

**Philine intricata Monterosato, 1884, an overlooked species from the North-East Atlantic and the Mediterranean Sea (Gastropoda, Opisthobranchia: Philinidae)**

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Frankenslag 176, 2582 HZ The Hague, The Netherlands

*Philine intricata* is redescribed from beach material in Europe and the Canary Islands and from dredged samples from the Azores, the Cape Verde Islands and the Canary Islands. The shell resembles that of *P. catena* and *P. angulata*, but shows consistent differences.

Key words: Mollusca, Gastropoda, Opisthobranchia, Philinidae, *Philine*, taxonomy, Europe, Azores, Canary Islands, Madeira, Cape Verde Islands.

Investigation of more than two hundred samples of Philinidae (all from shell-grit washed ashore on the beaches of Europe and the Canary Islands) from the collection of the Nationaal Natuurhistorisch Museum, Leiden (NNM) and from the collections of J. van der Linden, The Hague (LH), and H.P.M.G. Menkhorst, Krimpen aan de IJssel (MK), revealed a lot of errors in naming. Notably in samples labelled as *Philine catena* (Montagu, 1803), the most common 'European' *Philine*, I found many shells of other species [e.g. *P. punctata* (J. Adams, 1800) and *P. angulata* Jeffreys, 1867], among which several specimens with a mixture of the characters of both *P. catena* and *P. angulata*.

While studying the shells dredged around the Azores, the Canary Islands and the Cape Verde Islands by the NNM-CANCAP expeditions (1976-1988), I found another ten samples of the very same species, which turned out to be *P. intricata* Monterosato, 1884. It is surprising that this species has been overlooked for so many years.

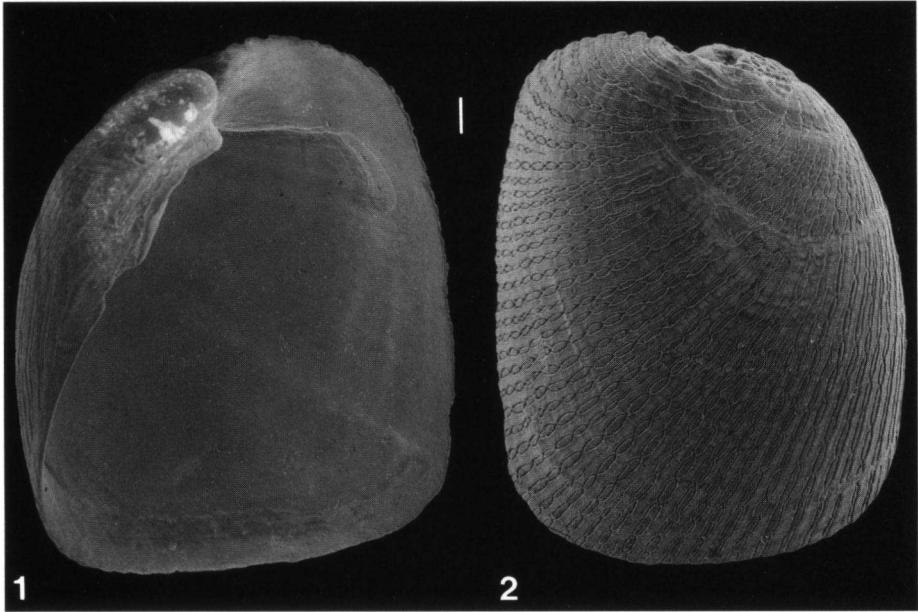
*P. intricata* will be compared with the other littoral 'European' Philinidae. Detailed SEM photographs will be added to facilitate comparison between the species.

*Philine intricata* Monterosato, 1884 (figs. 1-6)

*Philine intricata* Monterosato, 1875: 47 (nomen nudum); 1884: 47. Type locality. — Palermo, 60-90 m.

