A new *Skenea* species from Mediterranean Sea, with notes on *Skenea serpuloides* (Montagu, 1808) (Gastropoda, Vetigastropoda, Skeneidae)

Una nueva especie de *Skenea* del Mediterraneo, con notas sobre *Skenea serpuloides* (Montagu, 1808) (Gastropoda, Vetigastropoda, Skeneidae)

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ABSTRACT

A new Mediterranean species of the genus *Skenea* (Gastropoda, Vetigastropoda, Skeneidae), *Skenea giemellorum* sp. nov., is described. It is assigned to this genus based on comparison of conchological characters with the type species, *Skenea serpuloides*, for which sculptural variability is reported. *Skenea giemellorum* is also compared with other similar species.

RESUMEN

Se describe una nueva especie mediterránea del género *Skenea* (Gastropoda, Vetigastropoda, Skeneidae), *Skenea giemellorum* sp. nov. Se asigna a éste género comparando caracteres conquiológicos con la especie tipo, *Skenea serpuloides*, para la cual se hace una reseña de la variabilidad de escultura. Se compara también *Skenea giemellorum* con otras especies similares.

INTRODUCTION

The family Skeneidae Clark W., 1851 is a speciose group of small vetigastropods for which information on anatomical and molecular characters are largely incomplete. This group has been treated as a subfamily of the Turbinidae Rafinesque, 1815 or as a separate family. Genera presently assigned to Turbinidae form a heterogeneous and probably polyphyletic group (Bouchet & Rocroi, 2005; Williams & Ozawa, 2006; Williams, 2008; Hickman, 2013). The limits and internal relationships of the Skeneidae are currently so chaotic that Williams (2012) stated that "this group is in desperate need of revision".

The mediterranean Skeneid fauna is relatively well known (Warén, 1992 and references therein; Rubio, Dantart & Luque, 1998; La Perna, 1999; Carrozza & Van Aartsen, 2001; Rubio & Rodriguez Babio, 1991; Cretella & Fasulo, 2003; Rubio, Dantart & Luque, 2004; Peñas, Rolán, Luque, Templado,

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Moreno, Rubio, Salas, Sierra & Gofas, 2006; Buzzurro & Cecalupo, 2007; Rubio & Rolán, 2013), though few species have been studied anatomically and none with molecular methods, rendering a proper systematic placement of many species questionable. A clear example is the genus *Skenea* that acts as a "catch-all" taxon for species very probably unrelated to type species, such as *Skenea divae* Carrozza & Van Aartsen, 2001 and *Skenea nilarum* Engl, 1996.

MATERIAL AND METHODS

Abbreviations and acronyms

Dp: total diameter of the protoconch (in μm).
H: maximum height (in mm).
Nwp: number of protoconch whorls.
Nwt: number of whorls of the teleoconch.
SEM: scanning electron microscope.
W: maximum width (in mm).
MNHN: Muséum national d'Histoire naturelle, Paris.
CBC: Cesare Bogi collection (Livorno).
DSC: Christiane Delongueville and Roland Scaillet collection.
FGC: Francesco Giusti collection (Livorno).
FSC: Franco Siragusa collection (Livorno).
LRC: Luigi Romani collection (Lucca).
SBC: Stefano Bartolini collection (Firenze).

Material examined

Skenea giemellorum spec. nov. (see below for details), 4 shells.

Skenea serpuloides (Montagu, 1808): Scilla (Reggio Calabria, Italy), 50 m depth, more than 100 shells and specimens, in LRC and SBC. Lampedusa Island (Agrigento, Italy), 15 m depth, 5 shells and 1 specimens, in LRC. Lipari Island (Messina, Italy), 30 m depth, more than 100 shells, in SBC. Off Ouessant (Bretagne, France), 100 m depth, 2 shells, in DSC. Ferragudo (Algarve, Portugal), 1 specimen, in DSC (fig. 2G-I). Getares (Spain), 15 m depth, 50 shells, in SBC.

Skenea catenoides (Monterosato, 1877): Scilla (Reggio Calabria, Italy), 50 m depth, more than 100 shells and specimens, in LRC and SBC. Elba Island (Livorno, Italy), 20 m depth, 26 shells, in LRC and SBC. Getares (Spain), 15 m depth, 9 shells, in SBC.

