



## Notes on Mediterranean *Dizoniopsis* (Gastropoda: Cerithiopsidae), with the description of two new species

### Apuntes sobre los *Dizoniopsis* (Gastropoda: Cerithiopsidae) del Mediterráneo, con la descripción de dos especies nuevas

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*Recibido el 8-XI-2010. Aceptado el 10-XI-2010*

#### ABSTRACT

Species-level taxonomy is reviewed for the Mediterranean Cerithiopsidae with a sculpture formed by two rows of beads. The two previously known species are assigned respectively to *Dizoniopsis coppolae* (Aradas, 1870) and *D. concatenata* (Conti, 1864) and are held as distinct from the fossil type species *Dizoniopsis bilineata* (Hörnes, 1848). Two additional species, which are found sympatrically with these in the Strait of Gibraltar, are described as new. *Dizoniopsis micalii* Cecalupo and Villari 1997 is reassigned to the genus *Cerithiopsis*.

#### RESUMEN

Se revisa la taxonomía de las especies mediterráneas de Cerithiopsidae con escultura formada por dos filas de gránulos. Las dos especies previamente conocidas se asignan respectivamente a *Dizoniopsis coppolae* (Aradas, 1870) y *D. concatenata* (Conti, 1864) y se consideran distintas de la especie tipo fósil *Dizoniopsis bilineata* (Hörnes, 1848). Dos especies adicionales, que se encuentran en el estrecho de Gibraltar en simpatria con las anteriores, se describen como nuevas. *Dizoniopsis micalii* Cecalupo y Villari 1997 se reubica en el género *Cerithiopsis*.

#### INTRODUCTION

The Cerithiopsidae are a family of small gastropods, distributed worldwide in tropical and temperate shelf environments. There are many genera and species, difficult to recognize because there is very little differentiation in shell morphology. All may be characterized by small (3 to 10 mm) size, brown to dark colour, high spire and

usually a spiral sculpture of beaded cords. Cerithiopsidae are specialized for feeding on sponges and this feature is shared with the Triphoridae, another family in which differentiation at generic level is not reflected in shell characters. The question of the relationship between the two families remains beyond the scope of this paper.

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The genus-level taxonomy of the Cerithiopsidae remains to be worked out in most areas of the world, including Europe. The most relevant contribution is that of MARSHALL (1983) based on New Zealand species. The Mediterranean species have been described in numerous papers, scattered in the literature and usually dealing with one or two species at a time. It was our intention, many years ago, to provide a revision of all European species known to date. For this we accumulated substantial data, but the revision was not completed and, meanwhile, most of the species then undescribed were named by other authors.

Among European cerithiopsids, a noteworthy and easily recognized morphological group is composed by species in which the teleoconch sculpture is composed of only two rows of beads until at least the penultimate whorl. In most of the other Mediterranean species of the family, there are two (rarely three) cords on the first teleoconch whorl and a third one is added very early, adapically along the suture.

SACCO (1895) introduced *Dizoniopsis* as a subgenus of *Cerithiopsis*, for

Neogene fossils which were said to differ by having two rows of granules per whorl only. This character is shared by some Recent Mediterranean representatives, for which the name of the Miocene type species has been repeatedly used. There are two clearly different Recent species, long recognized by Mediterranean authors, but much confusion has arisen regarding which name should be used for one or another of them.

This report is mostly based on material collected around Ceuta, in the westernmost part of the Mediterranean, during a workshop organized by Philippe Bouchet (Muséum National d'Histoire Naturelle, Paris) and José Carlos García Gómez (Universidad de Sevilla), in May 1986. We here summarize published records on the two previously known species, and describe two additional species from the Strait of Gibraltar.

Abbreviations:

MNHN Muséum National d'Histoire Naturelle, Paris  
sh. shell(s)  
spm live taken specimen(s)

Genus *Dizoniopsis* Sacco, 1895

Type species: *Cerithium bilineatum* Hörnes, 1848, by original designation (Steinebrunn, Middle Miocene, Vienna Basin)

The type species of *Dizoniopsis* has been illustrated by LANDAU, LA PERNA AND MARQUET (2006) who designated a lectotype. The illustrated protoconch is incompletely preserved but conserves nearly two whorls, and therefore is presumably multispiral with nearly three whorls if complete. The sculpture of this protoconch consists of two moderate spiral keels on the penultimate whorl, the abapical one becoming concealed by the suture on the last whorl, and of flexuose axial riblets forming a reticulate pattern with the keels.

This protoconch morphology differs radically from that of the two Recent

Mediterranean species, adequately illustrated and discussed by PALAZZI AND VILARI (2001). Conversely, it is quite similar to the protoconch of the Recent *Dizoniopsis apexclarus* Rolán, 2007, described from the islands of the Gulf of Guinea, which differs in having a single keel on the penultimate whorl and hardly more than two whorls in total.

The outcome is that the name *Dizoniopsis bilineata* cannot be used for a Recent Mediterranean species. Other available names which have been used for this group of species, viz. *Cerithiopsis clarkii* Forbes and Hanley, 1851, *Cerithium concatenatum* Conti, 1864 and

*Cerithiopsis coppolae* Aradas, 1870, are discussed hereafter.

