

On some Mediterranean species of genus *Clathromangelia* Monterosato, 1884 (Mollusca Raphitomidae) with description of *C. peregrina* n. sp.

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ABSTRACT

A small group of *Clathromangelia* Monterosato, 1884 species is composed by *C. loiselieri* Oberling, 1970 and *C. strigilata* Pallary, 1904. They share an elongated, turreted outline of the shell, almost entirely light coloured in colour, and a more delicate sculpture. They have been studied in modern times and their taxonomical position seems to be stabilized. A third species, similar in general outline and colour of the shell to the preceding species, is here distinguished on the basis of adult shell and protoconch morphology and described as new.

KEY WORDS

Raphitomidae; shell morphology; *Clathromangelia*; Mediterranean Sea; new species.

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INTRODUCTION

Raphitomids of the genus *Clathromangelia* has been overlooked since modern times (see Scuderi et al., 2025 for references). They share with species of *Raphitoma* an almost turreted shell with reticulated sculpture composed by axial ribs and more or less equal spiral cords, at the intersection of which more or less marked tubercles are present (van Aartsen & Zenetou, 1987; Chirli, 1997; Oliverio, 1995). Protoconchs of extant species of raphitomids are similar to that of the exclusively Mediterranean *Raphitoma* and of the indo-pacific *Kermia* species. Fossil materials revealed a wider range of morphological variability as concern teleoconch as well as protoconch characters (Landau et al., 2020, 2022), though they all seem variations of the same basal outline.

Scuderi et al. (2025) recently treated species of *C. granum* group, often dark in shell colour and with a strong shell reticulation and robust tubercles.

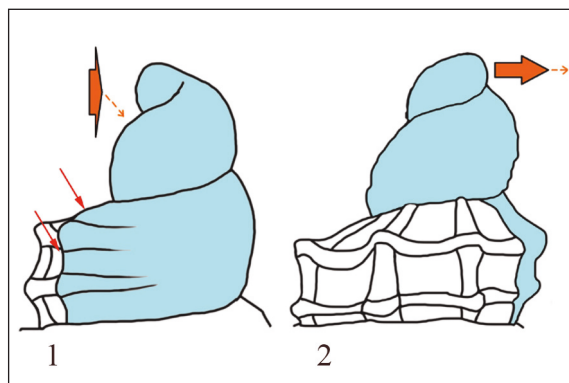
The present study completes the taxonomical investigation of the Mediterranean species of *Clathromangelia* with the group of *C. loiselieri*, composed by almost entirely light coloured representatives.

MATERIAL AND METHODS

The studied materials are all represented by dry shells derived from bioclastic coarse sediments collected by SCUBA from different Mediterranean localities. Specimens were picked up, measured, determined at species level and compared with other species under the stereoscopes and finally

stocked in our private collections. Shell measurements and morphometric nomenclature are the same utilized in Scuderi et al. (2025, Figs. 1, 2) and are here re-proposed. In addition to the frontal view of the protoconch (Fig. 1), in which the nucleus is turned towards the observer and the last portion with spiral carinae are visible if present, following Verduin (1988) here we consider as further useful character the view in position 2 of the protoconch of the treated species, as sketched in Fig. 2, with the nucleus turned to right, from which a different apical outline can be appreciated. As in the previous contribution, the following morphometrical ratios allowed shell outline comparisons: al/h ratio, b/h ratio and lw/h ratio. Specimens were photographed with a digital camera to obtain digital pictures of the entire shell. A Thermo Scientific™ Phenom™ XL G2 Desktop SEM in Low Vacuum modality has been utilized to obtain details of the micromorphology of their protoconch and teleoconch in uncoated specimens. Teleoconch and protoconch features were observed under a stereomicroscope and, for those specimens not photographed at SEM, protoconch microsculpture was revealed by treating the specimens with 70% Silver Proteinate stain solution. No living specimens were obtained with the hand-towed net method reported in Scuderi et al. (2025).

ABBREVIATIONS AND ACRONYMS. AR = Agatino Reitano collection (Catania, Italy); AV = Alberto Villari collection (Messina, Italy); DS = Danilo Scuderi collection (Catania, Italy); PM =



Figures 1, 2. Sketches of a generic protoconch (in azure) of *Clathromangelia* in position 1 (Fig. 1) and 2 (Fig. 2). Orange arrows indicate nucleus orientation; red arrows indicate the protoconch-teleoconch boundary.

