

**On the occurrence of *Eudolium crosseanum* (Monterosato, 1869) and *Eudolium bairdii* (Verrill & Smith, 1881) in the Mediterranean Sea
(Gastropoda, Caenogastropoda, Tonnidae)**

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Eudolium crosseanum (Monterosato, 1869) and *E. bairdii* (Verrill & Smith, 1881) are recorded a second time from the Mediterranean Sea, Spain.

Key words: Gastropoda, Mesogastropoda, Tonnidae, *Eudolium*, taxonomy, Mediterranean Sea, Atlantic Ocean.

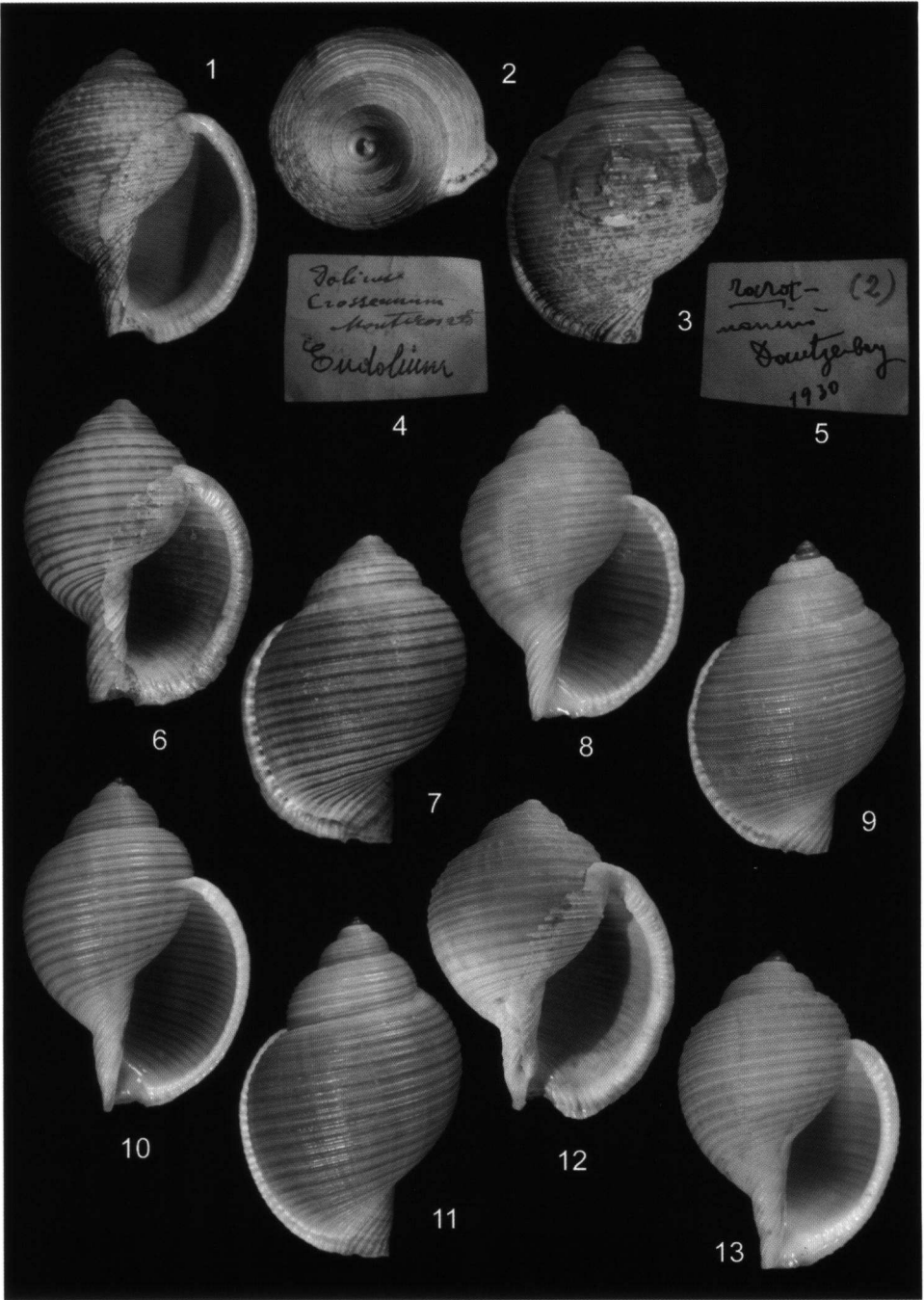
INTRODUCTION

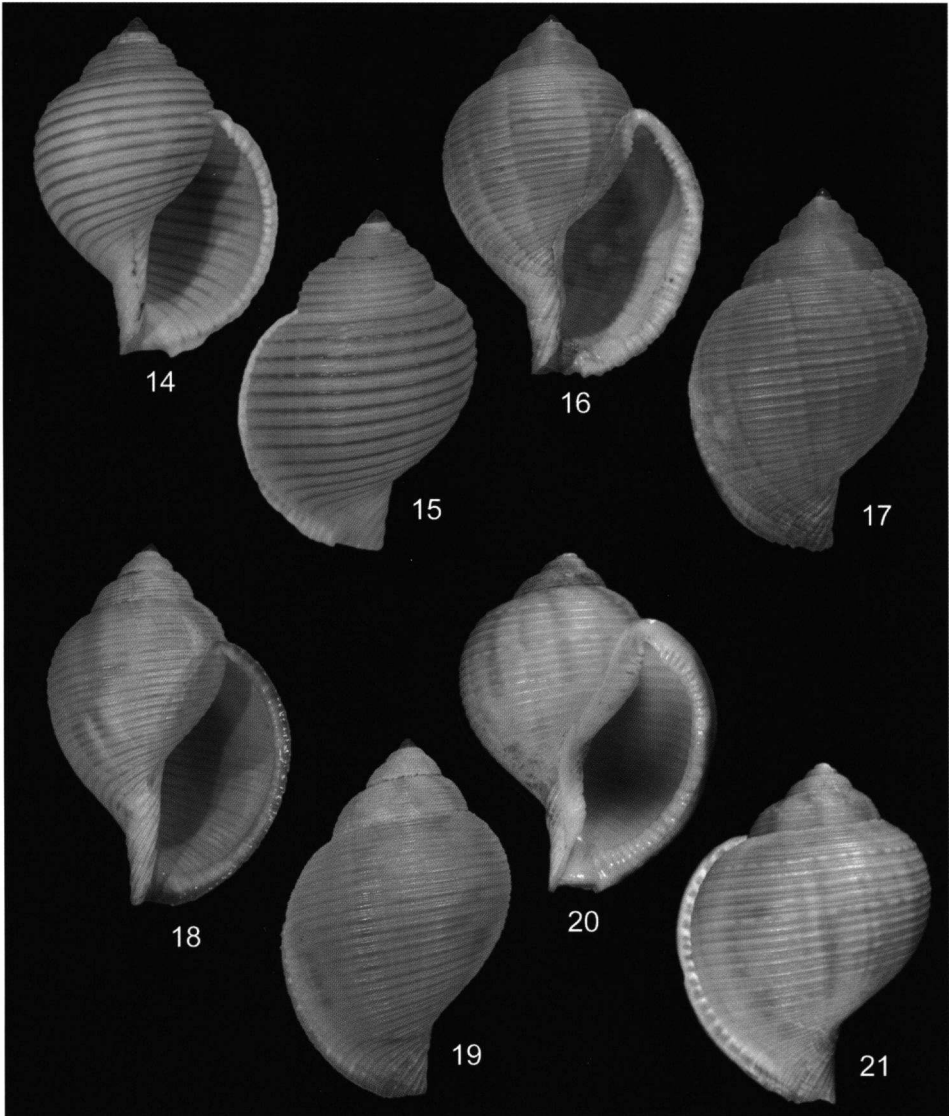
The taxonomy of the genus *Eudolium* Dall, 1889 (Tonnidae), has been reviewed by Marshall (1992) and concerns three Recent species: *E. crosseanum* (Monterosato, 1869), *E. bairdii* (Verrill & Smith, 1881) and *E. pyriforme* (Sowerby, 1914). The type material of *E. crosseanum* seemed to consist of two shells, stored in ZMR and HUI, which both had been interpreted in the past as the holotype, as recalled by Piani (1977), Marshall (1992) and Bouchet & Warén (1993). We checked the shell in ZMR and agree with the Marshall and Bouchet & Warén hypothesis that this is a worm specimen of *E. bairdii*. In this paper we report the presence of both *E. crosseanum* and *E. bairdii* in the Mediterranean Sea, after the description of Monterosato (1869) and the Mediterranean record by Piani (1977), respectively.

MATERIAL

The material examined concerned three species of the genus *Eudolium*. One specimen of *E. crosseanum*, lacking soft parts and collected from the Alboran Sea, off Estepona (Spain), dredged at a depth of 100 m on a muddy bottom, 67 x 49 mm. Thirteen specimens of *E. bairdii*: 6 from the Alboran Sea, off Estepona (Spain), 100 m depth, muddy bottom; 5 from the coast of Natal (R. S. A.), 650 m depth; 2 from the coast of Mozambique. Three specimens of *E. pyriforme*: 2 from the coast of Natal (R. S. A.); 1 from Mozambique Channel, in "Shrimpers" net, 800 m depth. The "type material" of *E. crosseanum*, colln Monterosato (MZB) was also analyzed, resulting in the recognition of a worm shell of *E. bairdii*.