An additional Mediterranean species was originally described as *Dizoniopsis micalii* by CECALUPO AND VILLARI (1997) and is still currently held in this binomen. It differs from the species discussed herein in both the protoconch and teleoconch

characters, and we consider it better assigned to *Cerithiopsis* s.l. Its protoconch has axial ribs resembling *Cerithiopsis scalaris* Locard, 1892 whereas the teleoconch starts with two rows on granules on the early whorls as most *Cerithiopsis* species, but later completes three rows like in the type species *Cerithiopsis tubercularis*.

*Dizoniopsis coppolae* (Aradas, 1870) (Figs. 1-4)

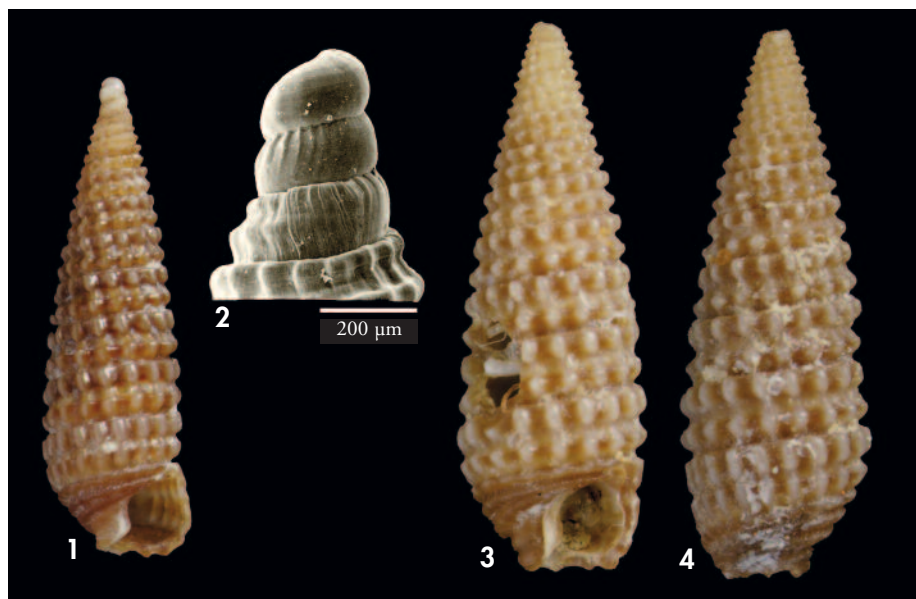
- Cerithiopsis coppolae* Aradas, 1870: *Atti Accad. Gioenia Sc. Nat.*, (3) 4: 263-268 [Ognina near Catania, Sicilia] – Pallary, 1920, *Expl. Scient. Maroc*: 45 .  
*Cerithiopsis bilineata* var. *ventricosa* Brusina, 1871, *Bull. Malac. Ital.*, 4: 5-7 [Croatia]  
*Cerithiopsis bilineata* [non (Hörnès, 1848)] – Monterosato, 1877, *J. Conchyl.*, 25: 41; Monterosato, 1878, *Giorn. Sc. Nat. Econ. Palermo*, 99; Kobelt, 1908, *Iconogr.* vol. 4: 118, pl. 120, fig. 14-15.  
*Cerithiopsis* (*Dizoniopsis*) *bilineata* [non (Hörnès, 1848)] – Nordsieck, 1968, *Europ. Meeres-Gehäuseschnecken*: 70, pl. 11 fig. 43.10.  
*Dizoniopsis euxinica haifensis* Nordsieck, 1972, *Arch. Molluskenk.*, 102: 234 [Shiqmona, Israel].  
*Cerithiopsis* (*Dizoniopsis*) *bilineata* [non (Hörnès, 1848)] and var. *concatenata* [non (Conti, 1864)] – Fekih and Gougerot, 1974, *Bull. Inst. Océanogr. Pêche Salammbô*: 184-185, 207-208.  
*Cerithiopsis* (*Dizoniopsis*) *coppolae* Aradas, 1870 – Nordsieck, 1976, *La Conchiglia* 87-88: 7 – Palazzi and Villari, 2001, *La Conchiglia*, 297, suppl.: 15-18, 38-40.  
*Dizoniopsis coppolae* (Aradas, 1870) – Oliver Baldoví, 2007, *Iberus* 25(2): 32.

**Type material:** *C. coppolae*, whereabouts unknown. *C. bilineata* var. *ventricosa*: 61 syntypes from mixed Dalmatian localities (Otok, Lapad, Lokrum) in Croatian Natural History Museum, Zagreb, reg. n° 1295, and 13 syntypes in Jeffreys collection ex Brusina, USNM 187810. *D. euxinica haifensis*: 7 syntypes SMF 239381/1 (the shell figured by Nordsieck) and 239382/6.

**Material examined:** Portugal. - Sagres, Ponta da Baleeira, 37° 00.3' N – 08° 55.5' W, 17-23 m, 2 sh. (4.0 × 1.5 to 4.8 × 1.8 mm without protoconch), Mission Algarve 1988 (MNHN). Morocco.- Asilah, from beach drift, 4 sh. (up to 3.5 × 1.3 mm without protoconch). Strait of Gibraltar. – Ceuta, Punta Almina, 35° 54.1' N – 05° 16.5' W, submarine cliff 25-40 m, 2 sh. (4.4 × 1.7 mm, 5.1 × 1.8 mm, MNHN). Ceuta, Punta del Desnarigado, 35° 53.6' N – 05° 16.8' W, 16-20 m, 1 old sh. (4.8 × 1.8 mm, MNHN). Italy, Sicily. - Acitrezza, 1 sh. (3.9 × 1.3 mm), Mission Sicile 1990 (MNHN). Brucoli, 1 sh. (4.7 × 1.4 mm), Mission Sicile 1990 (MNHN). Tunisia. – Djerba, 78 sh. (3.5 × 1.2 to 4.7 × 1.4 mm), col. Bouchet and Warén, 1982 (MNHN).

