

Description of a new *Solariella* species (Gastropoda: Trochoidea: Solariellidae) from the Azores

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KEYWORDS. Gastropoda, Trochoidea, Solariellidae, *Solariella cancapae* n. sp., Azores, central eastern Atlantic.

ABSTRACT. *Solariella cancapae* n. sp. is described from the Azores and compared with similar known species : *S. amabilis* (Jeffreys, 1865), *S. multirestis* Quinn, 1979, *S. azorensis* (Watson, 1886) and *Haloceras carinata* (Jeffreys 1883). Most of these species are illustrated.

RESUME. Une nouvelle espèce *Solariella cancapae* est décrite des Açores et comparée aux espèces connues les plus proches : *S. amabilis* (Jeffreys, 1865), *S. multirestis* Quinn, 1979, *S. azorensis* (Watson, 1886) et *Haloceras carinata* (Jeffreys 1883). La plupart de ces espèces sont illustrées.

INTRODUCTION

During about ten years (from 1976 to 1986), the Rijksmuseum van Natuurlijke Historie (National Museum of Natural History) in Leiden led the CANCAP-project, a large programme of biogeographically oriented marine research in the south-eastern part of northern Atlantic. Seven campaigns (CANCAP-I to VII) were carried out, visiting a large area covering Azores, Madeira Archipelago, the Moroccan shelf, Canary Islands, Mauritanian coasts, Senegal and the Cape Verde Islands. Van der Land (1987) listed the stations of the whole CANCAP-project. These campaigns have brought an interesting material of highly scientific interest, among others various trochids species. Some of them were *Calliotropis* species and have been studied in a more general work upon this genus in the central eastern Atlantic (Vilvens & Swinnen, in press). Other species were Solariellidae, and we found among them a specimen from the Azores that seems to be unknown. Closer examination and comparison with other species from this area lead us to conclude that this shell belong to another new species that is described here.

Abbreviations

Repositories

MHNSC: Museo de Historia Natural of Santiago de Compostela, Spain.
MNCN: Museo Nacional de Ciencias Naturales, Madrid, Spain.

MNHN: Muséum national d'Histoire naturelle, Paris, France.

BMNH: Natural History Museum, London, England.

NNML: Nationaal Natuurhistorisch Museum Leiden, The Netherlands.

ZSM: Zoologische Staatssammlung, München, Germany.

Other abbreviations

H: height

W: width

P1, P2, P3, ...: primary cords (P1 is the most adapical)

S1, S2, S3, ...: secondary cords (S1 is the most adapical)

stn: station

lv.: live-taken specimens present in sample

dd: no live-taken specimens present in sample

coll.: private collection

SYSTEMATICS

We follow here the classification of Bouchet & Rocroi (2005), where former Solariellinae, earlier treated as a subfamily of Trochidae (Hickman & McLean, 1990), are now ranked as a family of the superfamily Trochoidea.

Superfamily **TROCHOIDEA** Rafinesque, 1815

Family **SOLARIELLIDAE** Powell, 1951

(= Minoliinae Kuroda, Habe & Oyama, 1971)

Genus: *Solariella* Wood, 1842

Type species: *Solariella maculata* Wood, 1842 (by monotypy) – Pliocene, England.

Solariella cancapae n. sp.

Figs 1–2

Type material. Holotype (9.7 x 8.4 mm) NNML (RMNH.MOL.109036).

Type locality. Azores, east of Flores, CANCAP–V, stn 5.171, 39°20'N, 30°52'W, 1874–1887 m.

Material examined. Azores. CANCAP–V: stn 5.171, 39°20'N, 30°52'W, 1874–1887 m, 1 dd (holotype)

Distribution. Azores, east of Flores, 39°20'N, 30°52'W, 1874–1887 m.

Diagnosis. A high-spired *Solariella* species with conical shape, whitish, with 2 main spiral cords and numerous thin spiral cords on spire whorls, the adapical the strongest; abapical main cord obsolete on last whorl; base with numerous spiral cords and an inner granular cord around the broad umbilicus.

Description. *Shell* rather tall for the genus (height up to 9.7 mm, width up to 8.4 mm), higher than wide, rather thin, conical; spire high, height 1.15x width, 3.6x aperture height; wide umbilicus.

Protoconch of 400 µm, of 1 whorl, smooth, without visible terminal varix.

