ZOOLOGISCHE MEDEDELINGEN

UITGEGEVEN DOOR HET

RIJKSMUSEUM VAN NATUURLIJKE HISTORIE TE LEIDEN
(MINISTERIE VAN WELZIJN, VOLKSGEZONDHEID EN CULTUUR)

Deel 58 no. 1 13 juni 1984 ISSN 0024-0672

NOTES ON *CANCELLARIA MINIMA* REEVE (MOLLUSCA: NEOGASTROPODA: CANCELLARIACEA)

by

A. VERHECKEN

Verhecken, A.: Notes on *Cancellaria minima* Reeve (Mollusca, Cancellariacea). CANCAP-project. Contributions, no. 44.

Zool. Med. Leiden 58(1), 13-vi-1984: 1-9, figs. 1-7. — ISSN 0024-0672.

Key words: Mollusca; Cancellariacea; taxonomy; distribution; Madeira; Morocco.

Cancellaria minima Reeve, 1856, is redescribed after three syntypes and 59 shells recently collected near Madeira and off Morocco. The few literature data concerning this poorly known species are summarized. Its range appears to be situated between 27° and 37°N and 5° and 17°W, as far as known mainly between 78 and 680 m depth.

A. Verhecken, Ed. Arsenstraat 47, B-2510 Mortsel, Belgium.

INTRODUCTION

Cancellaria minima Reeve, 1856, is a poorly known species from off Madeira and the Atlantic coast of the southern Iberian peninsula. It was described (Reeve, 1856: species 77) after specimens of Cuming's collection, from an unknown locality. The syntypes are kept in the British Museum (Natural History [= BM], no. 1968410; although the label mentions four specimens, only three shells are present.

Monterosato (1878: 97, note 2), for the first time, gave a locality for *C. minima*, referring to "*C. minima* H. Adams, delle Canarie". Jeffreys (1885: 49), reporting on the material of the "Porcupine"-expeditions, mentioned five specimens from off the Gulf of Cadiz; he also referred to specimens found at Madeira, Gibraltar and the Canary Islands by McAndrew. Sykes (1911: 332), who studied additional "Porcupine"-material, added two stations, also off the Gulf of Cadiz. This is practically all what has been published on the distribution of *C. minima*.

MATERIAL

C. minima is very rare in European museum collections. BM has the types, two McAndrew specimens from Madeira, and the "Porcupine"-material studied by Jeffreys and by Sykes. Only two more specimens, also from Madeira, have been located: one in the Dautzenberg collection of the "Koninklijk Belgisch Instituut voor Natuurwetenschappen" at Brussels, and one in the "Laboratoire de Biologie des Invertébrés Marins et de Malacologie" of the "Muséum National d'Histoire Naturelle" at Paris.

During the first CANCAP-expedition (March 1976), with the Dutch research vessel "Onversaagd", 58 specimens of *C. minima* were collected, all with a Van Veen grab, at depths ranging from 30 to 1,085 m near Madeira; one specimen was collected off Morocco (station 120). Out of a total of 158 CANCAP-I stations, 33 were sampled with the Van Veen grab, the only sampling gear used that could produce small specimens. *C. minima* was found at 12 of these 33 stations and, therefore, cannot be considered a rare species. This confirms Watson's view (1897: 277), repeated by Nobre (1937: 23), that the species is "very common everywhere in Madeira".