**Description:** Shell up to a little more than 5 mm, high conical, solid, with about 2 1/4 protoconch whorls and 10-12 teleoconch whorls. Protoconch narrow and styliform, easily broken off, with convex whorls and a sculpture of flexuous axial riblets which start from the adapical suture and gradually fade out; these are irregularly distributed on the last protoconch whorls and vary in strength among individuals. Sculpture of teleoconch composed by two spiral cords, approximately as broad as the intervening space, crossed by axial ribs which form very distinct beads at their intersection with the cords. On the first

teleoconch whorl, the abapical cord is more prominent than the other one and the axial ribs are not very conspicuous. On the following whorls, the adapical cord progressively takes over as the thickest one. On the last whorl, the beads of the adapical cord become slightly more elongated but do not split. The abapical part of the body whorl bears one cord, slightly ragged but not beaded, in prolongation of the suture, and two more similar cords between this and the siphonal canal; these cords are markedly narrower than the beaded cords on the ribs and the spaces between them are crossed by raised



Figures 1-4. *Dizoniopsis coppolae* (Aradas, 1870). 1: shell from Djerba, Tunisia (actual size 4.4 mm); 2: protoconch of another specimen from the same locality (scanning electron micrograph); 3, 4: shell from Ceuta, Strait of Gibraltar, Punta Almina 25-40 m (actual size 5.1 mm).

Figuras 1-4. *Dizoniopsis coppolae* (Aradas, 1870). 1: concha de Djerba, Túnez (tamaño real 4,4 mm); 2: protoconcha de otro ejemplar de la misma localidad (micrografía electrónica de barrido); 3, 4: concha de Ceuta, estrecho de Gibraltar, Punta Almina 25-40 m (tamaño real 5,1 mm).

threads parallel to the growth lines. Aperture oval, with a broad and short siphonal canal and a smaller channel at the opposite end. Adult shells have a rounded, but not thickened edge to the outer lip. Colour brown, grading to paler or even white towards the apical whorls; the nodes are paler with a greyish hue contrasting with the dark brown on spaces between nodes on the cords, and the abapical cords are also somewhat darker than the intervening spaces. Animal unknown.

*Remarks:* It is strange that ARADAS (1870) dedicated a special paper to the description of this species whereas a few years later ARADAS AND BENOIT (1876: 239) do not list it as valid, mentioning instead that some authors hold it as a variety of *Cerithium tuberculare*, and do not even retain *Cerithiopsis* as distinct from *Cerithium*. Most Mediterranean authors subsequently used the name

*Cerithiopsis bilineata* for this species, following the lead by MONTEROSATO (1878).

This species has been adequately figured and discussed by PALAZZI AND VILLARI (2001) who noted the variability in the protoconch sculpture. The distribution of this species seems to be restricted. It is widespread in the Eastern and Central Mediterranean, but there are hardly any records from the coasts of France and Spain in the Western basin, and it is represented in our material from the Strait of Gibraltar by only three old shells. It is nevertheless cited by OLIVER BALDOVÍ (2007) in shell grit surrounding *Posidonia* grounds in the bay of Valencia, and by PALLARY (1929) from the Atlantic coast of Morocco. The specimens collected in the Strait of Gibraltar and in the Algarve are somewhat larger and broader than those from Tunisia and Sicily, and all lack a protoconch.

*Dizoniopsis concatenata* (Conti, 1864) (Figs. 5-12)

- Cerithium concatenatus* Conti, 1864, *Il Monte Mario*.: 51. – Landau, La Perna and Marquet, 2006, *Palaeontos* 10: 11, 15-16.
- Cerithiopsis clarkii* [non Forbes and Hanley, 1851] – Monterosato, 1877, *J. Conchyl.*, 25: 41; Monterosato, 1878, *Giorn. Sc. Nat. Econ. Palermo*, 99; Kobelt, 1908, *Iconogr.* vol. 4: 126-127, pl. 120, fig. 11-12.
- Cerithiopsis bilineata* var. *concatenata* (Conti, 1864) – Cerulli-Irelli, 1912, *Palaeontogr. Ital.*, 18: 149, pl. 23 fig. 50-51.
- Cerithiopsis bilineata* var. *ventricosa* [non Brusina, 1871] – Bucquoy, Dautzenberg and Dollfus, 1884, *Moll. Roussillon*, vol. 1: 205-206, pl. 27 fig. 10-12.
- Cerithiopsis* (*Cerithiopsida*) *clarki* [non Forbes and Hanley, 1851] – Nordsieck, 1968, *Europ. Meeres-Gehäuseschnecken*: 70, pl. 11 fig. 43.31.
- Cerithiopsis* (*Dizoniopsis*) *clarkii* [non Forbes and Hanley, 1851] – Fekih and Gougerot, 1974, *Bull. Inst. Océanogr. Pêche Salammbô* 3: 184-185, 207-208.
- Cerithiopsis* (*Dizoniopsis*) *bilineata* [non (Hörnes, 1848)] – Nordsieck, 1976, *La Conchiglia* 87-88: 7, 18 (en parte) – Ros and Altimira 1977: 53 “de color pardo oscuro en los individuos recolectados vivos”
- Cerithiopsis bilineata* [non (Hörnes, 1848)] – Giannuzzi Savelli et al., 1999: 44-45, fig. 76 a,b. – Oliver Baldoví, 2007, *Iberus*, 25 (2): 49, fig. 34-35.
- Cerithiopsis* (*Dizoniopsis*) *concatenata* (Conti, 1864) – Palazzi and Villari, 2001, *La Conchiglia*, 297, suppl.: 15-18, 38-40.