*Philine desmotis* Watson, 1897: 237-238, fig. 5, 5a (?). Type locality. — Punta de São Lourenço, Santa Cruz, Porto Santo, to 50 fms.

General description (after 86 shells from 23 localities). — The shell is more or less rhomboidal, in the upper part somewhat rounded, the basis is about straight and angular, very depressed, (semi)transparent and glossy. Old, empty shells are opaque white, often with a transparent zone in the middle. Length: 0.7-2.7 mm (rarely >2.2 mm). The spire is extremely narrow, less than one whorl and, from the top almost to its base, of the same size and somewhat sinuous. It is bordered, on its upper half and on the apertural side, with a ridge, separated from the spire by a small furrow. The ridge curves down, at the top of the spire, to the inside of the aperture, where it fuses with the inside like a 'seal' (not always visible). Often only the lower margin of this seal is visible, running horizontally to the outer lip (more easily observable on the dorsal side of the shell). The large aperture is almost flat at its base, a little more convex at the upper part.



Figs. 1-2. *Philine intricata*, Spain, Cadiz, Tarifa. Length 1.6 mm (LH). Scale 0.1 mm.

In fresh shells the margins are serrated, mainly the upper margin, which is on the same level with the top of the spire, or somewhat projecting beyond it. The microsculpture consists of many close-set and chainlike spirals: numerous minute circles or ovals, joined together one by one. Observed from the dorsal side of the shell, the spirals rise from the back of the intorted protoconch and fan out to the margin. Above the horizontal 'keel' there is another fan of spirals, originating from this keel and running in a vertical direction to the upper margin of the outer lip. These spirals are smooth close to the top of the spire; later on they become chainlike.

Discussion. — Monterosato mentioned *P. intricata* for the first time in 1875. The only character (translated): "closely related but distinct from *P. lima*..." is, even for the most credulous reader, not very satisfactory, particularly because the shape of *P. lima* and the *Philine* species in question are differing widely. After several other references, Monterosato gives more detailed information in 1884 (translated): (the shell) "has a sinuous and furrowed columella like in the genus *Raincourtia*, Fischer" (1884). However, the facts are more in accordance with the species here described, the classification (it is true, not without reservations) together with *Philine retifera* (Forbes, 1844), again a species with completely other features (e.g. outline, spire and sculpture), makes us fear the worst. Probably this is why Sabelli et al. (1990: 426) consider *P. intricata* a doubtful species, perhaps following Piani (1980: 161).

Gaglioni (1991) gives some clear photographs and a description of the taxon under discussion from a shell in the Monterosato collection in Rome. This specimen is provided with a label in the handwriting of Monterosato. Mrs. Caglioni does not indicate

what exactly Monterosato has written on this label, but I believe that the species in question is the real *P. intricata*.

It is not inconceivable that *P. desmotis* Watson, 1897, from Porto Santo (Madeira archipelago) is the same species, although the figure is not very distinct; some parts of the description give a lead to recognition: "the inner lip has a narrow thin appressed glaze across the upper part of the very slightly oblique body; after the glaze dies out, the thin sharp lip runs on with a slight twist to join the outer edge of the shell", and "...a slight translucent pad encircles the top of the shell". The main features, such as length, shape and sculpture are corresponding to those of *P. intricata*.

Confusion with the more common *P. catena* (figs. 7, 11-12) is obvious, because of the same chainlike sculpture, which further investigation seems to make redundant. Confusion with a juvenile stage of *P. catena* is impossible, because there is no juvenile shape in this way, neither for *P. catena* nor for *P. intricata*. On the contrary, shells with a length of between 0.5 mm and 1.0 mm have the same characters as the adults and beyond this, there are specimens of *P. intricata* with a length of 2.5 mm and more, a considerable length for this kind of Philinidae, no doubt, adult shells. Nevertheless, the differences are unmistakable:

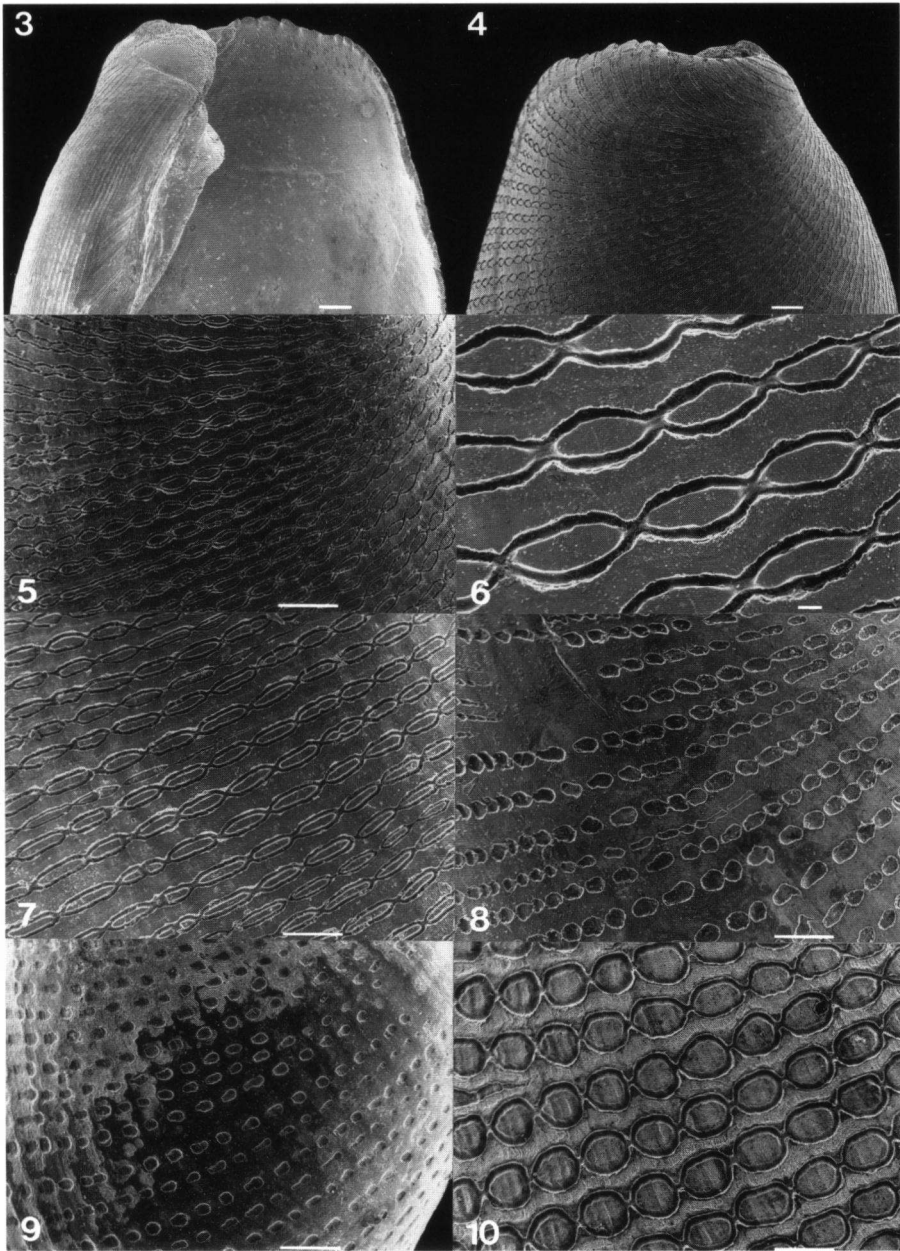
- (1) the shape of *P. catena* is oval, of *P. intricata*, particularly on the basis, squarish;
- (2) the shell of *P. intricata* is much more depressed and flat;
- (3) the spire of *P. intricata* is much narrower than that of *P. catena* and, furthermore, bordered with a ridge, which *P. catena* never has;
- (4) there is no horizontal 'keel' nor 'seal' near the top of the aperture of *P. catena*;
- (5) *P. catena* has a single fan of spirals on the shell, whereas in *P. intricata* there is a second fan of spirals, running from the horizontal 'keel' in an upward direction to the margin.