Pasquale Micali collection (Fano, Italy); MNB = Museum für Naturkunde, Berlin, Germany; MNHN = Muséum National d'Histoire Naturelle, Paris, France; NMB = Naturhistorisches Museum Bern, Switzerland; RMNH = Rijksmuseum van Natuurlijke Historie (Naturalis Biodiversity Center, Leiden, the Netherlands); SEM = scanning electron microscope; sh/s = shell/s without soft parts inside.

Nomenclature of the single characters: *al*: aperture length; *b*: total breadth of the shell; *EL*: external lip; *h*: total height of the shell; *ID*: internal denticles; *IS*: spirals between interspaces; *LC*: lower teleoconch spiral cord; *lw*: last teleoconch whorl; *N*: nucleus of protoconch; *NP*: nuclear papillae; *P*: protoconch; *PAR*: protoconch axial ribs; *PC*: primary teleoconch cords; *PC I*: adsutural primary teleoconch cord; *PK I*: adsutural protoconch keel; *PK II*: absutural protoconch keel; *PSS*: space between primary cords and siphonal fasciole; *PTT*: protoconch-teleoconch transition; *RP*: rows of micro-papillae; *SF*: siphonal fasciole; *UC*: upper teleoconch spiral cord.

RESULTS

Systematics

Classis GASTROPODA Cuvier, 1795

Subclassis CAENOGASTROPODA Cox, 1960

Ordo NEOGASTROPODA Wenz, 1938

Superfamilia CONOIDEA J. Fleming, 1822

Familia RAPHITOMIDAE Bellardi, 1875

Genus *Clathromangelia* Monterosato, 1884

TYPE-SPECIES. *Pleurotoma granum* R.A. Philippi, 1844 accepted as *Clathromangelia granum* (R. A. Philippi, 1844). The general description of the shell and external soft parts of this taxon are discussed in Scuderi et. (2025).

Clathromangelia loiselierii Oberling, 1970

(Figs. 3–7, 15–19)

C. fehri van Aartsen & Zenetou, 1987

ORIGINAL DESCRIPTION (Oberling, 1970). “*Clathromangelia loiselierii*, *spec. nov.* *Ce n'est pas le Cl. delosensis de Reeve, qui est synonyme de Cl. granum Phil. C. loiselierii est beaucoup plus mince*

et petit que C. granum (3x1 mm., contre 5x2,5 mm. chez granum); sa sculpture est beaucoup plus délicate, et il y a 5 cordons spiraux au lieu de 3 sur l'avant-dernier tour. On trouve chez cette espèce des variétés blanche et brune: chez la dernière les cordons spiraux peuvent être plus sombres que le reste de la coquille. Trouvé à Malia, Crète”.

TYPE LOCALITY. Malia, N-Eastern coast of Crete, Greece (Oberling, 1970).

TYPE MATERIAL. Lectotype. Greece • 1 sh; Crete, Malia; height 3.4 mm, width 1.59 mm; NMB.

Paralectotype. Greece • 1 sh; Crete, Malia; paralectotype n. 1, height 2.65 mm, width 1.23 mm; NMB • 1 sh; Crete, Malia; paralectotype n. 2, height 2.7 mm, width 1.2 mm, Figs. 3–5; NMB.

MATERIAL EXAMINED. GREECE • 30 sh; Achata, Karpathos Island; 20–38 m depth; bioclastic coarse sediment collected with SCUBA; PM and DS.

TUNISIA • 1 sh; Aghir, Djerba; 2–5 m depth; shell grit collected from intermattes of *Posidonia* beds, S. Palazzi legit; PM.

Holotype of *Clathromangelia fehri* in RMNH: MOL.55958, height: 4.1 mm (figured in Malacopic.nl, 2025).