**Type material:** Lectotype (Landau, La Perna and Marquet, 2006) in coll. Cerulli-Irelli, Museo di Paleontologia dell'Università di Roma “La Sapienza” (see remarks below).

**Material examined:** Portugal. - Sagres, Bay of Baleeira, 37° 00.7' N – 08° 55.0' W, 3-15 m, 1 spm. drawing AL 132. (3.6 × 1.4 mm without protoconch), Mission Algarve 1988 (MNHN). Strait of Gibraltar. - Ceuta, Punta del Saudioño, 35° 54.1' N – 05° 18.0' W, submarine cliff 17-35 m; drawing CE 38, 2 spm. (4.1 × 1.4, 4.0 × 1.4 mm); Punta del Desnarigado, 35° 53.6' N – 05° 16.8' W, 16-20 m, 1 old sh. (MNHN). Mediterranean France. - Le Dramont 22-30 m, 3 sh. (up to 3.7 × 1.2 mm), leg. Pelorce (MNHN). Iles d'Hyères, Grande Passe 112-113 m, 2 sh. (3.8 × 1.2, 5.2 × 1.7 mm) leg. Picard 1956 (MNHN). Cap Morgiou, Calanque de la Triperie 22 m, 1 sh. juv., leg. Zibrowius 1996 (MNHN). Unknown origin, possibly Roussillon, 2 spm. figured in Bucquoy, Dautzenberg and Dollfus (1884), pl. 27 fig. 10-11 as *C. bilineata* var. *ventricosa* (3.9 × 1.3 mm). Corsica. - Calvi, 1 spm. (4.5 × 1.5 mm, MNHN). Italy. - Camogli, Genova, 42 m, 1 sh. (3.0 × 1.2 mm). Capraia, Le Formiche, 3 sh. (3.1 × 1.1 to 4 × 1.2 mm), leg. Palazzi (MNHN); Livorno 7-17 m, 2 spm. (4.2 × 1.2), leg. Palazzi (MNHN). Sicily, Acitrezza 36 m, 4 sh. (full grown 3.2 × 1.1 to 4.0 × 1.4 mm), leg. Spada (SMNH). Acitrezza, 1 sh. (4.3 × 1.3 mm), Mission Sicile 1990 (MNHN).

**Description:** Shell up to a little more than 5 mm, high conical, solid, with about 2 <sup>1</sup>/<sub>4</sub> protoconch whorls and 7 to 8 <sup>1</sup>/<sub>2</sub> teleoconch whorls. Protoconch narrow and styliform, easily broken off, the first whorl rounded with a frosted surface, the following with two well-defined keels appearing progressively and running rather close together along the middle part of the whorl, more or less connecting to the start of the beaded cords on the first teleoconch whorl. Limit protoconch-teleoconch not very distinct. Sculpture of teleoconch composed by two spiral cords, approximately as broad as the intervening

space, crossed by axial ribs which form very distinct beads at their intersection with the cords. On the first teleoconch whorl, the abapical cord is markedly more prominent than the other one and overhangs the suture of the following whorl; the axial ribs are there comparatively more apparent and more crowded than on the second teleoconch whorl. On the following whorls, the adapical cord progressively takes over as the thickest one. On the last whorl, the beads of the adapical cord become elongated in the axial direction and, on the section preceding the aperture of adult specimens, this cord tends to split and



form two contiguous rows of beads, which become still more narrow and elongate. The abapical part of the body whorl bears one thick beaded cord in prolongation of the suture and another one, flatter and not distinctly beaded, in the intervening space between this and the siphonal canal. Aperture oval, with a broad and short siphonal canal and a smaller channel at the opposite end. Adult shells have a rounded, but not thickened edge to the outer lip. Colour brown, grading to paler or even white towards the apical whorls.

