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Two new records of fossil gastropods from the Italian upper Pleistocene

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ABSTRACT The examination of numerous materials related to the upper Pleistocene ("Tirreniano" sensu Authors) from Sardinia and Calabria led to the discovery of two new fossil species for the Mediterranean basin: *Sinum bifasciatum* (Récluz, 1851) (Gastropoda Naticidae), found both in the upper Pleistocene of Sardinia and in that of Calabria, and *Morula nodulosa* (C.B. Adams, 1845) (Gastropoda Muricidae), found in the Sardinian upper Pleistocene. Both species are discussed and illustrated in this paper.

KEY WORDS *Sinum*; *Morula*; Pleistocene; Tyrrhenian.

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INTRODUCTION

The study of material coming from the upper Pleistocene of the Mediterranean basin led to the discovery of two new fossil gastropod molluscs for the Mediterranean basin: *Sinum bifasciatum* (Récluz, 1851) and *Morula nodulosa* (C.B. Adams, 1845). Both species come from deposits with the typical hot fauna with Senegalese affinity to *Persistrombus latus* Gmelin, 1791 (= *Strombus bubonius* Lamarck, 1822), *Monoplex trigonus* (Gmelin, 1791) [= *Cymathium ficoides* (Reeve, 1844)], *Gemophos viverratus* (Kiener, 1834), *Conus ermineus* Born, 1778, (= *Conus testudinarius* Hwass in Bruguière, 1792), etc. (Gignoux, 1913; Trevisan & Di Napoli, 1938; Mirigliano, 1953; Segre, 1954; Malatesta, 1954; Ruggieri & Buccheri, 1968; Settepassi, 1971; Ruggieri & Melone, 1975; Vazzana, 2008).

MATERIAL AND METHODS

The samples, collected during surface searches, come from different deposits of the upper Pleistocene from Sardinia and Calabria (see Examined material). The taxonomy follows Worms (2018) and the others cited publications.

ABBREVIATIONS. H: maximum height of the shell, measured from the apex up to the front end of the siphonic channel; L: maximum width of the shell; ex: specimen/s; CMF: Maurizio Forli collection; CPC: Paolo Crovato collection; CMB: Mauro M. Brunetti collection.

RESULTS

Systematics

Classis GASTROPODA Cuvier, 1795
Subclassis CAENOGASTROPODA Cox, 1960
Ordo LITTORINIMORPHA Golikov et Starobogatov, 1975
Superfamilia NATICOIDEA Guilding, 1834
Familia NATICIDAE Guilding, 1834
Genus *Sinum* Röding, 1798
Type species: *Sinum haliotoideum* Linnaeus, 1758

Sinum bifasciatum (Récluz, 1851) (Figs. 1–3)

Sigaretus bifasciatus Récluz, 1851: 190, tab. 6, figs. 3–4

Sigaretus philippii Weinkauff, 1883: 23, tab. 5, figs. 1– 3
Sinum bifasciatum Settepassi, 1972, tab. 2
Sinum bifasciatum Ardovini & Cossignani, 2004: 119
Sinum bifasciatum Rolán, 2005: 91, fig. 383
Sinum bifasciatum Giannuzzzi Savelli et al., 1997: 202, figs. 831a-f.

EXAMINED MATERIAL. Porto Alabe (Nuoro, Italy) "Tirreniano", 1 ex, CMB; Trumbacà (Reggio Calabria, Italy) "Tirreniano", 1 ex, CMF; Saracinello (Reggio Calabria, Italy) "Tirreniano", 4 ex, CPC.

DESCRIPTION. Shell oval, depressed, not very robust. Maximum width of the shells (L): 17.5 mm (Porto Alabe) and 11.2 mm (Trumbacà). Protoconch composed of three whorls. Teleoconch largely formed by the last lap, very wide. Sculpture composed of numerous spiral cords separated by narrow furrows. Umbilicus absent.

