

The family Cingulopsidae (Prosobranchia: Rissoidea) in the Cape Verde Islands, with the description of one new species

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Two species belonging to the family Cingulopsidae, genus *Eatonina*, found in the Cape Verde Islands, are dealt with, viz. *E. (Coriandria) vermeuleni* Moolenbeek, 1986, and *E. martae* n. sp.

Key words: Gastropoda, Prosobranchia, Cingulopsidae, *Eatonina*, taxonomy, Cape Verde Islands.

INTRODUCTION

Continuing our studies on several groups of marine gastropods from the Cape Verde Islands, we deal in this paper with the family Cingulopsidae Fretter & Patil, 1958. This family was established on the basis of anatomical studies on the European species *Cingulopsis fulgida* (J. Adams, 1797).

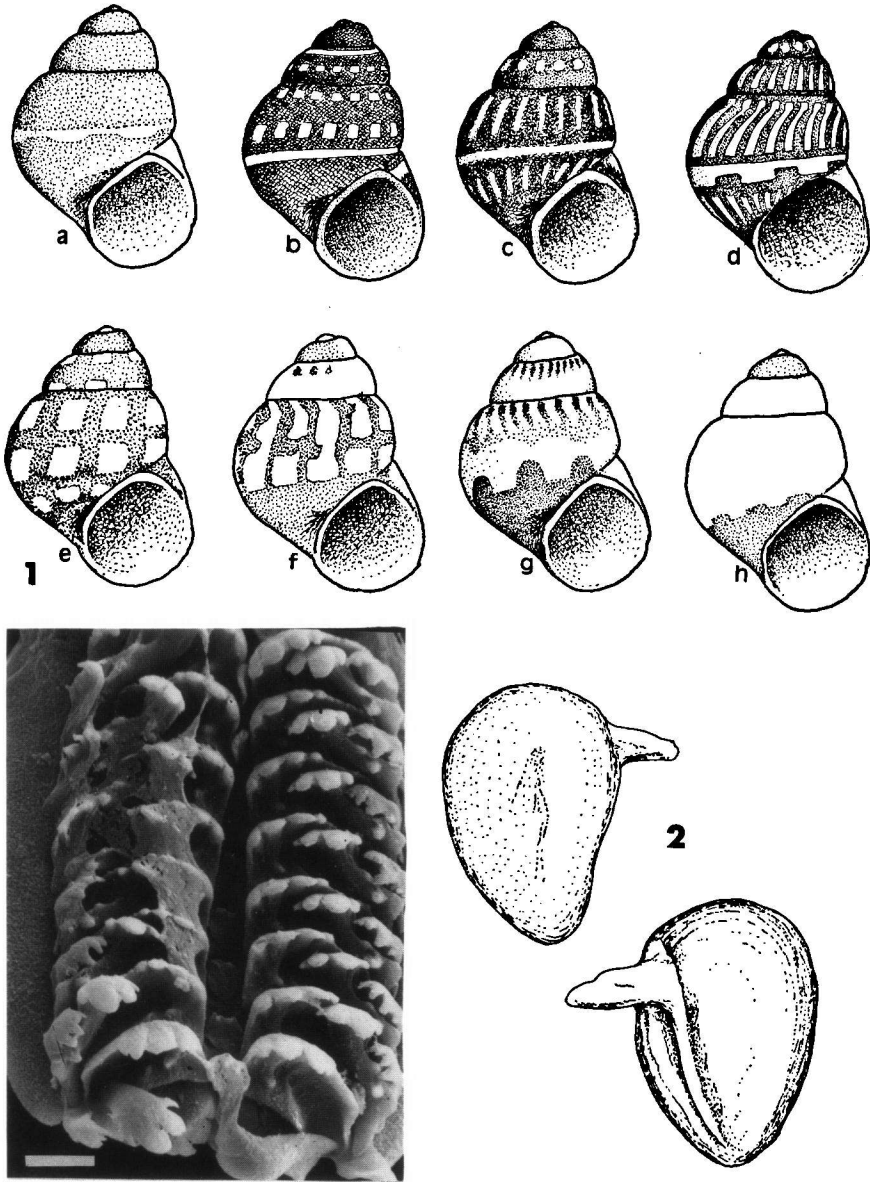
Recently Ponder & Yoo (1980) have published a revision of the genera of this family; this classification and nomenclature is adopted here. Amati (1987) reviewed the European Cingulopsidae, concluding that six species of this taxon are present in this area. Verduin (1988) discussed and illustrated many small rissocean species from Europe, Madeira and the Canary Islands, among them four species of cingulopsids.