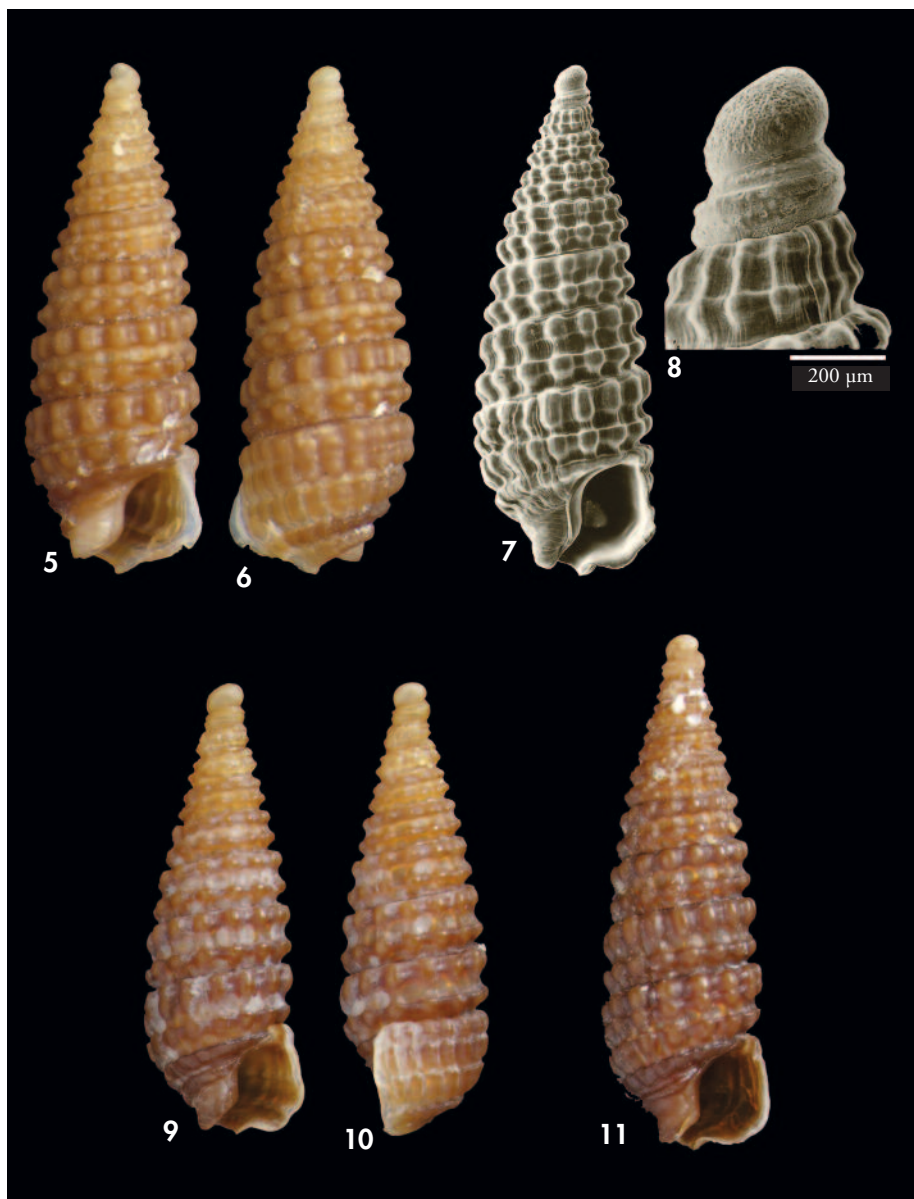
Animal with an elongated foot, with propodium truncated in front and bordered anteriorly by a mentum, the median part rather narrowing, and the metapodium broadly ovate. Opening of the pedal gland conspicuous at the anterior end of metapodium, prolonged towards the posterior end by an axial groove on the sole. Head devoid of snout, provided with two elongate cephalic tentacles which are not separated at their base by any rim or swelling, and form a V-shape when extended. Eyes black, rounded, situated within the base of the tentacles without forming a distinct swelling, not surrounded by any opaque granular material. Opercular lobe rather thick, not containing any opaque granular material. Mantle with a smooth edge.

*Remarks:* This species is clearly separated from *Dizoniopsis coppolae* and *D. bilineata* by both protoconch and teleoconch characters. The protoconch lacks axial sculpture, whereas on *D. coppolae* it is covered with flexuous axial ribs and lacks spiral keels (see PALAZZI AND VILLARI, 2001: figs 65-69); its two peripheral keels remain on the median part of the whorl contrary to the fossil *D. bilineata* in which the abapical keel is concealed by the suture on the last protoconch whorl. The teleoconch differs from *D. coppolae* in several clearcut characters of the body whorl. The subsutural cord definitely splits before reaching the outer lip of the aperture, and there accounts for more than one-third of the height of the whorl, whereas in *D. coppolae* this cord does not split and does not

exceed one-quarter of the height of the whorl. The most obvious distinguishing feature is that there are only two abapical cords on the base (one in prolongation of the suture, and one more) whereas there are three (one in the prolongation of the suture and two more) in *D. coppolae*. The colour pattern is also different. Although grading from lighter to darker from apex to later whorls, it is uniformly brown on one particular whorl whereas in *D. coppolae* the nodes have a greyish hue contrasting with the dark brown on spaces between nodes on the cord, and with an intermediate light brown in the intervening spaces between cords; it is clear from this that ROS AND ALTIMIRA (1977) observed this species, and not *D. coppolae*, on the Catalan coast.

The areas behind the eyes and beneath the operculum are translucent and similar in texture to the remaining surface of the body, contrary to most cerithiopsids we have observed and particularly to *Cerithiopsis tubercularis*, where these areas are densely furnished with whitish or yellowish granules. The animal was observed alive in two different localities (Ceuta and Algarve) which rules out that this difference is accidental.