CANCAP-I stations for *C. minima*

Date	Station	Coordinates	Depth(m)	Specimens	Bottom
W. of Deserta Grande:					
8.iii	17	32°31'N 16°32'W	120	2	fine sand
8.iii	20	32°31'N 16°32'W	144	11	fine sand, clay, shell gravel
8.iii	19	32°29'N 16°31'W	30	1	fine sand
8.iii	21	32°29'N 16°32'W	228-240	14	sand, shell gravel
SE of Madeira:					
9.iii	25	32°42'N 16°45'W	78	6	sand, some clay, shell gravel
9.iii	29	32°41'N 16°46'W	340	7	sandy clay
9.iii	31	32°40'N 16°43'W	1,085	1	clay
12.iii	57	32°43'N 16°43'W	100-122	9	shells, sand
13.iii	62	32°40'N 16°46'W	680	4	sandy clay
13.iii	67	32°44'N 16°41'W	30	1	sand, marl, shell gravel, clay
Near South coast of Madeira:					
15.iii	84	32°38'N 16°51'W	86	1	sand, shells, some clay
Off Cape Hadid, Morocco:					
25.iii	120	32°02'N 09°56'W	340	1	clay

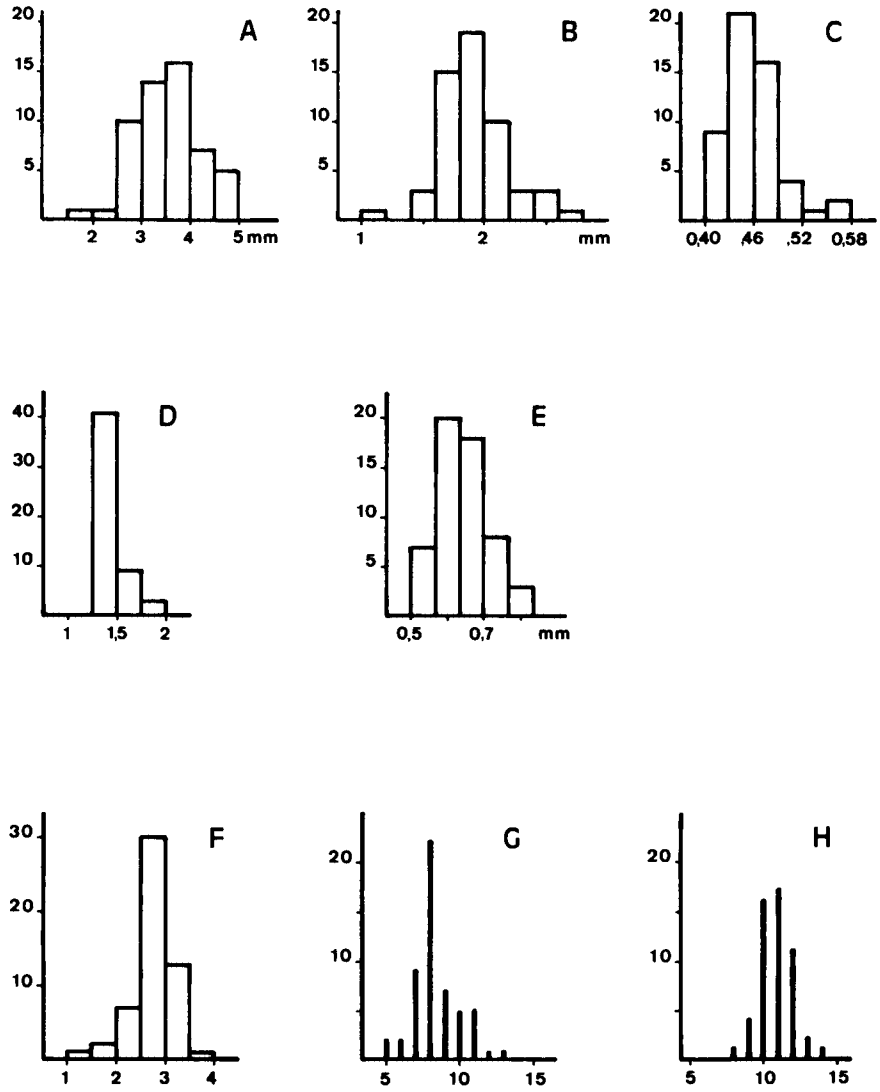

Fig. 1. Shell characters of the "Onversaagd" specimens. In ordinate for all graphs: number of specimens. In abscissa: shell height (A), width (B), height of aperture : total shell height (C); protoconch, number of whorls (D), maximum diameter (E); teleoconch, number of whorls (F), number of spirals on penultimate whorl (G), number of axial ribs on last whorl (H).

