



Notas breves

Moelleriopsis messanensis (Seguenza, 1876), its radula and taxonomic position (Vetigastropoda, Trochoidea, Skeneidae)

Moelleriopsis messanensis (Seguenza, 1876), su rádula y posición taxonómica (Vetigastropoda, Trochoidea, Skeneidae)

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Recibido el 30-VI-2015. Aceptado el 18-XI-2015

INTRODUCTION

The family Skeneidae W. Clark, 1851 is a speciose group of small vetigastropods that appears very heterogeneous and probably polyphyletic (WARÉN, 1992; BOUCHET & ROCROI, 2005; WILLIAMS & OZAWA, 2006; HICKMAN, 2013). Numerous genera previously assigned to the Seguenzioidea A.E.Verrill, 1884 based on molecular and anatomical data (WARÉN & BOUCHET, 1989; KANO, 2008; KANO, CHIKYU & WARÉN, 2009), among them *Akritogyra* Warén, 1992, *Anekes* Bouchet & Warén, 1979, *Granigyra* Dall, 1889, *Lisotesta* Iredale, 1915, *Moelleriopsis* Bush, 1897 and *Trenchia* Knudsen, 1964 have Mediterranean representatives. The taxonomic position of *Moelleriopsis* Bush, 1897 is quite uncertain, as KANO ET AL. (2009) listed it as a "plausible" member of the Seguenzioidea, but did not include it in their molecular dataset. Here we present new information on *Moelleriopsis messanensis*

(Seguenza, 1876) and discuss the taxonomic position of the genus.

MATERIALS AND METHODS

Abbreviations and acronyms:

H: maximum height (in mm),
W: maximum width (in mm),
MNHNP: Muséum national d'Histoire naturelle, Paris,
SEM: scanning electron microscope.

All Tuscan material was obtained from bottom samples trawled by local fishermen, the French specimen was dredged in the frame of IFREMER/DEPRO 96 project. Shells and opercula were examined with a stereomicroscope. Images were obtained with a digital photocamera and SEM. The protoconch whorls are counted according to the method of VERDUIN (1977).

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TAXONOMY

Class GASTROPODA Cuvier, 1795

Subclass VETIGASTROPODA Salvini-Plawen, 1980

Superfamily TROCHOIDEA Rafinesque, 1815

Family SKENEIDAE W.Clark, 1851

Genus *Moelleriopsis* Bush, 1897

Moelleriopsis messanensis (Seguenza, 1876) [*Cyclostrema*] (Figs. 1, 2)

Material examined: *Moelleriopsis messanensis* (Seguenza, 1876): 1 specimen, off Gorgona Island (Livorno, Italy) 400 m depth, in Francesco Giusti collection (Livorno) (Fig. 1 D); more than 100 shells, off Gorgona Island (Livorno, Italy), 500–600 m depth, in Luigi Romani collection (Lucca), Cesare Bogi collection (Livorno), Francesco Giusti collection (Livorno); 1 specimen, off Capraia Island (Livorno, Italy) 550 m depth, in Francesco Giusti collection (Livorno); 1 specimen, Gulf of Lion (France), DEPRO, station 3, 1129–1193 m depth, 42° 44.5' N, 004° 29.4' E, in MNHNP (Fig. 1A–C, E, F).

Description: Shell skeneiform, depressed, thin, glossy, with rapidly expanding whorls. Surface smooth except for 5–7 basal ridges running inside and around the umbilicus and a dorsal ridge starting at the beginning of teleoconch and slowly fading next the 1 ½ whorl (Fig. 1 A, B, D). Protoconch paucispiral of about 0.5 whorl sculptured with close-set spiral threads and separated from teleoconch by a varix (Fig. 1C). Umbilicus broad and deep. Opening wide, circular. The average adult shell reaches 2–2.5 mm in diameter. The shell does not change its outline through various stages of growth. Operculum horny, yellowish and transparent, multispiral with central nucleus and narrow growing edge (Fig. 1 D, E). The radula is more than 5 times as long as wide, bilaterally symmetrical, of the rhipidoglossate type, with formula: $n - 4 - 1 - 4 - n$. The transverse rows are more or less sigmoid; the central field (rachidan + lateral teeth) is not very wide, the marginal fields are wide with more than 25 teeth each (Fig. 1 F, 2 A, B). The rachidian tooth is large, subtrapezoidal, with a wide base laterally expanded, crossed by a horizontal central ridge. The cutting edge is equipped with 13–17 cusps, the central cusp is much larger than lateral ones (Fig. 2 C). The lateral teeth, increasing in size outwards, have a curved base, a straight shaft and bent cutting edges

bearing a serrated strong central cusp (Fig. 2 B, C). The numerous marginal teeth decrease in size outwards and are claw-shaped with a serrated apical part. The innermost marginals have a very strong central cusp and few smaller lateral cusps, they become smaller and of the same size moving outwards (Fig. 2 D). There is no lateromarginal plate. The external morphology of the animal is unknown.