MONTEROSATO (1877, 1878) was the first to distinguish two species among Mediterranean cerithiopsids having two rows of granules, and used for them respectively the names *Cerithiopsis bilineata* (considering *C. coppolae* as a synonym) and *C. clarkii*. *Cerithiopsis clarkii* Forbes and Hanley, 1851 (vol. 3 p. 368, vol. 4 pl. 103 fig. 6) was introduced conditionally, based on a specimen collected at Exmouth, in the English Channel. All the species of Cerithiopsidae found in Britain, including the type species *Cerithiopsis tubercularis* (Montagu, 1803), have normally three rows of granules on the whorls but may occasionally display two or four rows, usually after an accident in shell growth. Therefore JEFFREYS (1867: 267) was definitely correct in his interpretation of the specimen as a teratological "Monstr. *Clarkii*" of *Cerithiopsis tubercu-*



Figures 5-11. *Dizoniopsis concatenata* (Conti, 1864). 5, 6: specimen from Ceuta, Strait of Gibraltar, Punta del Saudíño 17-35 m (actual size 4.1 mm, same specimen as fig. 12); 7: another specimen from the same locality (scanning electron micrograph, actual size 4.1 mm); 8: protoconch, same specimen; 9, 10: shell from Le Dramont, Mediterranean coast of France, 22-30 m (actual size 3.6 mm); 11: shell from Aci Trezza near Catania, Sicily (actual size 4.1 mm).

*Figuras 5-11. Dizoniopsis concatenata* (Conti, 1864). 5, 6: ejemplar de Ceuta, estrecho de Gibraltar, Punta del Saudíño 17-35 m (tamaño real 4,1 mm, mismo ejemplar que fig. 12); 7: otro ejemplar de la misma localidad (micrografía electrónica de barrido, tamaño real 4,1 mm); 8: protoconcha, mismo ejemplar; 9, 10: concha de Le Dramont, costa mediterránea de Francia, 22-30 m (tamaño real 3,6 mm); 11: concha de Aci Trezza cerca de Catania, Sicilia (tamaño real 4,1 mm).

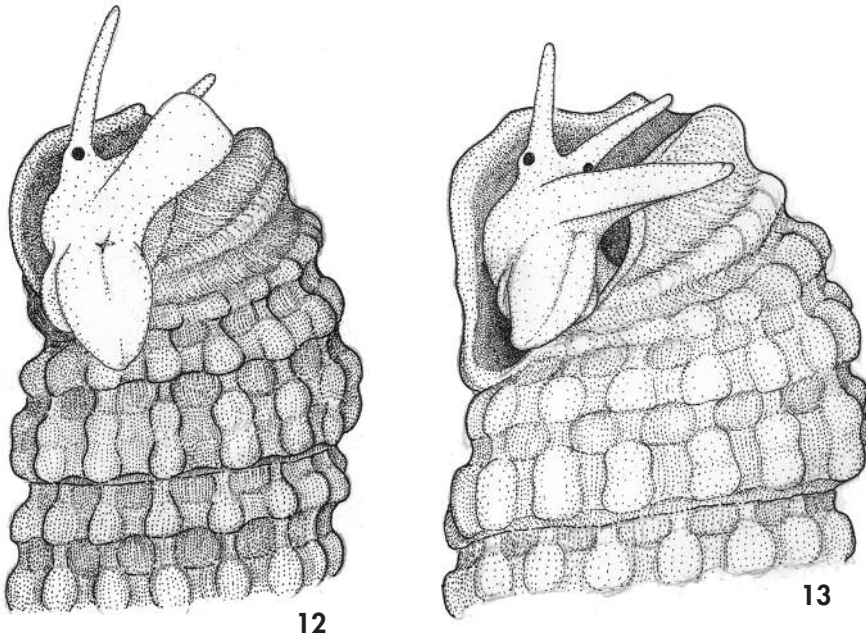


Figure 12. *Dizoniopsis concatenata* (Conti, 1864), living animal from Ceuta, Strait of Gibraltar, Punta del Saudiño 17-35 m (same specimen as fig. 5-6). Figure 13. *Dizoniopsis aspicienda* spec. nov., living animal of the holotype from Ceuta, Strait of Gibraltar, Punta Almina 25-40 m (same specimen as fig. 14-15).

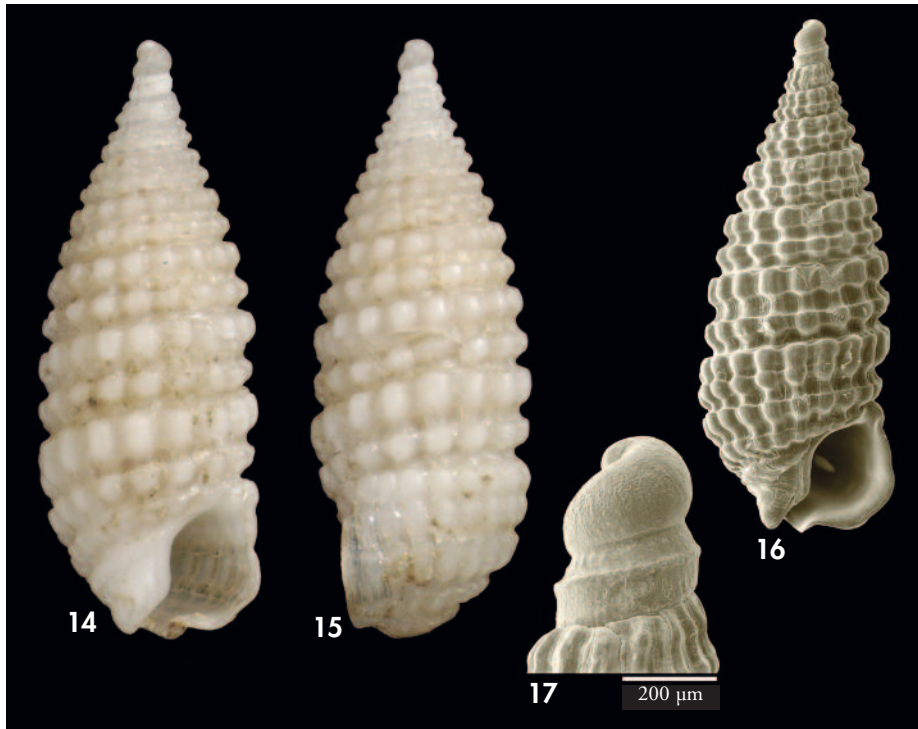
Figura 12. *Dizoniopsis concatenata* (Conti, 1864), animal vivo de Ceuta, estrecho de Gibraltar, Punta del Saudiño 17-35 m (mismo ejemplar que fig. 5-6). Figura 13. *Dizoniopsis aspicienda* spec. nov., animal vivo del holotipo de Ceuta, estrecho de Gibraltar, Punta Almina 25-40 m (mismo ejemplar que fig. 14-15).