Skenea olgae Segers, Swinnen and De Prins, 2009: Caniço (Madeira, Portugal), 15 m depth, 2 shells, in CBC.

Skenea pelagia Nofroni and Valenti, 1987: Lampedusa Island (Agrigento, Italy), 5 m depth, 5 shells, in LRC; 3 m depth, 4 shells, in FSC; 27 m depth, 4 shells, in SBC.

Moelleriopsis messanensis (Seguenza, 1876), Gorgona Island (Livorno, Italy), 400 m depth, about 30 shells, in LRC. Capraia Island (Livorno, Italy), 550 m depth, 2 specimens, in FGC.

All material was picked up from bioclastic bottom samples collected by SCUBA diving or trawled by local fishermen. Shells were studied with a stereomicroscope. Photos were taken with a digital photocamera or Scanning Electron Microscope (SEM). The protoconch whorls are counted according to the method described by Verduin (1977).

RESULTS

Class Gastropoda Cuvier, 1795
Subclass Vetigastropoda Salvini-Plawen, 1980
Superfamily Trochoidea Rafinesque, 1815
Family Skeneidae Clark W., 1851

Genus *Skenea* Fleming, 1825

Skenea Fleming, 1825, *The Edinburgh Philosophical Journal*, 12 (24): 246. Type species *Helix serpuloides* Montagu, 1808, by subsequent designation (Gray 1847:152). Recent, Great Britain.

Skenea giemellorum spec. nov. (Fig. 1 A-F, 2 A)

Material examined: Paratypes B and C (SBC): Lo Scalone, Capo Peloro (Messina, Italy), coralligenous bottom, 40 m depth, Stefano Bartolini legit 07-2009, H: 1.30 mm, W: 2.00 mm and H: 1.05 mm, W: 1.75 mm respectively.
Type material: Holotype (MNHN IM-2000-30149), H: 1.46 mm, W: 2.12 mm (Fig. 1 A-E) and Paratype A (CBC), H: 1.54 mm, W: 2.31 mm (Fig. 1 F, 2 A).
Type locality: Capraia Island (Livorno, Italy, 43°00□N, 09°50□E), coralligenous bottom, 40 m depth
Etymology: phonetic rendering of the acronym G.M.L. (Gruppo Malacologico Livornese - Livorno Malacological Group). This species is dedicated to the past and present members of the group.

Description (based on the type series, details of sculpture and protoconch on holotype and paratype A; holotype measurements in parentheses): The shell (Fig. 1 A-C) is small, discoidal, depressed, wider than high, rather solid, opaque whitish. The protoconch (Fig. 1 E, F) is paucispiral (0.5 whorls), with a diameter of 250-265 (255) μm, completely smooth except two very thin threads visible on the dorsal surface. Protoconch-teleoconch border marked by a varix. The teleoconch comprises 2.1-2.4 (2.4) convex whorls. The suture is distinct and deep. The spire is quite flattened, in some specimens more elevated. The aperture is slightly prosocline and almost circular. The peristome is sharp, and discontinued in the parietal area just below the suture. In apertural view the columellar lip is regularly curved on the side bordering the aperture, slightly flared and almost straight on the side bordering the umbilicus. Outer lip simple. The umbilicus (Fig. 1 C) is open, simple, wide and deep (the protoconch can be seen from the base). The sculpture of the teleoconch is distinctive: the first ½ - ¾ whorl is ornamented by smooth, flattened, spiral ribs, gradually disappearing on the apical part of the whorl and then on the periphery at 1.6-1.9 whorl, then remaining only on the base. The spiral ribs become increasingly wide along the spire. Between the spiral ribs is present a microsculpture, at first consisting by close-set, thin, irregular axial lamellae which turn into a finely granulose surface after the first whorl. The shell surface is also crossed by growth lines, more marked near the aperture and in the periumbilical zone. Umbilicus striated. Dimensions: H: 1.05 mm-1.46 mm, W: 1.75 mm-2.31 mm, H/W: 0.60-0.73 (0.69). Variability: the spire is more or less depressed yet never flattened, teleoconch sculpture is more or less marked, the width of the spiral ribs is more or less broad.

Soft parts unknown.

Distribution and habitat: known only from the Northern Tyrrhenian Sea and the strait of Sicily, from coralligenous bottoms.