Distribution: the Holocene range of *Moelleriopsis messanensis* extends from the Bay of Biscay to the Lusitanian Seamounts and the West-Central Mediterranean Sea (WARÉN, 1992; BECK, METZGER & FREIWALD, 2006). There are very few records of live-taken specimens in the Mediterranean Basin, all from the North-Central Tyrrhenian Sea and the Gulf of Lion, from 400–1200 m depth (ARDOVINI & COSSIGNANI, 1999; COSSIGNANI & ARDOVINI, 2011; present study); empty shells are found between 350–2500 m depths.

Cyclostrema messanensis was described by G. Seguenza (1876) as a fossil from the Pliocene of southern Italy but never illustrated. The type material is supposedly lost (LA PERNA & D'ABRAMO, 2010) but three shells were subsequently found in a collection by Seguenza in the Geological and Paleontological Museum of Florence University (BERTOLASO & PALAZZI, 2000), thus confirming the identity of the species.

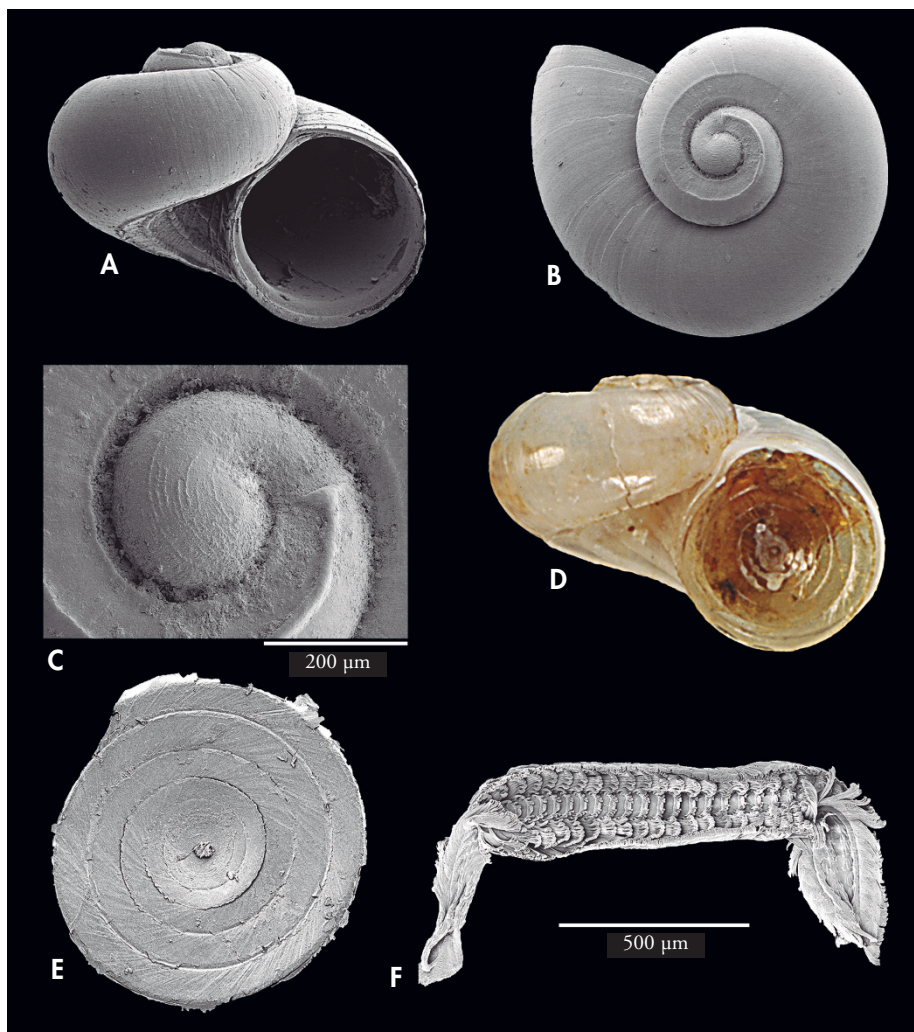


Figure 1. *Moelleriopsis messanensis*. A–C, E, F: Gulf of Lion, H 1.52 mm, W 2.01 mm. A: frontal view; B: apical view; C: protoconch; E: operculum, diameter 1.08 mm; F: radula. D: off Gorgona Island, H 1.05 mm, W 1.50 mm, frontal view.

Figura 1. Moelleriopsis messanensis. A–C, E, F: Golfo de León, H 1,52 mm, W 2,01 mm. A: vista frontal; B: vista apical; C: protoconcha; E: opérculo, diámetro 1,08 mm; F: rádula. D: frente a la isla de Gorgona, H 1,05 mm, W 1,50 mm, vista frontal.