In a recent paper Ponder (1989) revised the Mediterranean species. Only two of the genera dealt with by that author are also represented in the Atlantic Ocean, viz. *Eatonina* Thiele, 1912, with the subgenera *Eatonina* s. s. and *Coriandria* Tomlin, 1917, and *Tubbreva* Ponder, 1965. On the other hand, Van Aartsen et al. (1984) considered *Coriandria* a distinct genus.

According to Ponder (1989), the European species should be classified as follows: *E. (Eatonina) ochroleuca* (Brusina, 1869), *Eatonina (Coriandria) cossurae* (Calcara, 1841), *E. (C.) fulgida* (J. Adams, 1797), *E. (C.) globulina* (Monterosato, 1884), *E. (? C.) celata* (Monterosato, 1884), and *Tubbreva micrometrica* (Aradas & Benoit, 1876). Six of these species are endemic to the Mediterranean Sea, whereas *E. (C.) fulgida* extends to the European Atlantic coasts, Morocco and the Canary Islands. *E. vermeuleni* was described by Moolenbeek (1986) from San Nicolau Island in the Cape Verde Archipelago; recently, Moolenbeek & Faber (1991) described the first cingulopsid species recorded in the western Atlantic, *E. laurensi*.

Ponder (1988) classified the family Cingulopsidae with the superfamily Cingulopsoidea next to the Rissoidea.

The species of the Cingulopsidae have a minute, globose to pupoid, smooth shell, with a blunt apex. Some small species of the Rissoidae and Barleeidae have similar shells. However, the Cingulopsidae can be clearly differentiated by the structure of the operculum, the radula and anatomical characters (see Ponder & Yoo, 1980). The



Figs. 1-3. *Eatonina vermeuleni*, 1, shells with different colour patterns, form a-b, Furna (Brava); c, Salamanca (S. Vicente); d, Furna (Brava); e, Regona (Sal); f-h, Furna (Brava); 2, operculum; 3, radula (scale bar 0.01 mm).

operculum has a median ridge with a peg on the inner surface. The taenioglossan radula has a minute central tooth with a small to obsolete cusp; the lateral two teeth are large and variable in form.

MATERIAL AND METHODS

The methods used and the localities that have been visited are described in detail in another paper (Templado & Rolán, in press). More than 1200 specimens (empty shells and living animals) regarded as members of the Cingulopsidae have been used in the present study. This material has been collected from eight different islands of the Cape Verde Archipelago, viz. Sal, Boavista, Santiago, Brava, Branco, Raso, Santa Luzia and San Vicente. The largest part of the material is kept in the collection of E. Rolán; the rest is from the Centro de Zoologia de Lisboa (= IICT) and the Museo Nacional de Ciencias Naturales de Madrid (= MNCN). Paratypes of the new species have been deposited in the collections of the following institutes: American Museum of Natural History, New York (= AMNH); The Natural History Museum, London (= BMNH); Muséum National d'Histoire Naturelle, Paris (= MNHN); Nationaal Natuurhistorisch Museum, Leiden (= RMNH); Zoölogisch Museum, Amsterdam (= ZMA). Under the heading 'Material' the number of specimens recorded is indicated between brackets.

RESULTS

Family Cingulopsidae Fretter & Patil, 1958

= Coriandriidae Nordsieck, 1972

= Eatoninidae Golikov & Starobogatov, 1975

Eatonina (Coriandria) vermeuleni Moolenbeek, 1986

Material. — Sal: Regona, at 1 m (10); Mordeira (2); Praia do Cascalho, at 4 m on seaweeds (21 and 25 alive); Rabo de Junco, at 5 m (10). Boavista: Sal-Rei, at 3 m on seaweeds (2); Derrubado, at 2 m (4); Teodora Bay, at 4 m (16). Santiago: Tarrafal, at 5 m (42) and on *Laurencia intermedia* (10 alive); Prainha, at 1 m on *Dictyopterus* sp. and on *Laurencia majuscula* (3 alive); Praia Abaixo, at 3 m on *Hypnea cervicornis* and *Dictyota dichotoma* (34 alive). Brava: Furna, at 9 m on *Hypnea cervicornis* and *Jania crassa* (635 & 34 alive); Pedrinha, at 8 m (12). San Vicente: Salamança Bay, at 1 m deep on seaweeds of *Laurencia majuscula*, *Dictyota dichotoma* and *Hypnea cervicornis* (30 alive); Calhau, in *Galaxaurus* communities (2 alive); Porto Mindelo, at 20 m (1).