Confusion with *P. angulata* (figs. 8, 13-14), a rather rare species, is possible since both species have a similar, narrow and elongated spire, with on both the bordering ridge, although the ridge of *P. angulata* has a more angulate protrusion on the upperside, near the top of the spire. *P. angulata* has a similar, but rather strong, horizontal 'keel' (crossbeamlike) on the inside of the aperture, near the upper edge. The differences between these two species are:

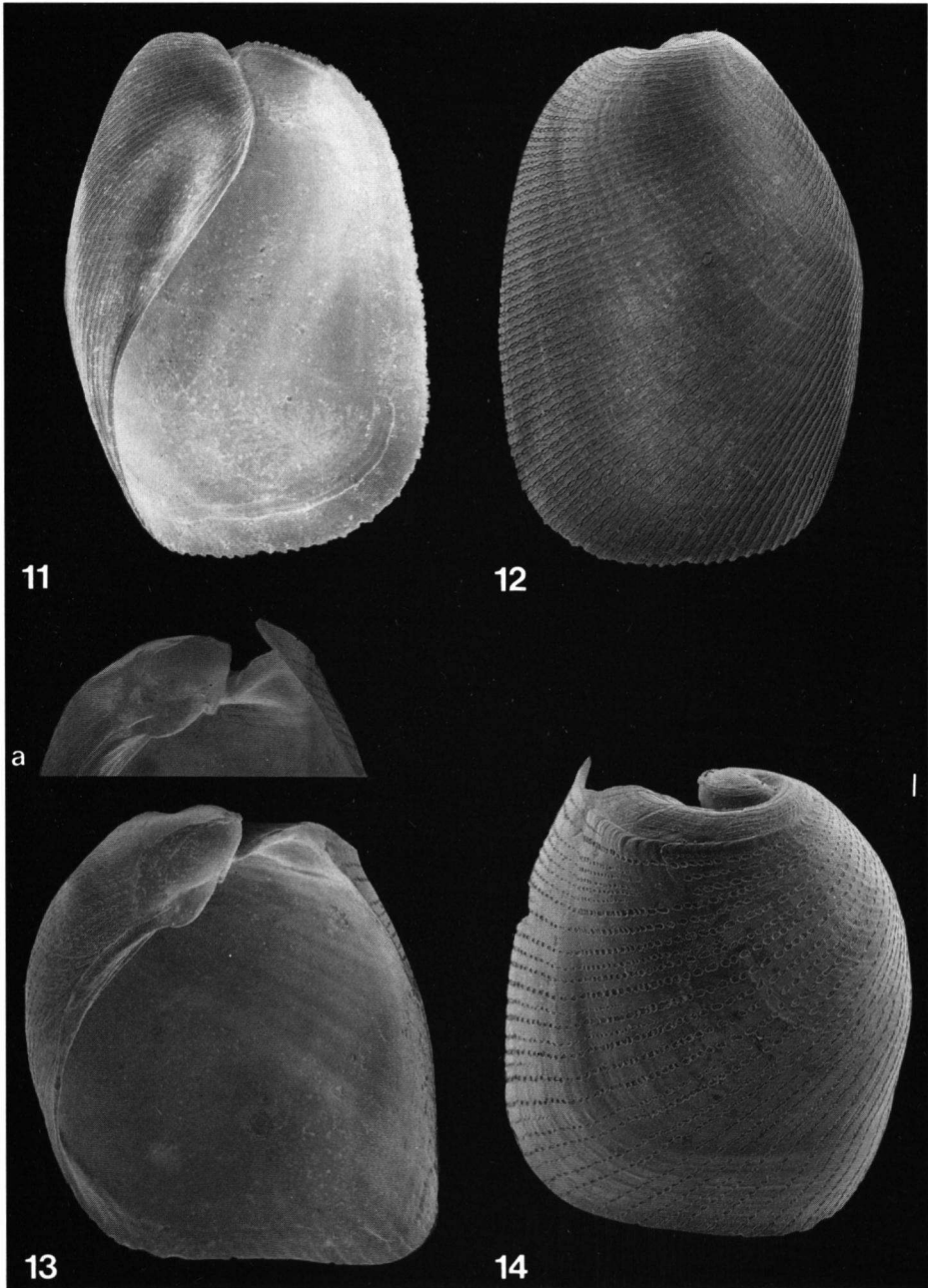
- (1) the aperture of *P. angulata* is still broader (not flatter) than the aperture of *P. intricata*, and the shape of the shell is squarish, whereas in *P. intricata* it is rectangular;
- (2) the upper margin of the aperture of *P. angulata* is deeply impressed near the top of the spire and the outer corner has a winglike protrusion, with its point clearly higher than the spire;
- (3) the spirals on the surface of *P. angulata* are not close together, as in *P. intricata*, but well separated; the chains are not composed of very regular, interconnected rings or ovals as in *P. intricata*, but are rows of irregularly formed dots or circles, detached, fused, or only touching each other, all this sometimes in a single spiral; near the base of the aperture the spirals change in spidery lines, just as the spirals above the horizontal 'keel'.