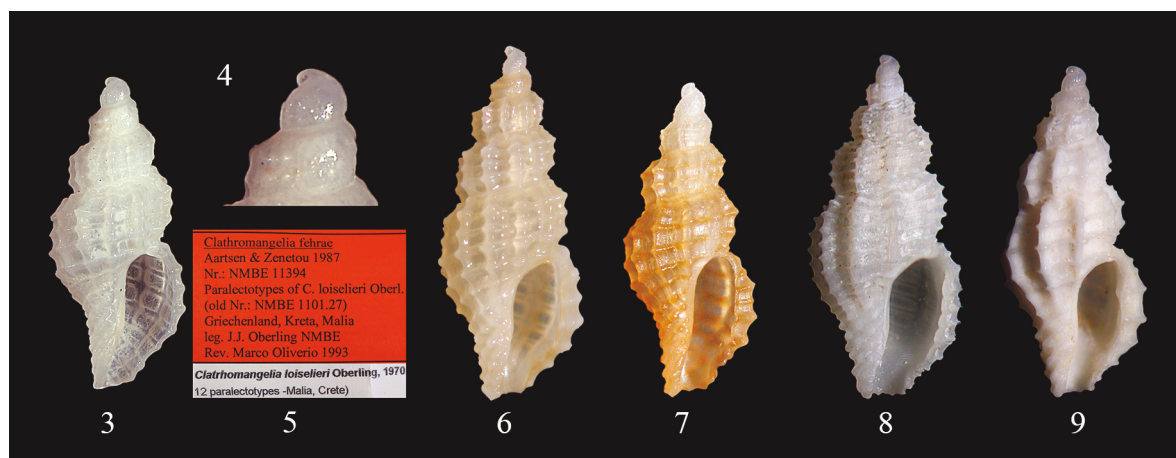
DISTRIBUTION AND BIOLOGY. The species seems to be almost exclusively present in the Levantine basin, but rare specimens have been collected along the Tunisian coasts (Fig. 40). Since only empty shells has been found, including types, habitat

remains almost unknown. They all derive from bioclastic coarse sediments collected in shallow (2–38 m depth) waters.

STRATIGRAPHIC DISTRIBUTION. No fossil material is known of this species.

REMARKS. The species has been exhaustively re-described by Oliverio (1995), who selected and figured the lectotype and two paralectotypes. Van Aartsen & Zenetou (1987) described and figured this species as *C. fehri*, as currently accepted by the official checklists and agreed by us. Manousis et al. (2012, 2018) also re-described and figured it after abundant materials from the Hellenic waters, reporting the brownish colour of the shell with darker spiral ridges and protoconch, as more common than the almost entirely white specimens.

The study of the lectotype and the two paralectotypes in NMBE by Oliverio (1995) allowed the rediscovery of the Oberling's species and the synonymy with *C. fehri* van Aartsen et Zenetou, 1987. Oliverio (1995) selected and figured the lectotype, an almost fully grown shell, among the three syntypes present in NMB. We also observed the figures of the two paralectotypes and ascertained the almost worn conditions of all these specimens. This conducted Oliverio (1995) to figure the protoconch of a more recent specimen from the same Cretan origin, which seems to be in accordance with the characteristics of the protoconchs observed by us, except for a less



Figures 3–9. Shells of *Clathromangelia*. Figs. 3–5: paralectotype n. 2 of *C. loiselieri*, h = 2.7 mm, with detail of the protoconch, and its labels, Malia, Crete, Greece (NMB). Figs. 6–7. *C. loiselieri*, light coloured and darker specimens, Karpathos Island (Greece), h = 4.1 and 3.1 mm respectively. Figs. 8–9: *C. strigilata*, typical and morphological variation, Sidi Youssef, Kerkennah Islands (Tunisia), h = 4.2 and 3.9 mm respectively.

slender general outline, depending probably by a different orientation, and a more coalescent weave of the tubercles of the second whorl to thin axial riblets. The protoconch of paralectotype n. 2 (Figs. 3–5) seems to be worn too but complete. Though we were not able to obtain a SEM photograph of it, the shape characteristically slender, with the nucleus projected upward, is sufficient to characterize the species. As all the other congeners, in *C. loiselieri* the shell surface is covered by dense microgranules (Fig. 19).