Description. — The shell is squat-conical in general shape, smooth, with a small spire and a large and globose body whorl. It is less than 1 mm in length. There is a narrow umbilical chink, but the shell is not really umbilicate.

Only one colour pattern is mentioned in the original description, based on only five specimens. After study of several hundreds of shells, we can conclude that the shell is very variable in colour pattern from one population to another, but within a given population only few patterns usually predominate. The main colour patterns can be described as follows.

Pattern A (fig. 1a): brown background colour with a light line along the periphery [very uncommon and only present in Furna (Brava)].

Pattern B (fig. 1b): very dark brown with two spiral lines of small rectangles and a continuous light line along the periphery [only observed in Furna (Brava)].

Pattern C (fig. 1c): axial lines above and below the continuous spiral line [predominates in Salamança and Mindelo (S. Vicente), Tarrafal (Santiago), and Furna (Brava)].

Pattern D (fig. 1d): the subsutural axial lines are slightly curved and the continuous spiral band has rectangular areas [in Tarrafal (Santiago) and Furna (Brava)].

Pattern E (fig. 1e): bigger rectangles in three spiral bands [typical in Regona and Praia do Cascalho (Sal), and in Teodora Bay and Derrubado (Boavista)].

Patterns F and G (figs. 1f and g): both similar, with a white dorsal part of the last whorl, a dark brown base and subsutural spots [some specimens in Regona and Mordeira (Sal), Teodora Bay (Boavista), Pedrinha and Furna (Brava)].

Pattern H (fig. 1H): an extreme form, almost completely white [only some specimens in Furna (Brava)].

In contrast, the general form of the shell is very constant, and only slight differences in the convexity of the whorls and in the diameter/length ratio can be observed.

Head-foot whitish without any pigmentation, with long cephalic tentacles; neither pallial nor metapodial tentacles have been observed. Operculum (fig. 2) white, corneous and smooth outside, with a prominent peg inside.

The radula (fig. 3) shows a short central tooth with two little cusps on the cutting edge without any denticles on the inner part. Lateral teeth with four subequal, wide and blunt cusps.

Remarks. — The head-foot, opercular and radular characters indicate that this species belongs to the Cingulopsidae as Moolenbeek (1986) suggested after studying only shell characters. Ponder (1989) tentatively included this species in the subgenus *Eatonina* because the colour patterns and shell form are similar to those of *E. (E.) ochroleuca*. However, its radular characters, described in this paper, agree with those of *Coriandria* (see Ponder & Yoo, 1980). We consider the radular characters more important than the shell form and colour pattern with regard to the generic/subgeneric arrangement in this family. Therefore, we refer *E. vermeuleni* to the subgenus *Coriandria*.

***Eatonina martae* n. sp.**

Material. — Sal: Palhona, at 0.5 m (3); Mordeira, at 4 m (2). Boavista: Derrubado, at 8 m (1). Santiago: Tarrafal, at 4 m (4); Brava: Furna, at 20 m (15). San Vicente: Porto Mindelo, at 25 m (103). Branco and Raso (MNCN): in front of Ilheu Branco, dredged at 25 m (38); between Branco and Raso, dredged at 50 m (106). Santo Antão, from Mission Hidrografica Portuguesa 1947-49 (IICT): Porto Novo, at 32 m (20) (sample 470), at 61 m (50) (sample 630), at 273 m (15) (sample 1123); South of Santo Antão, at 337 m (14) (sample 197), at 60 m (5) (sample 243); at 111 m (10) (sample 241); at 43 m (28) (sample 688).

Type material. — Holotype (1.0 mm in length and 0.6 mm wide) and 4 paratypes from the area between Branco and Baso, deposited in MNCN, no. 15.05/833. Five paratypes from the type locality have been deposited in each of the following institutes: AMNH, BMNH, MNHN, RMNH, ZMA, and twenty in the collection of E. Rolán.