Discussion: A survey of the literature on European "Skeneimorphs" (Jeffreys, 1883; Dautzenberg & Fischer, 1897; Rubio & Rodriguez Babio, 1991; Warén, 1991, 1993, 1996; Warén, 1992 and teferences therein; Rubio *et al.*, 1998; La Perna, 1999; Carrozza & Van Aartsen, 2001; Cretella & Fasulo, 2003; Rubio *et al.*, 2004; Peñas *et al.*, 2006; Buzzurro & Cecalupo, 2007; Hoffman, van Heugten & Lavaleye, 2008, 2010; Segers, Swinnen & De Prins, 2009; Rolán, 2011; Rubio & Rolán, 2013) found no species matching *Skenea giemellorum*. The extra-european (particularly West Atlantic) and fossil Cenozoic (particularly Euro-Mediterranean) literature was also reviewed.

Skenea giemellorum is conchologically distinct. Only the following species of Skeneimorphs are superficially similar.

Skenea serpuloides (Montagu, 1808) is smaller, more depressed (Fig. 2 B-D), with a completely smooth protoconch, without varix (Fig. 2 E). The teleoconch sculpture is much finer than *Skenea giemellorum* (Fig. 2 D), consisting in spiral grooves running on the smooth surface (Fig. 2 F), except in the umbilicus where the sculpture is coarser.

Skenea catenoides (Monterosato, 1877) is very similar to *S. serpuloides* in general outline and size, moreover the characteristic periumbilical ribs and the proto-

