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First record of *Tellimya tenella* (Lovén, 1846) in the Italian waters

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Alive specimens belonging to Tellimya tenella (Lovén, 1846) were recorded for the first time in Adriatic Sea. Up to date, only few pleistocene fossils or empty valves of this species had been reported in Italian waters.

Key words: bivalves, Adriatic Sea, *Tellimya tenella*, misidentification

INTRODUCTION

The bivalves belonging to the superfamily Galeommatoidea J.E. Gray, 1840, and in particular to the family Lasaeidae Gray, 1842 , have a wide geographical distribution and inhabit a wide range of depths. This family has long been known to be commensal with some sea-urchin species and some of these shallow water bivalves have been studied in considerable detail. For example, in the North Sea *Tellimya ferruginosa* (Montagu, 1808) has been found to live in association with the sea urchin *Echinocardium cordatum* (Pennant, 1777), *Montacuta substriata* (Montagu, 1808) with *Spatangus purpureus* O.F. Miiller, 1776, (POPHAM, 1940; OLDFIELD, 1961) and *T. tenella* usually occurred on the echinoid *Brissopsis lyrifera* (Forbes, 1841) or in grab samples also containing *B. lyrifera* (LOVEN, 1850; OCKELMANN, 1965; DAAN *et al*., 2004).

Tellimya tenella (Lovén, 1846) was originally described by FRIELE (1876) as *Decipula ovata* (Friele, 1876), then it was named as *Tellimya ovalis* (Sars G.O., 1878) and *Montacuta tenella* (Lovén, 1846).

This species has a wide geographical distribution (VAN AARTSEN, 1997), and in some cases has been probably confused with *T. ferruginosa* (Montagu, 1808). It is considered as an Atlantic, Lusitanian and Boreal species (OCKELMANN, 1965; VAN AARTSEN, 1997; GOFAS, 2007) and it occurs from the North Atlantic Ocean (GOFAS *et al.,* 2001) to the eastern basin of the Mediterranean Sea (ZENETOS *et al.*, 2005).

Following SCHIAPPARELLI (2008), up to date fourteen species of the family Montacutidae Clark, 1855 have been reported in Italian waters, where only few single fossil valves of *T. tenella* (Lovén, 1846) have been recorded in sand-muddy bottoms of the circalittoral zone, these records have been dated back to Pleistocene (CALDARA *et al*., 1981; MICALI *et al.*, 2006).

The present study, instead, reports for the first time the presence of alive specimens of *T. tenella* in the Adriatic Sea.

MATERIAL AND METHODS

Macrozoobenthos samples were collected in three different areas (A, B, C) of the central Adriatic Sea, each having a surface area of ≈ 16 km^2. Areas A (a1: 44°04'12'',84N-13°31'57'',54E; a2: 44°02'28'',38N-13°34'32'',34E) and B (b1: 43° 48' 53"N-14° 0' 20"E; b2: 43° 47' 6"N-14° 2' 51"E) are located at around 45 km from the Italian coast in front of Pesaro and Ancona cities respectively, at 75 m depth on silty-sands and clay-silt bottoms respectively. Area C (c1: 43° 36' 47"N-14° 19' 03"E; c2: 43° 34' 56"N-14° 21' 37"E) is located at about 60 km offshore, further south-east than area B, on silty-sand bottom at around 80 m depth (Fig.1).

Four surveys per area (two per year: spring and autumn) were carried out from 2015 to 2016. A total of 24 stations were sampled at each survey in each area.

Six samples were collected at each station using a Van-Veen grab (capacity 13 l; surface 0.1 m^2). The grab samples were sieved in situ through a 0.5 mm mesh and all the retained organisms were preserved in 5% buffered formalin and then transferred in 70% ethanol. Macrozoobenthos was sorted in the laboratory using stereomicroscope and binocular microscope.

The specimens were identified as *T. tenella* following the original description of FRIELE (1876) and OCKELMANN (1965), COSSIGNANI & ARDOVINI (2011) and SCAPERROTTA *et al.* (2015). The nomenclature used in the present paper follows the World Register of Marine Species (WoRMS Editorial Board 2019). Voucher specimens are presently kept in the reference collection of the CNR-IRBIM at Ancona, Italy.