Teleoconch up to 5.7 convex whorls, bearing up to 20 spiral granular cords and thin prosocline ribs; nodules from cords produced by intersections with axial threads. Suture impressed, slightly canaliculated. First whorl convex, immediately sculptured by 6 thin, evenly spaced spiral cords; P1 granular, P2 and P3 subgranular, P4, P5 and P6 smooth; half a whorl later, P2 and P3 granular and P4 subgranular; weak, almost indistinct, axial thin ribs; ribs stronger at end of whorl, thicker in their adapical part; interspace between ribs 3x broader than ribs. On second whorl, all spiral cords granular; P1 stronger than other cords, with thick beads; P6 sinking into suture and disappearing; secondary cords S1 and S4 appearing. On third whorl, P1 strongest, producing subsutural horizontal ramp, with beads becoming sharp, oriented at 75°; P4 weaker than P1 but stronger than other cords,

producing a second keel at second third of whorl; axial ribs visible all around the whorl, prosocline, thicker than on preceding whorl, interspace between ribs about 2x broader than ribs. On succeeding whorls, additional thin spiral cords appearing by intercalation between existing cords, more visible between P4 and P6; axial ribs still rather thick above P4, much thinner under it; subsutural ramp becoming oblique. On last whorl, all spiral cords weak except P1 strong with sharp, isolated nodules; cords hard to count, about 20; keel at P4 disappearing.

Aperture circular; peristome almost complete; outer and inner lip rather thin. Columella curved, with a weak median thickening, without tooth.

Base moderately convex, with about 10 spiral cords, innermost much stronger, with sharp beads, bordering umbilicus; distance between cords similar in size to cords; thin axial ribs between cords, thinner than cords, distance between from 1x to 1.5x size of ribs.

Umbilicus broad, diameter about 30% of shell width, funnel shaped with gently sloping walls, with about 8 thin, granular spiral cords and thin axial lamellae inside.

Colour of protoconch and teleoconch off-white.

Discussion. *Solariella cancapae* n. sp. is rather close to *S. amabilis* (Jeffreys, 1865) (Figs 7–12) from North-western European Atlantic [(from Iceland and Norwegian to off Morocco (Sneli et al., 2005)], but this species, rather variable regarding the height of the shell but never recorded from the Azores, is much smaller, has three, not only one, strong spiral cords making keels on last whorl, much thinner, indistinct spiral cords on the base with an innermost much thicker spiral cord around the umbilicus, and less numerous spiral cords (up to 5) inside the umbilicus. The combination of an elevated shell, a strong spiral cord P1 with sharp beads and a prominent second keel on spire whorls may remember *S. multirestis* Quinn, 1979 from Lesser Antilles and Florida Keys, but this similar in size species has the main spiral cords of same strength, no keel at second third of the spire whorls and stronger, only 7, spiral cords on the base (see Quinn, 1979 for an illustration).

Figures 1–14 (Scale bars: Figs 1–6 = 5 mm; Figs 7–12 = 1 mm; Figs 13–14 = 2 mm)

1–2. *Solariella cancapae* n. sp., Azores, holotype NNML (RMNH.MOL.109036), 1874–1887 m (CANCAP–V, stn 5.171), 9.7 x 8.4 mm.

