebae* (Kiener), we find an exactly similar discontinuity (Abbott, 1961: 155, pl. 125).

We wish to express our gratitude to Mrs. Mora Williams for supplying the Zoölogisch Museum, Amsterdam, with specimens of *S. t. terebellatus* from the Red Sea, to Mrs. Thora Whitehead for

Fig. 10. Distribution of *Strombus terebellatus* (* = records in present paper, o = records in Abbott, 1960, † = fossil record Celebes).



lending her specimens to the museum and to Mr. H.E. Coomans for critically reading the manuscript.

SAMENVATTING

Door een recente vondst van *Strombus (Canarium) t. terebellatus* Sow. in de omgeving van Obhur, Saoedi-Arabië, blijken *S. t. terebellatus* en *S. t. afrobellatus* een andere verspreiding te hebben dan tot nu toe werd aangenomen. *Strombus terebellatus* s. str. heeft een onderbroken verspreidingsgebied: Rode Zee en westelijk deel van de Stille Oceaan, terwijl *S. t. afrobellatus* tot nu toe langs de Z.O.-kust van Afrika en op de Andamanen werd aangetroffen (fig. 10). Het operculum van *S. terebellatus* s. str. (fig. 9) wijkt niet noemenswaardig af van dat van *S. t. afrobellatus*.

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