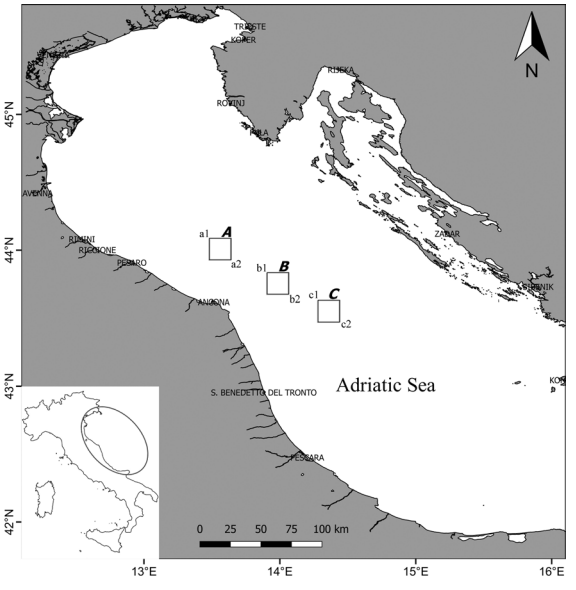

Fig. 1. Geographic overview of the Adriatic Sea with the details of the surveyed areas

RESULTS AND DISCUSSION

Material examined

70 specimens in total from A, B and C areas.

Systematics

Class BIVALVIA
Superfamily GALEOMMATOIDEA Gray, 1840
Family LASAEIDAE Clark, 1855
Genus *Tellimya* Brown, 1827
Tellimya tenella (Lovén, 1846)

Description

Shell ranging in length from 1.5 mm to 5.0 mm, thin and fragile, equivalve, lightly convex and sub equilateral. Oblong-ovate outline expanded anterior ventrally. Beaks are subcentral, positioned at 2/3 of the shell length. Antero-dorsal margin slightly curved; antero-ventral portion slightly pointed. Hinge teeth feeble.

Surface almost smooth, with fine and dense concentric growth-lines and a few stronger ones at irregular intervals, with faint microscopic radiating striae. Inner margin smooth. The hinge consists of a very small laminar tooth with a hemisphere at its end and it is located in front of the beak in the left valve. The ligament is internally attached on a shallow resilifer behind the beaks. Periostracum is a thin glossy film, and the internal surface may be smooth, mat or

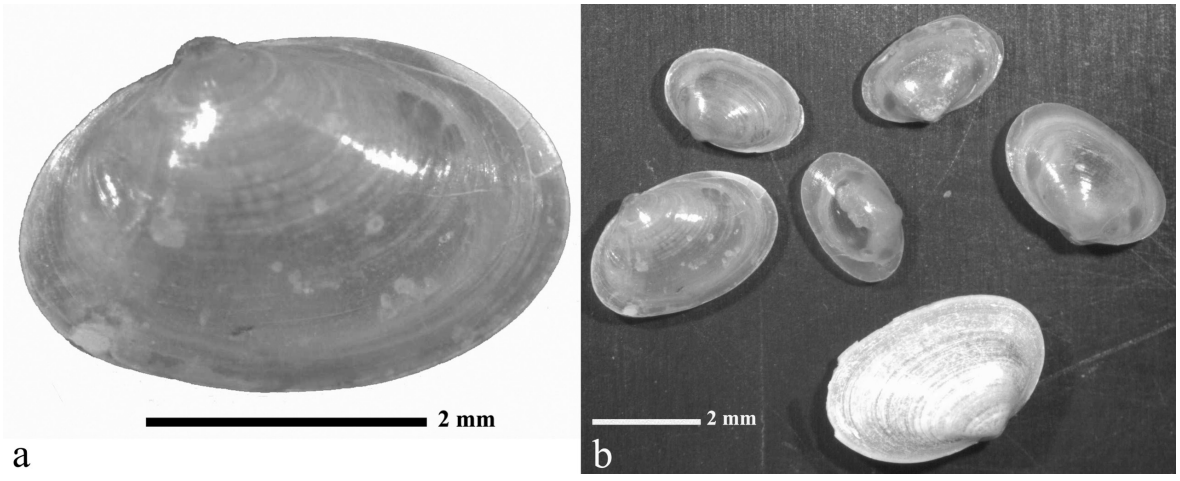

Fig. 2. Tellimya tenella (Lovén, 1846) from the Adriatic Sea. a: enlarged view of one organism; b: specimens group of different size

slightly sleek. Transparent bluish-white shells in alive and fresh specimens, opaque and white in preserved ones, often with a ferruginous deposit over the umbo.