Often the winglike protrusion on the outer lip is broken or not completely developed (in juvenile shells), but there are enough other features to separate *P. angulata* and *P. intricata* well.

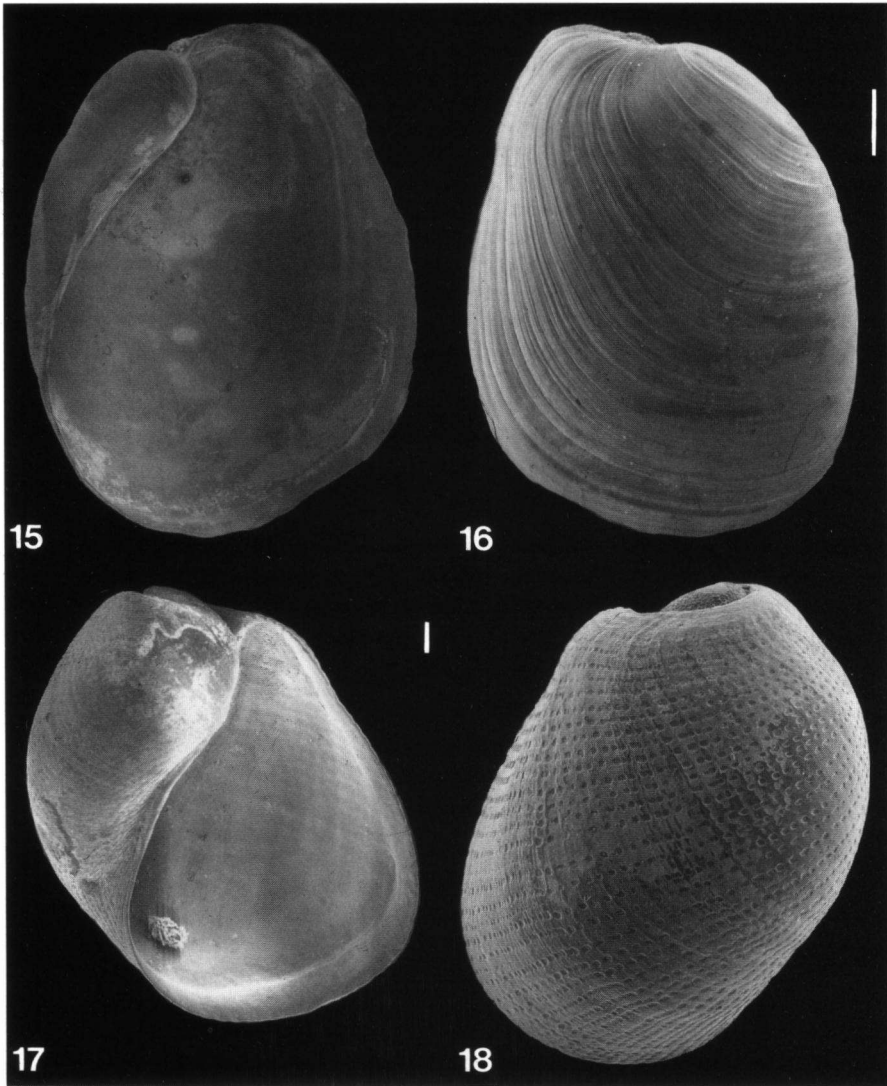
There are three more littoral 'European' Philinidae: *P. aperta* (L., 1767), *P. punctata* (J. Adams, 1800), and *P. scabra* (Müller, 1776). The many other species are from considerable depths, or from northern latitudes and none of these have approximately the same