DESCRIPTION

The shell is fusiform, white to pale brownish, sometimes with a diffuse whitish band near the shoulder of the last whorl. Full-grown specimens cannot be recognized as such, i.e., by special characters of the aperture. In the CANCAP material there are up to 4.75 whorls (counted according to Ehrmann, 1933: 21, fig. 12) and the maximum dimensions are 4.8 mm for height and 2.6 mm for width, with a mean ratio height: width of 1.80 (s = 0.15; N = 50). Two of the three syntypes are clearly larger, however, viz., 5.5 and 6.3 mm high and 3.1 and 3.4 mm wide, with 4.5 and 5.0 whorls, respectively.

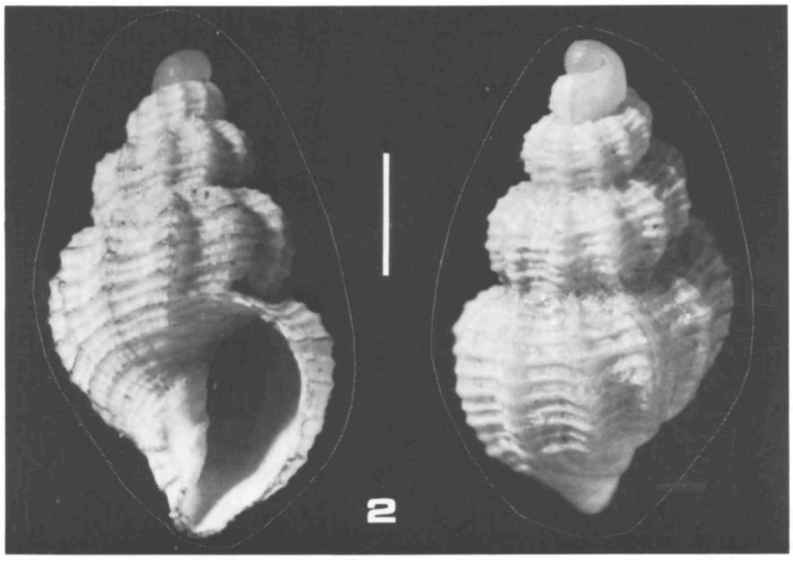

Fig. 2. Ventricose form of *C. minima*. Scale bar = 1 mm. Syntype, BM 1968410, 3.9 × 2.4 mm. Photographs from negatives provided by the Trustees of the BM(NH).

The protoconch is relatively large, with a mean diameter of 0.62 mm (s = 0.07; N = 56) and a mean number of 1.31 whorls (s = 0.14; N = 53). The nucleus is submerged and slightly heterostrophic. The protoconch is sculptured with thin spiral lines; on its last quarter of a whorl these spirals are crossed by thin orthocline transverse lines, very faint at first, but stronger near the edge of the protoconch, which is clearly marked and almost straight.

The teleoconch sculpture starts immediately after the protoconch edge with broad, rounded spiral ridges; their mean number on the visible part of the first teleoconch whorl is 4.8 (s = 0.8; N = 48), it is 7.5 (s = 1.6; N = 46) on

the second. From the second teleoconch whorl on, many specimens have a secondary sculpture of fine spirals between the ridges, varying from very faint to almost equal to the primary sculpture. The axial sculpture consists of rounded ribs, varying from faint to strong. The mean number of axial ribs per whorl on the teleoconch whorls remains stable during shell growth; we found 11.1 (s = 1.2; N = 46) ribs on the first teleoconch whorl, 11.2 (s = 1.3; N = 46) on the second, and 11.0 (s = 0.9; N = 14) on the third. In many specimens there is a microsculpture of growth-lines crossing the spirals.