Ecology and Distribution

Tellimya tenella, cited as *T. ferruginosa*, was found in a Pleistocene paleocommunity in the Ionian Sea off Gallipoli (Italy) (CALDARA *et al.*, 1981). No records of alive specimens have been reported to date in the Italian waters.

In the Aegean Sea this alive species has been often found in association with the burrowing urchin *B. lyrifera* Forbes, 1841 (MICALI *et al.*, 2006) as already described for most montacutids that live as commensals of other invertebrates, mainly sea urchins (OCKELMANN, 1965). The species lives in soft bottoms, varying from silty sand to pure mud or clay, between 15 and 750 m depth (OCKELMANN, 1965; KALLONAS *et al*., 1999; MICALI *et al.,* 2006), but it is not known if *T. tenella* lives freely "on" or "in" bottom sediments, nor its maximum length. However, the fragility of its shell suggests a specialized habit of living in protected conditions (KALLONAS *et al*., 1999; ZENETOS *et al.,* 2005).

Currently only few records of this alive species are known from: Norway Sea, Sweden Sea (Gullmarfjord), North Sea alongside the western coast of Scotland and in Danish waters, Porcupine Bank near Ireland and, most recently, from West of the Scilly Isles (OCKELMANN, 1965; BAREL & KRAMERS, 1977; GUIRY & GUIRY, 2011; DYNTAXA, 2013). However, it is interest to point out that some records of *T. ferruginosa* (Montagu, 1808) from the North Sea could be considered as a misidentification of *T. tenella* due to their similarity (SEAWARD, 1990).

In the Mediterranean Sea, KALLONAS *et al.* (1999) and ZENETOS *et al.* (2005) reported the presence of this species in the Greek waters.

CONCLUSIONS

The taxonomic misidentification issue play an important role in the marine biodiversity field, especially for very small marine species. These species are frequently under a wrong systematic identification. Furthermore, genetic analysis on these specimens is difficult because of the small and fragile body and the sampling difficulties.

The present paper reports on the first record of *T. tenella* alive specimens in the Italian waters.

Closely related to *T. ferruginosa*, *T. tenella* has a much more oval and elongated valve shape; inferior margin is more bandy; posterior margin forms a duller angle; umbo is less bent towards the front and more central; superior margin does not form any angle in front of umbo; cardinal tooth is more upright and shorter, forming an angle of around 15° with the umbo-ventral axis

as already pointed out by OCKELMANN (1965) and MICALI *et al.* (2006).

The specimens were found on silty-sand and clay-silt bottoms at 75-80 m depth and especially at the same stations where *Brissopsis atlantica mediterranea* Mortensen, 1913 was sampled.

T. tenella is considered a rare species with only few records reported. The frequent association of *T. tenella* with sea urchins and the wide spatial distribution of these echinoderms lead to suppose that the population of this bivalve is underestimated.

Furthermore, this underestimation is mainly due to the small sized and fragile shell that makes difficult to collect undamaged specimens using common sampling techniques. This species is widely confused by "non-specialized" taxonomists with *T. ferruginosa* (Montagu, 1808) or other similar bivalves and this is probably another reason for its rareness.

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Prvi nalaz školjkaša *Tellimya tenella* (Lovén, 1846) u talijanskom dijelu Jadranskog mora

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SAŽETAK

Žive jedinke *Tellimya tenella* (Lovén, 1846.) prvi su puta zabilježeni u Jadranskom moru. Do danas je u talijanskim vodama zabilježeno svega nekoliko pleistocenskih fosila ili praznih ljuski ove vrste.

Ključne riječi: školjkaši, Jadransko more, *Tellimya tenella*, pogrešna identifikacija