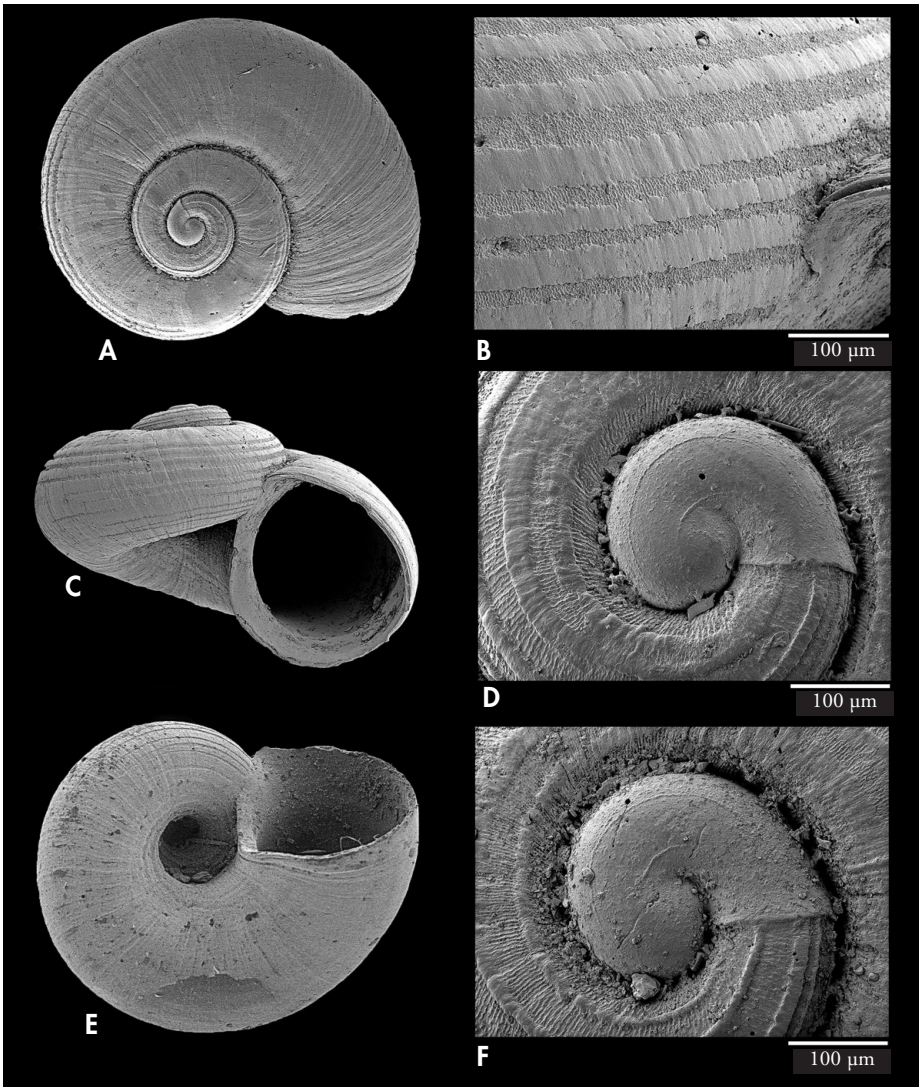

Figure 1. *Skenea giemellorum* spec. nov. A-E. Holotype, H 1.46 mm, W 2.12 mm, Capraia Island. (Livorno, Italy), in MNHN IM-2000-30149. A: shell, apical view; B: detail of the sculpture; C: shell, apertural view; D: protoconch; E: shell, basal view. F. Paratype A, H 1.54 mm, W 2.31 mm, Capraia Island, in CBC.

Figura 1. Skenea giemellorum *spec. nov. A-E. Holotipo, H 1,46 mm, W 2,12 mm, isla de Capraia (Livorno, Italia), en MNHN IM-2000-30149. A: concha, vista apical; B: detalle de la escultura; C: concha, vista apertural; D: protoconcha; E: concha, vista basal. F. Paratipo A, H 1,54 mm, W 2,31 mm, isla de Capraia, en CBC.*

conch with deformed nucleus differs from *Skenea giemellorum* (Warén, 1992). Actually CLEMAM (and then WoRMS) ignored Warén's (1992) placement in *Lodderena* because *Lodderena* has an Australian type species and has a thickened outer lip which never occurs in any European *Skenea* (Gofas, pers. comm.).