Fig. 3. Slender form of *C. minima*. Scale bar = 1 mm. CANCAP-I Station 21, 3.3 × 1.7 mm. Photograph: SEM Laboratory, University of Basel; M. Düggelin, operator.

The whorls are inflated and may be slightly shouldered; in specimens with conspicuous spiral ridges, the one near the shoulder of the whorl is somewhat more prominent than the others. The sutures are impressed to deeply impressed. The aperture is widely elongate and constricted above and below; there is a faintly indicated siphonal canal. The outer lip is thin; there are no internal lirations, but the spiral ridges of the outside of the last whorl can be seen from the aperture through the thin shell-wall. The columella is straight, with two faint folds situated half-way the inner lip. There may be traces of a very thin parietal callus. The umbilicus is covered by the columellar callus in most specimens; if open it is only a very narrow slit.

There is some variation in general shape, i.e., in slenderness (figs. 2-3). In the more slender specimens the sculpture is less prominent than in the other shells. This applies especially to the axial ribs, which are quite variable in

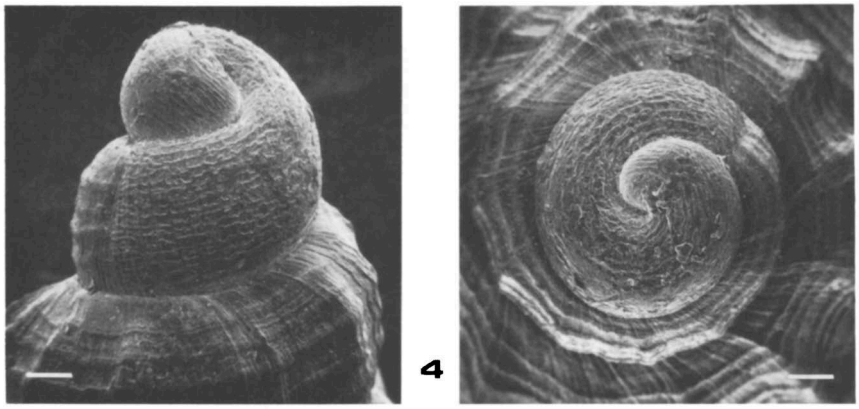

Fig. 4. Specimen of fig. 3: protoconch. Scale bar = 0.1 mm. Left: lateral view; right: apical view. Photograph: see fig. 3.

strength. The axial ribs are straight in the more obese forms and rather sigmoid in the slender specimens. The latter form has been callec *C. subangulosa* Wood by some authors (see remarks); there is no morphological gap between this form and less slender specimens of *C. minima.*

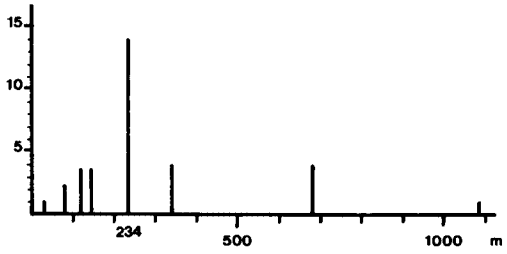

FIG 5

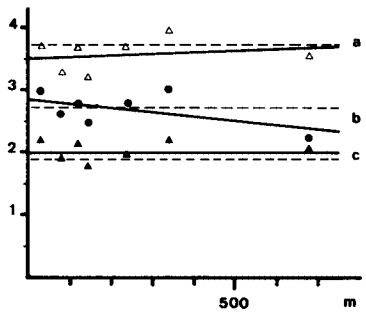

FIG 6

Fig 5. Arithmetic average number of specimens taken per grab (ordinate) in function of depth (abscissa).

Fig. 6. Shell characters, averaged per depth-sample. In abscissa: depth; in ordinate: a — mean shell length in mm, b — mean number of teleoconch whorls, c — mean shell width in mm. Solid line: linear best fit for data-points, calculated by method of least squares; dashed line: corresponding value for complete lot of 58 specimens.