DISTRIBUTION. *Sinum bifasciatum* has a very wide geographical distribution, ranging from the western Mediterranean Sea (Giannuzzi-Savelli et al., 2002) to all of West Africa, up to Angola (Ardovini & Cossignani, 2004; Rolán, 2005).

REMARKS. For *S. bifasciatum* it is the first record as a fossil for the Mediterranean basin. Among the two currently known species of the genus *Sinum* present in the Pliocene of the Mediterranean basin, *S. bifasciatum* bears some resemblance to *S. striatum* (De Serres, 1829) (Fig. 3). From this species, *S. bifasciatum* differs mainly for the different spiral sculpture as specified also by Pedriali & Robba (2009): "*The Mediterranean and West African species* Sinum bifasciatum *(Récluz, 1851) has a larger, 3 whorled protoconch whith rapidly expanding last whorl, a more depressed teleoconch and narrowed spirals separated by shallow, narrow grooves". Sinum bifasciatum* shows greater differences with the other Pliocene species, *S. perregulare* (Sacco, 1891) (see figures published in Pedriali & Robba, 2009), of smaller dimensions and with the presence of an evident umbilicus.

Ordo NEOGASTROPODA Wenz, 1938
Superfamilia MURICOIDEA Rafinesque, 1815
Familia MURICIDAE Rafinesque, 1815
Genus *Morula* Schumacher, 1817
Type species: *Morula papillosa* Schumacher, 1817

Morula nodulosa (C.B. Adams, 1845) - Fig. 4

Purpura nodulosa C.B. Adams, 1845: 2

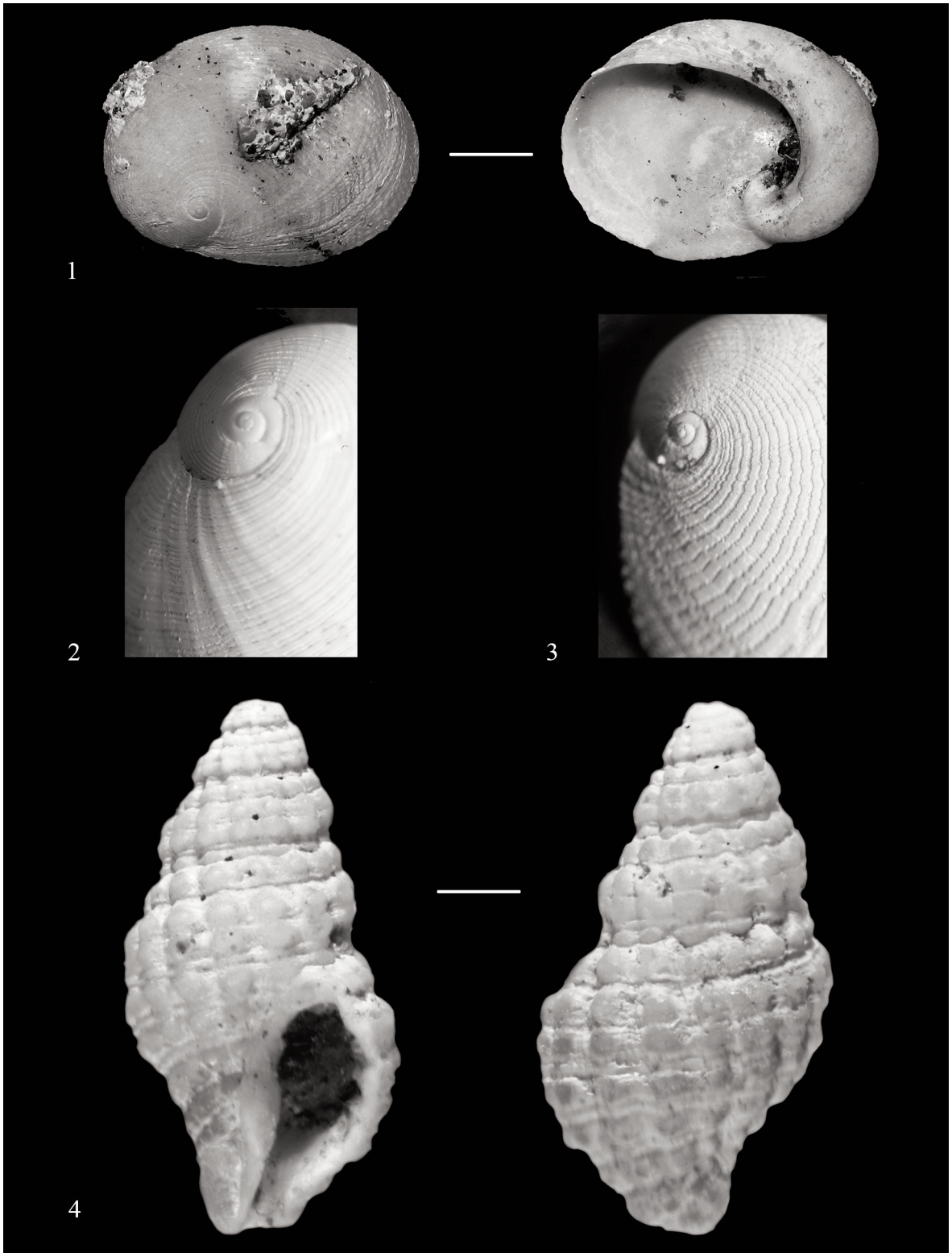
Ricinula ferruginosa Reeve, 1846: 50, tab. 1–6.
Morula nodulosa Houart, 1997: 83, figs. 174–175, 197, 256–260
Morula nodulosa Ávila et al., 2002: 354, figs. 100–103
Morula nodulosa Ardovini & Cossignani, 2004: 155–156
Morula nodulosa Rolán, 2005: 129, figs. 532–533.