DISCUSSION

The genus *Moelleriopsis* Bush, 1897 was created for *Moelleriopsis abyssicola* Bush, 1897 a deep water skeneiform from the North-Eastern Atlantic Ocean, known only from an incomplete empty shell (BUSH, 1897: 138). *Moelleriopsi-*

sabyssicola is characterized by spiral keels running on the smooth whorls (1 adapical and 4 periumbilical). This sculpture is very similar to that of *Cyclostrema messanensis*, which induced WARÉN (1992) to consider the two

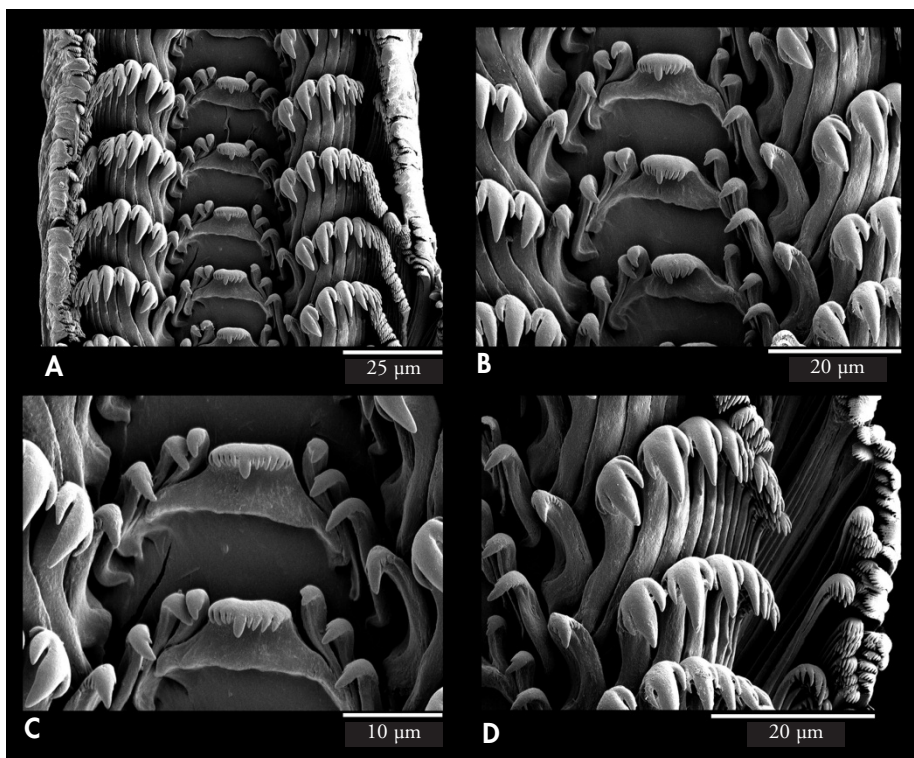


Figure 2. *Moelleriopsis messanensis*, radula, Gulf of Lion. A: whole view; B, C: partial views of central and lateral teeth; D: marginal teeth.

Figura 2. *Moelleriopsis messanensis*, radula, Golfo de León. A: vista general; B, C: vistas parciales de los dientes central y laterales; D: dientes marginales.

species congeneric even if no anatomical details were known at that time. Other skeneiform gastropods, both recent and fossil, were also assigned to *Moelleriopsis* only on conchological grounds, (WARÉN, 1992; HASEGAWA & OKUTANI, 2011; ENGL, 2012). The World Register of Marine species accepts nine Recent species of *Moelleriopsis* (BOUCHET & GOFAS, 2014), to which should be added unidentified species reported by WARÉN & BOUCHET (1989), WARÉN (1992), HASEGAWA (2005) and BECK ET AL. (2006), and two fossil species (TABANELLI, 1991; LOZOUET, 1999).

WARÉN (1992), in his revised diagnosis of *Moelleriopsis*, included radular characters based on an undescribed species from the Indian Ocean having a radula of the “seguenzioid” type. This

species and *M. messanensis*, though having somewhat similar shells, display completely different radular and opercular patterns so cannot be regarded as congeneric or even confamiliar. Instead the radula of *M. messanensis* is very similar to that of *Skenea basistriata* (Jeffreys, 1877).

The use of shell morphology to assess the phylogenetic relationships of skeneiforms is not reliable, as conchological homoplasy is quite common in these small gastropods. Combined conchological, radular, anatomical and molecular criteria must be used for this purpose. Since *Moelleriopsis abyssicola* is unknown anatomically and the holotype and only known specimen lacks a protoconch, it is not possible to resolve this conflict definitely, but,

pending the availability of new material for anatomical examination, it is reasonable to provisionally place *Moelleriopsis* Bush, 1897 in the family Skeneidae (Warén, pers. comm.).

ACKNOWLEDGEMENTS

The authors are grateful to Francesco Giusti for the loan of material, the

MNHNP provided the French material. Giovanni Repetto, Attilio Pagli and Kazunori Hasegawa provided bibliographic assistance. Sincere thanks are due to Stefano Bartolini for digital photographs, to Anders Warén for the SEM images and for useful exchange of views and advices, to Enzo Campani for reading the manuscript. Harry G. Lee contributed the English revision of the manuscript and made other suggestions.

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