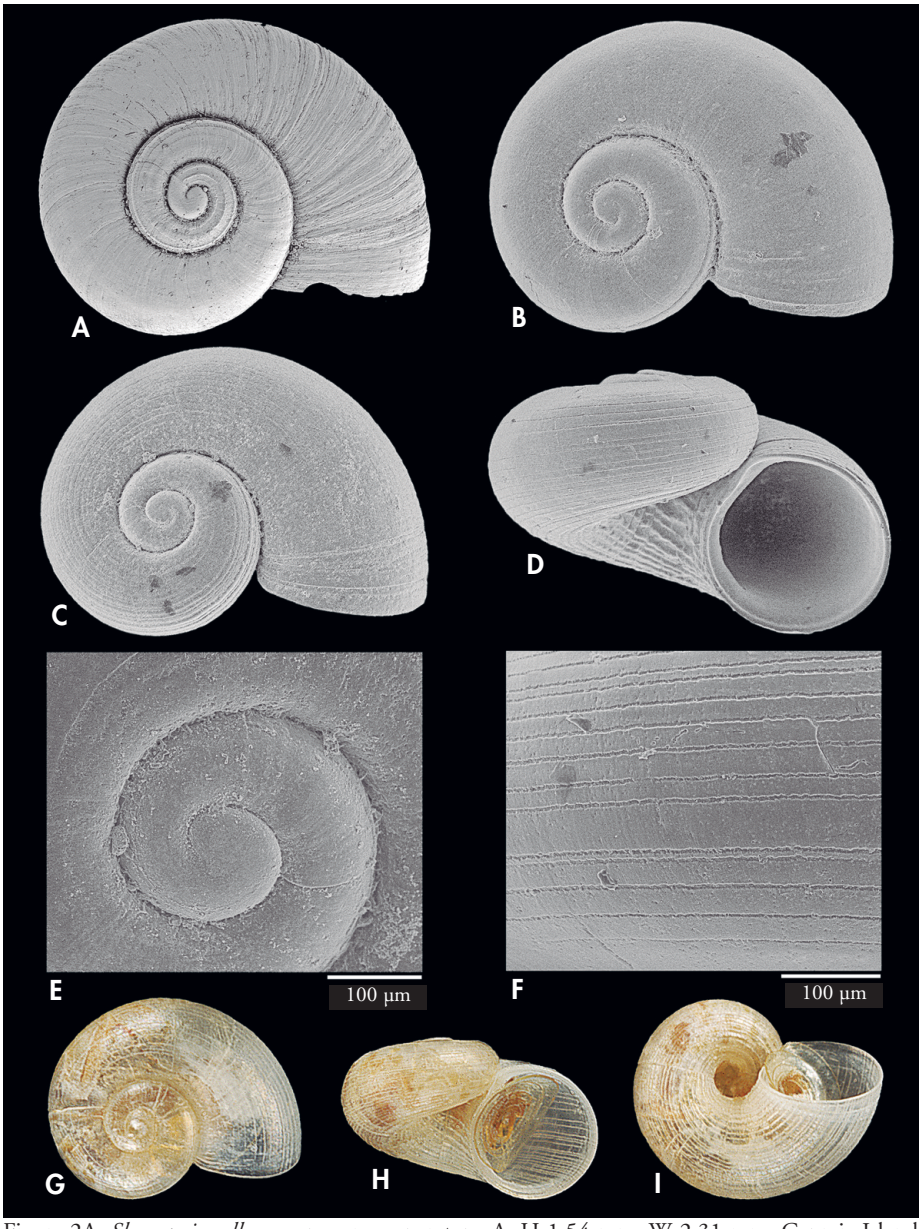

Figure 2A. *Skenea giemellorum* spec. nov., paratype A, H 1.54 mm, W 2.31 mm, Capraia Island (Livorno, Italy), in CBC, shell, apical view. Figures 2B-I. *Skenea serpuloides* (Montagu, 1808), B: W 1.30 mm, Scilla (Reggio Calabria, Italy), shell, apical view; C: W 1.43 mm, Getares (Spain), shell, apical view; D: W 1.42 mm, Scilla (Reggio Calabria, Italy), shell, apertural view; E: protoconch, same shell as C; F: detail of the sculpture, same shell as D; G-I: W 1.00 mm, Ferragudo (Algarve, Portugal). *Figure 2A.* Skenea giemellorum *spec. nov., paratipo A, H 1,54 mm, W 2,31 mm, isla de Capraia , en CBC, concha, vista apical. Figures 2 B-I.* Skenea serpuloides *(Montagu, 1808), B: W 1,30 mm, Scilla (Reggio Calabria, Italia), concha, vista apical; C: W 1.43 mm, Getares (Spain), concha, vista apical; D: W 1.42 mm, Scilla (Reggio Calabria, Italy), concha, vista apertural; E:protoconcha, misma concha que C; F: detalle de la esculptura, misma conha que D; G-I: W 1.00 mm, Ferragudo (Algarve, Portugal).*

Skenea olgae Segers, Swinnen & De Prins, 2009 is smaller, the protoconch is smooth, the spiral grooves are all over the shell surface (Segers *et al.*, 2009).

Skenea pelagia Nofroni & Valenti, 1987 is smaller, more globose, with spiral sculpture on the whole shell surface, obliquely converging towards the umbilicus (Nofroni & Valenti, 1987).

Moelleriopsis messanensis (Seguenza, 1876) has a smooth shell, except the periumbilical and adapical ribs, the protoconch is sculptured with many spiral threads (Warén, 1992).

The japanese *Dillwynella planorbis* Hasegawa, 1997 is similar in size and ouline but has a different sculpture and protoconch (Hasegawa, 1997; Okutani, 2000).

Spiromoelleria quadrae (Dall, 1897), from the Northern Pacific, differs, above all, in the shell sculpture and umbilicus size (Baxter & McLean, 1984).

Lacking anatomical data to assess its systematic position, the new species is provisionally attributed to *Skenea*. The shells were always found empty and have a somewhat bleached appearance, so it cannot be excluded they belong to quaternary thanatocoenoses. It will be necessary to obtain living specimens to confirm that this species is a member of the recent Mediterranean fauna.

We take the opportunity to add some data on the shell morphology of the numerous specimens of *Skenea serpuloides* available to us. The protoconch size varies between 245 μm and 290 μm, larger than the 180-200 μm reported by Fretter & Graham (1977) for northern European specimens. The teleoconch sculpture is quite variable: the spiral striae are more or less strong and range from few to numerous and quite close-set; in particular, most Mediterranean specimens (Fig. 2 B) lack sculpture on the apical part of the spire, while entirely sculptured specimens are more common in southern Spain and Atlantic coasts (Fig. 2 C, G-I).

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