DISTRIBUTION

Bathymetric distribution.—As may be concluded from fig. 5, the CANCAP-material studied had been collected mainly between 78 and 680 m depth, with a maximum density near 230 m depth. The average height, width, and number of whorls do not differ substantially in function of the depth, and are the same as the respective average for the whole lot of 58 specimens (fig. 6).

Geographic distribution.—All localities where *C. minima* is known from are plotted on fig. 7. Most samples are from near Madeira. CANCAP-I station 120, off Cape Hadid (Morocco), is the first record for *C. minima* from near the NW. African coast. Localities off the Gulf of Cadiz ("Porcupine" material) are well documented, but Gibraltar and the Canary Islands might go back as records to McAndrew (1856: 132), citing a "*Cancellaria*? sp. ined." from Gibraltar, the Canary Islands and Madeira. Jeffreys (1885: 49) studied McAndrew's material and identified these specimens as *C. minima* and a variety of it, resembling *C. subangulosa.*

The range of *C. minima*, as far as known, is an area roughly between 27° and 37° N and 5° and 17° W.

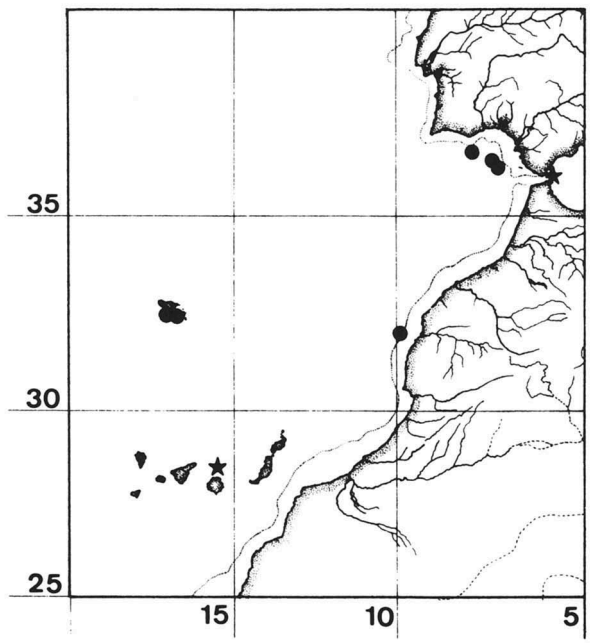

Fig. 7. Localities reported for *C. minima*: dots, checked on museum-specimens; asterisks, literature-records only.

REMARKS

Hidalgo (1917: 188) and after him Nobre (1938-1940: 153) indicated a height of 13 mm for *C. minima,* which must be erroneous. Neither in the "Museo Nacional de Ciencias Naturales" at Madrid, nor in the Nobre collection of the "Instituto de Zoologia" at Porto, material of *C. minima* identified by Hidalgo or Nobre, respectively, was found and, therefore, it remains uncertain what caused this error.

There are no soft parts left in any of the CANCAP specimens studied, indicating that not a single specimen had been collected alive. Several shells are heavily corroded or damaged by boring organisms. Consequently, data concerning the ecology of the animal cannot be given. The paucispiral protoconch (fig. 4) suggests that the pelagic veliger stage is short, if it exists at all.

Nordsieck (1968: 151) assigned the present species to *Sveltella* Cossmann, which he considered a subgenus of *Narona* H. & A. Adams. Because the systematics of the cancellariid genera are still uncompletely understood, the genus name *Cancellaria* is used in a wide sense in the present paper; future research might yield data enabling a further detailing within the familiy Cancellariidae.

Jeffreys (1885: 49) compared *C. minima* with the fossil species *C. subangulosa* Wood, 1848. According to its type-specimens (BM G 1952), there are no columellar plaits in the latter species. To answer the question whether *C. minima* and *C. subangulosa* are closely related indeed, some additional "species" described from the European Tertiary should be studied.