*laris*, noting that the early whorls have the usual three rows, and this was also the view of MARSHALL (1911). NORDSIECK (1968) first used the name *Cerithiopsis* (*Cerithiopsida*) *clarki* (written with one "i") for this species, but later (Nordsieck, 1976) assigned it to *C. bilineata* and considered *C. clarki* (based on the figure of Forbes and Hanley) to occur only in the Atlantic. His figure of *C. bilineata* on p. 18 is nevertheless *C. coppolae*.

CERULLI-IRELLI (1912) used the name *C. bilineata* var. *concatenata* (Conti, 1864) and illustrated a specimen from the type locality, the lower Pleistocene strata of Monte Mario near Rome, which is definitely the species considered here. The same shell is again figured by LANDAU,

LA PERNA AND MARQUET (2006) and designated as lectotype of *Cerithium concatenatus* Conti, 1864. Cerulli-Irelli stated to have identified his specimens by comparison with Conti's type material. This interpretation was also that of PALAZZI AND VILLARI (2001) but contradicts MONTEROSATO (1884: 134; 1890: 163) and MARSHALL (1895: 38) who considered that *Cerithium concatenatus* was the same as *Cerithiopsis pulchella* Jeffreys, 1858 (= *C. jeffreysi* Watson, 1885). However, both are somewhat at odds with Conti's original description (reproduced in VAN AARTSEN, MENKHORST AND GITTEBERGER, 1984: 29), which mentions three rows of granules on the whorls and four on the body whorl of which there is one smaller next to the





Figures 14-17. *Dizoniopsis aspicienda* spec. nov. 14, 15: holotype, specimen from Ceuta, Strait of Gibraltar, Punta Almina 25-40 m (actual size 4.9 mm); 16: paratype, specimen from Ceuta, Benzú, 24 m (scanning electron micrograph, actual size 4.2 mm); 17: protoconch, same specimen. *Figuras 14-17. Dizoniopsis aspicienda* spec. nov. 14, 15: holotipo, ejemplar de Ceuta, estrecho de Gibraltar, Punta Almina 25-40 m (tamaño real 4,9 mm); 16: paratipo, ejemplar de Ceuta, Benzú, 24 m, (micrografía electrónica de barrido, tamaño real 4,2 mm); 17: protoconcha, mismo ejemplar.

suture and the two on the middle of the whorl merging into a single one (hence the name).

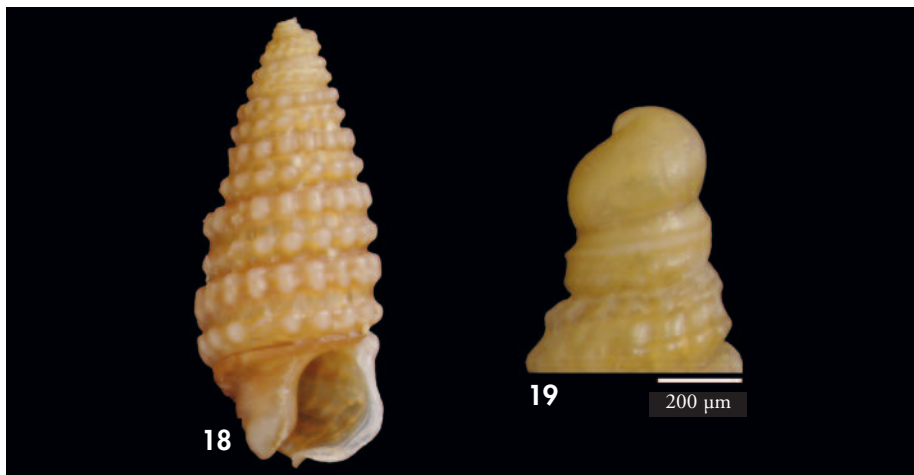
Our understanding of the taxon is here based on the lectotype illustrated by LANDAU, LA PERNA AND MARQUET (2006). This specimen may not be eligible as such because of not forming part of Conti's original material, the whereabouts of which are unknown. It is not

desirable as a neotype either, because it lacks a protoconch. Therefore, if it is demonstrated that this is not Conti's species, it may have to be named as a new species but we nevertheless consider it more parsimonious, for the stability of nomenclature, to continue usage of this name instead of leaving *Cerithium concatenatus* as a *nomen dubium*.

### *Dizoniopsis aspicienda* spec. nov. (Figs. 13-17)

**Type material:** Holotype, live-collected specimen, Ceuta, Punta Almina, 35° 54.1' N – 05° 16.5' W, 38-40 m, drawing CE 18 (4.9 × 1.8 mm), MNHN 23283. Paratype, Ceuta, Benz, 35° 55.0' N, 05° 22.5' W, 24-26 m (4.2 × 1.6 mm), MNHN 23284.