Figs. 3-6. *Philine intricata*, Cape Verde Islands, CANCAP Sta. 7.102 (NNM). Scales figs. 3-5 0.1 mm; fig. 6 0.01 mm. Fig. 7. *Philine catena* has about the same chainlike spirals as *Philine intricata*. Scale 0.1 mm. Fig. 8. Sculpture of *Philine angulata*. Scale 0.1 mm. Fig. 9. *Philine punctata* has a more regular sculpture than the preceding species. Scale 0.1 mm. Fig. 10. The much coarser sculpture of *Philine scabra*. Scale 0.1 mm.



Figs. 11-12. *Philine catena*, Spain, Mallorca, Barcaras. Length 3.2 mm (NNM). Scale 1 mm. Figs. 13, 13a-14. *Philine angulata*, Canary Islands, S. of Lanzarote, 28°48'N, 13°46'W, depth 120 m, CANCEP Sta. 4.041. Length 2.2 mm (NNM). Scale 0.1 mm. On fig. 13 the winglike protrusion is not visible because of the projection of the shell.



Figs. 15-16. *Philine aperta*, France, Côtes-du-Nord, St. Jacut. Length 8.3 mm (LH). Scale 1.0 mm. Figs. 17-18. *Philine punctata*, Spain, Santander, Laredo. Length 1.7 mm (LH). Scale 0.1 mm.

characters as *P. intricata*. *P. aperta* (figs. 15-16), the largest 'European' *Philine* (20 mm is not unusual) has no microsculpture of (chainlike) spirals, but only, sometimes pronounced, growth-lines. *P. punctata* (figs. 9, 17-18) might be confused with *P. catena*, but the former species has a more convex shell, with a more rounded profile, a broader spire and no chainlike spirals, but rows of separated points, dots or irregular circles. Confusion with *P. intricata* is out of the question. Finally, *P. scabra* (figs. 10, 19-20) is much larger, with a rather cylindrical, elongated, shape. The aperture is narrow, as compared to the other Philinidae and the chains are much coarser than those of *P. catena* or *P. intricata*.

Distribution. — Known from northern Brittany, southwards to the Mediterranean (as far as Sicily), Azores, Madeira, Canary Islands, and Cape Verde Islands.

Material examined (locality and number of specimens).

(A) From shell-grit samples from beaches:

France (Atlantic): Côtes-du-Nord, Trébeurden/2 (LH); Finistère, Ile Tudy/1 (LH); Morbihan, Penthièvre/1 (LH).

Portugal: Algarve, Praia da Alvor/11 (MK).