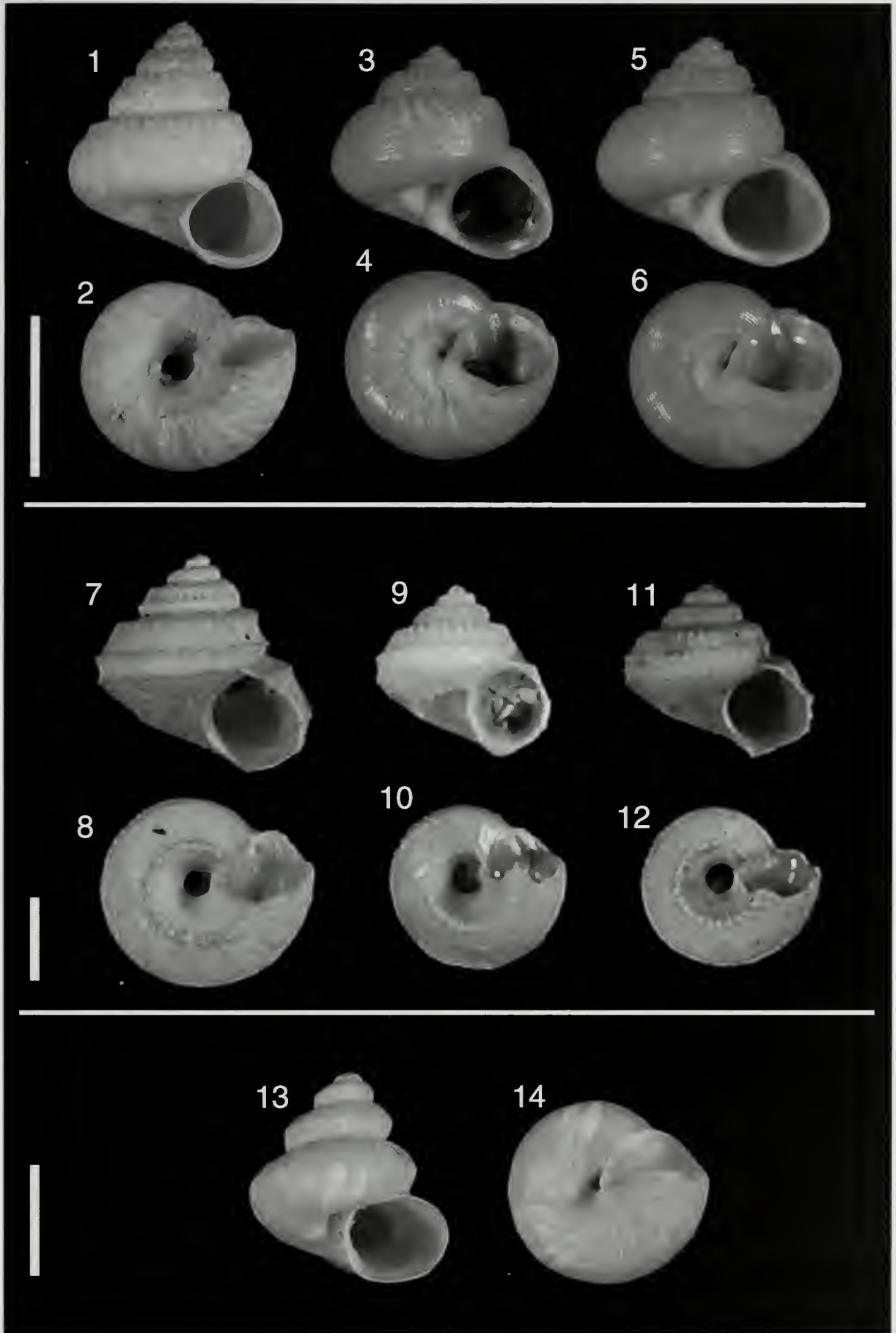
3–6. *Ethalia azorensis* (Watson, 1886).

3–4. Holotype BMNH (1887.2.9.332). Azores, 823 m (CHALLENGER, stn 75), 8.1 x 8.4 mm; 5–6. NNML, Azores, 250 m (CANCAP–V, stn 5.121), 9.3 x 9.3 mm.

7–12. *Solariella amabilis* (Jeffreys, 1865).

7–10. MNCN, golfe of Huelva, 585–546 m. 7–8. 3.3 x 3.3 mm; 9–10. 2.4 x 2.6 mm. 11–12. Cadiz, NNML, 2.3 x 2.7 mm.

13–14. *Haloceras carinata* (Jeffreys 1883), Madeira, Ilheu de Buglio, Ihlas desertas, 140–160 m, B. Van Heugten coll., 6.6 x 6.3 mm.



From the same Azores area, the new species may also be compared to *S. azorensis* (Watson, 1886) (Figs 3–6), but this similar in size species has a less elevated spire with a ratio H/W about 1, apical granular spiral cords on whorls aligned along prosocline axial ribs and abapical ones smooth on last whorl, and a thick funicle partly filling the umbilicus (this feature lead us to think that this species could be moved from the genus *Solariella* to the genus *Ethalia* Adams & Adams, 1854, or related *Rossiteria* Brazier, 1895). *S. cancapae* n. sp. is also superficially similar to *Haloceras carinata* (Jeffreys 1883) (Vanikoroidea) (Figs 13–14), former known as *S. constricta* Dall, 1927 and *Cithua carinata* Jeffreys, 1883 (Waren & Bouchet, 1991 and 1993) from northern Atlantic (from southern Georgia to southern Florida and from off Portugal to Madeira), but this much smaller species has more convex whorls, a thinner subsutural beaded spiral cord if present, and a much narrower umbilicus.

Etymology. Of CANCAP (Latin) – after the CANCAP campaigns that brought this species to our knowledge.

ACKNOWLEDGEMENTS

We would like to thank P. Bouchet (Muséum national d'Histoire naturelle, Paris) for reading the manuscript, giving advice and access to the malacological resources of the MNHN. We also warmly thank V. Héros (MNHN) for her dynamic help in our search of types and various scientific papers.

We are very grateful to J.Goud (NNML), K.Way and A.McLellan (BMNH), E.Rolan (MHNSC), E.Schwabe (ZSM) and O. Soriano (MNCN) for the loan of types and specimens belonging to their institutions, F.Deniz, J.Hernandez-Otero and B.Van

Heugten for the loan of specimens of their collections and to A.Gittenberger (NNML) for providing documents about CANCAP-project.

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