EXAMINED MATERIAL. Porto Alabe (Nuoro) "Tirreniano", 2 ex, CMB.

DESCRIPTION. Shell sturdy biconoidal, with multispiral protoconch, smooth. Maximum height of the shell (H): 8 mm. Teleoconch with 5 convex whorls, sculpture robust, formed by large roundish nodules originating from the crossing of the strong axial ribs with the spiral cords. The oval opening has 4–5 robust round teeth on the outer lip, 2–3 poorly visible teeth are present on the columellar side. Short siphonal channel, slightly bent to the left. Umbilicus absent.

DISTRIBUTION. This species has a very wide, amphitlantic geographical distribution, from the Caribbean to the whole of West Africa to Angola (Houart, 1997; Rolán, 2005). Reported as a fossil of the Upper Pleistocene of the Azores Islands (Garcia-Talavera, 1990; Ávila et al., 2002, 2008).

REMARKS. This is the first record of *M. nodulosa* as a fossil for the Mediterranean basin. Houart (1997) illustrated the protoconch, the radula and the typical material of this species that comes from Jamaica. The reports of *M. nodulosa* as a fossil of the upper Pleistocene are all related to the island of Santa Maria, the Azores archipelago (Garcia-Talavera, 1990; Ávila et al., 2002, 2008). Ávila et al. (2008) report *M. nodulosa* as belonging to a group of species that left the Azores during the last glaciation, ascribing it to the genus *Trachypollia* Woodring, 1928. The material from the Sardinian Pleistocene is smaller than today's populations.



Figures 1, 2. *Sinum bifasciatum* (Récluz, 1851). Fig. 1: Porto Alabe (Nuoro, Italy) "Tirreniano", L = 17.5 mm, CMB. Fig. 2: Trumbacà (Reggio Calabria) "Tirreniano", detail of the sculpture, L = 11.2 mm, CMF. Figure 3. *Sinum striatum* (De Serres, 1829) Poggio alla Staffa (Siena, Italy), Zanclean, detail of the sculpture, L = 16 mm, CMB. Figure 4. *Morula nodulosa* (C.B. Adams, 1845) Porto Alabe (Nuoro) "Tirreniano", H = 8 mm, CMB.

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