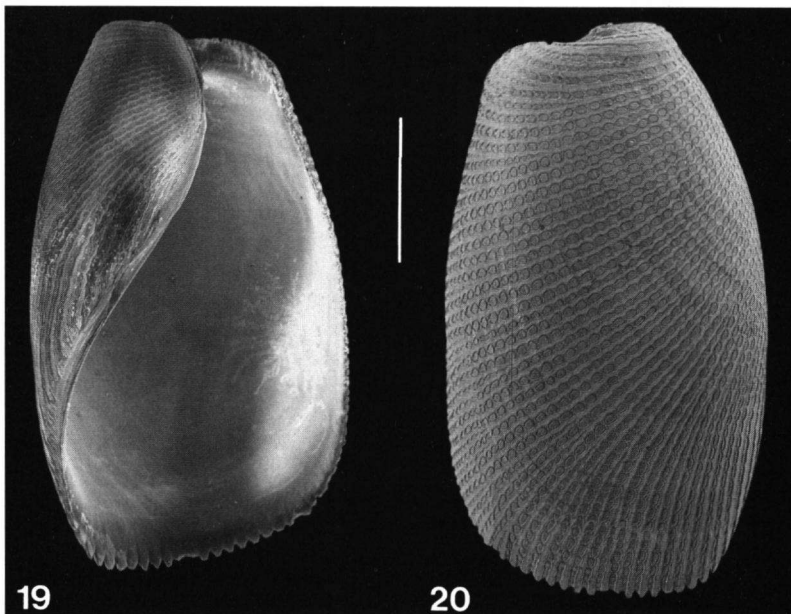
Spain: Cadiz, Tarifa/10 (LH, NNM), Gétarès/1-L.2.7 mm! (MK); Gerona, Rosas/4 (MK).

France (Mediterranean): Bouches-du-Rhône, Ste. Croix/12 (LH).

Italy: Sicily, Marsameni/3 (MK), Trapani/3 (MK).

Canary Islands: Gran Canaria, Maspalomas/20 (LH).

From unspecified origin:



Figs. 19-20. *Philine scabra*, off Monaco, 43°40'N, 07°21'E, depth 100 m. Length 4.1 mm (MK). Scale 1.0 mm.

Madeira/1 (NNM).

(B) From dredged samples:

Azores: S. of Santa Maria, 36°55'N, 25°07'W, depth 620 m, Cancap Sta. 5.051/4 (NNM).

Canary Islands: SW. of Palma, 28°40'N, 17°59'W, depth 400 m, Cancap Sta. 4.159/1 (NNM); S. of Lanzarote, 28°48'N, 13°46'W, depth 150 m, Sta. Cancap 4.044/1 (NNM).

Cape Verde Islands: S. of Razo, 16°36'N, 24°36'W, depth 140-160 m, Cancap Sta. 7.119/2 (NNM), 16°36'N, 24°37'W, depth 208 m, Cancap Sta. 7.120/2 (NNM); W. of Sal, 16°45'N, 23°01'W, depth 262-280 m, Cancap Sta. 7.101/1 (NNM), 16°46'N, 23°01'W, depth 165 m, Cancap Sta. 7.102/1 (NNM), 16°46'N, 23°02'W, depth 85 m, Cancap Sta. 7.110/1 (NNM); SSW. of Santa Luzia, 16°43'N, 24°47'W, depth 204 m, Cancap Sta. 6.105/2 (NNM); SW. of São Tiago, 14°54'N, 23°38'W, depth 420 m, Cancap Sta. 7.007/1 (NNM); SW. of São Vincente, 16°47'N, 25°06'W, depth 293 m, Cancap Sta. 6.149/1 (NNM).

#### ACKNOWLEDGEMENTS

I thank Prof. Dr. E. Gittenberger, curator of molluscs of the Nationaal Natuurhistorisch Museum (NNM) for his advice and for the loan of material, and Mr. J. Goud (NNM) for making the SEM photographs. The collection of Mr. H.P.M.G. Menkhorst clarified the distribution of this species.

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