**Etymology:** meaning "worth looking at", alluding to the handsome aspect of the species.



Figures 18, 19. *Dizoniopsis abylensis* spec. nov. 18: holotype, shell from Ceuta, Strait of Gibraltar, Punta del Saudíño 17-35 m (actual size 3.8 mm); 19: protoconch of a juvenile shell from Ceuta, Punta Bermeja, 27-32 m.

*Figuras 18, 19. Dizoniopsis abylensis spec. nov. 18: holotipo, concha de Ceuta, estrecho de Gibraltar, Punta del Saudíño 17-35 m (tamaño real 3,8 mm); 19: protoconcha de una concha juvenil de Ceuta, Punta Bermeja, 27-32 m.*

*Description:* Shell up to nearly 5 mm, definitely cyrtoconoid, solid, with about 2 protoconch whorls and 7 to 7<sup>1</sup>/<sub>2</sub> teleoconch whorls. Protoconch narrow and styliform, easily broken off, the first whorl with a frosted surface, the following with one well-defined keel appearing progressively and running at about two-thirds of the whorl, closer to the adapical suture, and a less pronounced one situated more abapically; both more or less connecting to the start of the beaded cords on the first teleoconch whorl. Limit protoconch-teleoconch not very distinct. Sculpture of teleoconch composed of two spiral cords, approximately as broad as the intervening space, crossed by axial ribs which form very distinct beads at their intersection with the cords. On the first teleoconch whorl, the abapical cord is markedly more prominent than the other one and overhangs the suture of the following whorl. On the following whorls, the adapical cord progressively takes over as slightly thicker. On the last whorl, the beads of the adapical cord become elongated in the axial direction and, on the section preceding the aper-

ture of adult specimens, this cord tends to split and form two contiguous rows of beads. The abapical part of the body whorl bears one thick beaded cord in prolongation of the suture and another one, flatter and not distinctly beaded, in the intervening space between this and the siphonal canal. Aperture oval, with a broad and short siphonal canal and a smaller channel at the opposite end. Adult shells have a rounded, but not thickened edge to the outer lip. Colour white to very pale tan.

Animal essentially like in *D. concatenata*, but markedly smaller in relation to the shell and with cephalic tentacles broader and flatter.

*Remarks:* This species is only represented by these two specimens, but is clearly separable from sympatric *D. concatenata* by having a pale, nearly white shell, by the cyrtoconoid, rather pupoid teleoconch which is markedly broader at the same height, and by lacking the paired keels on the later larval whorls. Like *D. concatenata*, it has been observed to lack the granular masses behind the eyes and beneath the operculum.

*Dizoniopsis abylenis* spec. nov. (Figs. 18-19)

**Type material:** Holotype, shell, Ceuta, Strait of Gibraltar, Punta del Saudioño, 35° 54.1' N – 05° 18.0' W, submarine cliff 17-35 m; m (3.8 × 1.6 mm), MNHN 23285. Paratype, juvenile shell from Ceuta, Punta Bermeja, 35° 54.6' N – 05° 20.3' W, 27-32 m (1.8 mm), MNHN 23286.

**Etymology:** from Abyla, the name of Ceuta in classical Antiquity.

*Description:* Shell up to nearly 4 mm, slightly cyrtoconoid, solid, with about 2 protoconch whorls and 7 teleoconch whorls. Protoconch narrow and styli-form, easily broken off, the first whorl rounded with a frosted surface, the following with two well-defined keels appearing progressively and running along the middle part of the whorl, more or less connecting to the start of the beaded cords on the first teleoconch whorl. Limit protoconch-teleoconch not very distinct. Sculpture of teleoconch composed by two spiral cords, approximately as broad as the intervening space, crossed by axial ribs which form very distinct beads at their intersection with the cords. On the first teleoconch whorl, the abapical cord is markedly more prominent than the other one and overhangs the suture of the following whorl. On the last two whorls, the adapical cord progressively takes over as slightly thicker. On the last whorl, this cord tends to split and form two contiguous rows of beads. The abapical part of the body whorl bears one well defined, smooth cord in prolongation of the suture and the intervening space between this and the siphonal canal is smoothish and excavated, with a weak spiral swell which is too poorly defined to be taken as a cord. Aperture oval,

with a broad and short siphonal canal and a smaller channel at the opposite end. Adult shells have a rounded, but not thickened edge to the outer lip. Colour pale brown, with the beads on the spiral cords lighter, the intervening spaces between beads on the cords and the smooth cord on the base darker. Animal unknown.

*Remarks:* Although represented by only one adult specimen and a juvenile, this species is so strikingly different from the other two sympatric species of *Dizoniopsis* that we venture its description as new. The shell is stouter than *D. concatenata* and *D. aspicienda*, but the most noteworthy character is the configuration of the base with one smooth cord in prolongation of the suture (distinctly beaded in the other two species) and an excavated surface between this and the suture (furnished with a distinct cord in the other two species); this character is held as significant since the holotype is a completely adult individual with a well-formed aperture. The colour pattern is also different, and reminiscent of *D. coppolae* with lighter beads contrasting on cords which are darker than the intervening spaces; however the latter differs in having three cords on the base and a very different protoconch, with axial ribs.

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