C. minima Reeve should not be confused with *C. minima* Kaunhowen (1897: 104), an Upper Cretaceous species from Maastricht, Netherlands, for which the nomen novum *Uxia kaunhoweni* was introduced by Cossmann (1899: 38).

ACKNOWLEDGEMENTS

Thanks are due to Dr. E. Gittenberger (Rijksmuseum van Natuurlijke Historie, Leiden) for making this material available for study, for critically reading the manuscript and for helpful suggestions; and to Dr. P. Bouchet (Laboratoire de Biologie des Invertébrés Marins et de Malacologie, Paris), Dr. A. Luque (Museo Nacional de Ciencias Naturales, Madrid), Dr. M. T. Madureira (Instituto de Zoologia, Porto), Dr. J. Van Goethem (Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels), and Miss K. Way (British Museum (Natural History), London), for permission to study the collections in their respective Institutes. The loan of photographic material by Dr. P. Jung (Naturhistorisches Museum, Basel) and Miss K. Way is gratefully acknowledged.

REFERENCES

Adams, H. & Adams, A., 1853–54. The genera of recent Mollusca 1: 1–484. London.

Cossmann, M., 1889. Catalogue illustré des coquilles fossiles de l'Eocène des environs de Paris, IV, 4. — Ann. Soc. Roy. Malac. Belg. 24: 216–228, pls. 7–8.

Cossmann, M., 1899. Essais de paléoconchologie comparée 3. Toxoglossa (suite). Cancellariidae: 1–41, pls. 1–2. Paris.

Ehrmann, P., 1956. Mollusca. In: P. Brohmer et al. (ed.), Die Tierwelt Mitteleuropas 2 (1): 1–264, figs. 1–147, pls. 1—13. Leipzig.

Hidalgo, J. G., 1917. Fauna malacológica de España, Portugal y las Baleares, moluscos testaceos marinos: 1–752. Madrid.

Jeffreys, J. G., 1885. On the Mollusca procured during the "Lightning" and "Porcupine" expeditions 1868–1870, 9. — Proc. Zool. Soc. 1885: 27–62, pls. 4–6.

Kaunhowen, F., 1897. Die Gastropoden der maestrichter Kreide. — Palaeontologische Abhandlungen 4 (new series), 1: 3–132, pls. 1–13.

McAndrew, R., 1856. Report on the marine testaceous Mollusca of the N. E. Atlantic and neighbouring seas. — Report of the British Association for the Advancement of Science: 101–158.

Monterosato, T., 1878. Enumerazione e sinonimia delle conchiglie mediterranee. — Giorn. Sci. Nat. Econom. 13: 62–115.

Nobre, A., 1937. Moluscos testaceos marinhos do arquipélago da Madeira. — Mem. Est. Mus. Zool. Univ. Coimbra 1 (98): 1–101.

Nobre, A., 1938–40. Fauna malacologica de Portugal: I. Moluscos marinhos e das águas salobras: i-xxxii, 1–808, pls. i–xix, 1–87. Porto.

Nordsieck, F., 1968. Die europäischen Meeres-Gehäuseschnecken (Prosobranchia) vom Eismeer bis Kapverden und Mittelmeer: i-viii, 1–273, pls. 1–31. Stuttgart.

Reeve, L. A., 1856. Monograph of the genus Cancellaria. — Conchologia Iconica 10: pls. 1–18, textpages unnumbered. London.

Sykes, E. R., 1911. On the Mollusca procured during the Porcupine expedition 1869–70. Supplemental notes, 4. — Proc. Malac. Soc. Lond. 9: 331-348, figs. 1–4.

Watson, R. B., 1897. On the marine Mollusca of Madeira; with descriptions of 25 new species, and an index-list of all the known seadwelling species of that island. — Journ. Linn. Soc., Zoology 26: 233– 329, pls. 19–20.

Wood, S. V., 1848. A monograph of the Crag Mollusca, 1. Univalves: v-xii, 1–208, pls. 1–21. London.