Abbreviations: HUI = Hebrew University of Jerusalem, Israel; ZMR = Museo Zoologico di Roma, Italy.





Figs 1-13. *Eudolium bairdii* (Verrill & Smith, 1881). 1-3, *E. bairdii*, ex "type material" of *E. crosseanum*, colln Monterosato (MZB, Italy), 74 x 55 mm; 4-5, original label from ex "type material"; 6-7, Alboran Sea, offshore Estepona (Spain), 100 m, 80 x 65 mm; 8-9, Alboran Sea, off Estepona (Spain), 100 m deep, 44 x 35 mm; 10-11, Natal (R. S. A.), 650 m, 75 x 55 mm; 12, Alboran Sea, off Estepona (Spain), 100 m deep, 69 x 49 mm; 13, Mozambique Channel, 600 m, 37 x 20 mm.

Figs 14-21. *Eudolium* spp. 14-15, *E. bairdii* (Verrill & Smith, 1881), Natal, 650 m, 56 x 37 mm; 16-17, *E. pyriforme* (Sowerby [3rd], 1914), Natal (R. S. A.), 650 m, 63 x 39 mm; 18-19, *E. pyriforme*, Mozambique Channel, 800 m, 79 x 52 mm; 20-21, *E. crosseanum* (Monterosato, 1869), Alboran Sea, offshore Estepona (Spain), 100 m, 56 x 41 mm.

SYSTEMATICS

Family Tonnidae Suter, 1913

Genus *Eudolium* Dall, 1889Type species (by monotypy): *Dolium crosseanum* Monterosato, 1869; Recent, Mediterranean Sea.*Eudolium crosseanum* (Monterosato, 1869) (figs 20-21)*Dolium crosseanum* Monterosato, 1869: 228, pl. 12 fig. 1.*Eudolium bairdii* (Verrill & Smith, 1881) (figs 1-15)*Dolium bairdii* Verrill & Smith, in Verrill, 1881: 299.*Eudolium pyriforme* (Sowerby [3rd], 1914) (figs 16-19)*Dolium pyriforme* Sowerby [3rd], 1914: 37, pl. 2 fig. 14.

DISCUSSION

The "type material" of *E. crosseanum* seemed to consist of two shells, one in the Monterosato collection (ZMR), the other in the Coen collection (HUI). Both had been considered by the curators of these museums to be the holotype, as recalled by Piani (1977), Marshall (1992) and Bouchet & Warén (1993). The examination of the HUI specimen lead to the conclusion that this shell is indeed *E. crosseanum* (Marshall, 1992; Bouchet & Warén, 1993). On the other hand, the ZMR specimen was thought to be conspecific with *E. bairdii*. We analyzed the shell in ZMR (figs 1-3), which turned out to be a worn specimen of *E. bairdii*, confirming the hypotheses of Piani (1977), Marshall (1992) and Bouchet & Warén (1993). The label (figs 4-5) shows three different handwritings, Coen's one reports "*Dolium crosseanum* Monterosato"; the second is of Francesco Settepassi (late curator of the malacological collections of ZMR), who wrote "*Eudolium*" (Sic); the last one, on the back of the label, is possibly by Dautzenberg, who sent this specimen to Giorgio Coen. The shell is 67 mm in height, very fresh and consists of four and a half teleoconch whorls, but the protoconch is missing. In this paper we report for the second time, after the description of Monterosato (1869) published more than 135 years ago, the presence of *E. crosseanum* in the Mediterranean Sea. One shell of *E. crosseanum* (figs 20-21) has been dredged from a muddy bottom offshore Estepona (Spain), Alboran Sea. As suggested by Marshall (1992), the record of this Western Atlantic species in the Mediterranean basin is most likely due to the introduction of teleplanic larvae transported by the Gulf Stream. Interestingly, from the same geographical area six specimens of *E. bairdii* (figs 6-9, 12) have been collected in different dredgings, so confirming the presence of this species in the Mediterranean Basin after the two shells reported from southeastern Sicily by Piani (1977: figs 1-2). Also in this case we think that those shells may be derived from transported teleplanic larvae. Of the three *Eudolium* species, *E. bairdii* exhibits the greatest shell morphological variability and

the largest distribution, causing in the past the creation of different nominal taxa which are conspecific (Marshall, 1992: 35).

We figure different shells of *E. bairdii* from several areas to illustrate this great variation in teleoconch morphology (figs 6-15). The last *Eudolium* species is *E. pyriforme*, closely related to *E. crosseanum*, but clearly distinguishable in shell outline and with a separate geographical distribution (Marshall, 1992). We figure two specimens of this species for comparison (figs 16-19).

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