Description. — Shell (fig. 4) minute (0.7-1.1 mm in length, 0.35 mm in diameter), smooth, semitransparent but quite solid, with a blunt apex. Slightly convex whorls, not well marked suture, narrow spire with a straight profile, wide and a little globose body whorl, umbilicate; small and subcircular aperture, with a thin outer lip.

Protoconch $1\frac{1}{4}$ whorls, smooth. Teleconch of about three whorls without any sculpture. The colour of the shell is uniformly pale brown, but the apex is paler. A

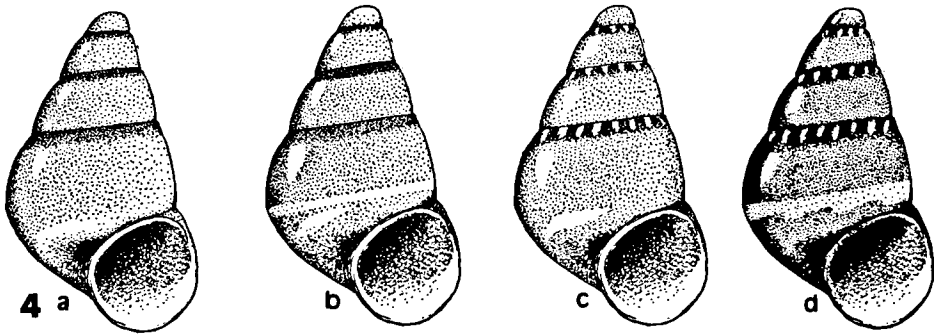


Fig. 4. *Eatonina martae* n. sp., shells with different colour patterns, from area between Branco and Raso. The pattern d is the one of the holotype.

subsutural darker band is present. A row of whitish spots is present on top of the subsutural darker band in more than half of the specimens studied. A paler band in the lower part of the periphery exists in about one third of the specimens. Therefore, the following four main colour patterns can be observed.

Pattern A (fig. 4a): uniform pale brown, with a darker subsutural band.

Pattern B (fig. 4b): a paler band below the periphery.

Pattern C (fig. 4c): white spots on the darker subsutural band, without the paler one.

Pattern D (fig. 4d): with the subsutural white spots and the paler band. This is the pattern of the holotype.

All these colour patterns can be present within a single population. Small differences can be observed in the colour patterns B, C and D, because the subsutural white spots may vary in size, sometimes extending axially; the paler band is discontinued in a few specimens. The morphology of the shell is very constant.

No data on the soft parts are available.

Remarks. — This species is tentatively placed in the family Cingulopsidae, genus *Eatonina*, on shell characters only. For a definitive placement, the study of the soft parts would be necessary.

E. martae can be easily differentiated from *E. (C.) vermeuleni* by its more slender and solid shell, which is deeply umbilicated. The colour patterns are different in these two species. None of the European species of the genus *Eatonina* can be confused with *E. martae*.

While *E. (C.) vermeuleni* is abundant in seaweeds in shallow water throughout the Cape Verde coasts, *E. martae* has been found only in sediments below 10 m; the majority of the specimens has been collected deeper than 50 m.

Etymology. — Named after Marta Calvo, for her invaluable cooperation in sorting and classifying the material obtained during the I Expedición Científica Ibérica al Archipiélago de Cabo Verde.

ACKNOWLEDGEMENTS

The authors are grateful to the Dirección General de Cooperación Técnica y Científica del Ministerio de Asuntos Exteriores (Spain) which provided financial support for

the I Expedición Científica Ibérica al Archipiélago de Cabo Verde. We also wish to thank the authorities of the Republic of Cape Verde, who gave us the facilities for undertaking this expedition, and to TAP (Air Portugal) who kindly transported all scientific material. We are also grateful to Rosario Moran, Marta Calvo and Ignacio Gil for their help with the sorting and arrangement of all the material from this expedition, to Jorge Otero Schmitt for his support with living material and the identification of the algae and, finally, to everybody else who helped us during our trips to Cape Verde.

We also thank Matthew Harffy for his help with the English text.

The scanning photograph of the radula was taken by Maria de los Angeles Rodríguez Cobos of the Facultad de Medicina (Anatomía) of Santiago de Compostela.

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