In addition to shell colour, *C. loiselieri* also shows a variability in the number of spiral cords at the end of the penultimate whorls, that are five (three main and two adapical secondary) in the lectotype, against four in the specimen from Karphatos figured at Fig. 7 and possibly six in the white specimen figured by Manousis et al. (2018, Fig. 1 g) and Manousis (2021: 261, upper line). Sutural ramp is of variable width.

Clathromangelia loiselieri differs from *C. strigilata* for the “clathrate” sculpture of solely 3 primary cords and one PC I, adherent to suture, which give rise to squared pits in interspaces and pronounced but not pointed tubercles at intersections, while the latter has rectangular interspaces derived by more numerous (5–6) and narrower primary cords and 2–3 PC I, adherent to the suture. Moreover, the shape and sculpture of the protoconch is different (Figs. 15–18). Differences with *C. peregrina* n. sp. are summarized under this latter species.

***Clathromangelia strigilata* Pallary, 1904**

(Figs. 8, 9, 20–24)

ORIGINAL DESCRIPTION (Pallary, 1904): “*Clathromangelia* (?) *strigilata* Pallary, nov. sp. (*Pl. VII*, fig. 6.). *Testa oblonga, turrata. Anfractus* 5; *apicales* 1 ½; *normales* 3 ½, *convexi, costis longitudinalibus funiculisque decurrentibus ornati. Costae prominentes, quam interstitial paulo angustiores, usque ad caudae extremitatem productae; funiculi transversi plurimi, exiles, aequidistantes, areas intercostales instruantes, costasquae superantes. Sutura undata. Pertura producta. Cauda brevissima, aperta. Margo columellaris arcuata. Labrum extus intusque incrassatum, haud dentatum; sinus suturalis impressus. Color albus. Alt. 4–5 mm., lat. 2–2 ¼.*

*Conquille fusiforme. Tours convexes ornés de cordons longitudinaux de stries décurrentes éqidistantes passant sur les côtes. Ouverture oblongue, arrondie; canal très ouvert; columelle faiblement incline sur la gauche. Labre simple, replié en dedans et pourvu au sommet d'un sinus pen profonde. Coloration d'un blanc pur un pen hyalin. Ouverture un peu moins haute que la moitié de la hauteur de la conquille. Nous n'avons trouvé, ni dans notre collection, ni dans les ouvrages que nous possédons, aucune espèce qui puisse rapprochée de celle-ci. So caractère principal est d'avoir une sculpture composée de côtes longitudinales et de cordons décurrents, qu'on ne peut mieux comparer qu'à celle du *Cancellaria cancellata* ou du *C. similis*. L'ouverture a tous les caractères de celle des *Mangilia* don't elle se distingue par son ornementation cancellée; mais par sa protoconche elle se rapproche bien plus des *Leufroya*. Sfax”.*

TYPE LOCALITY. Sfax, Tunisia.

TYPE MATERIAL. Syntype, MNHN; IM 2000-3242.

MATERIAL EXAMINED. TUNISIA • 59 sh; Aghir, Djerba; 2–5 m depth; shell grit collected from intermattes of *Posidonia* beds, S. Palazzi legit; PM • 3 sh; Kerkennah Island, Sidi Youssef; DS • 10 sh; Kerkennah Island; PM • 29 sh; Kerkennah Island, Kraten; 1 m depth; in shell grit, A. Cecalupo legit; PM.

DISTRIBUTION AND BIOLOGY. The species is present almost exclusively along the Tunisian gulf, with rare specimens in Aegean Sea (Fig. 40).

STRATIGRAPHIC DISTRIBUTION. No fossil material is known of this species.

REMARKS. The species has been exhaustively treated and figured by van Aartsen & Zenetou (1987) and also by Oliverio (1995), who provided a SEM picture of the protoconch and summarized the distinctive characters. This species shows a remarkable variability in the position of the spiral cords and number of axial ribs and sculpture (compare Fig. 8 against Fig. 9). Similar variability is shown in Manousis et al. (2018, Fig. 2 a, b) and Manousis (2021: 262).

Clathromangelia strigilata is easily distinguishable from the other extant as well as fossil congeners by the presence of 5–6 spirals on each

teleoconch whorls, though a different morph with the same protoconch (Fig. 22) of this species, with 3 main spirals and 2–3 adsutural primary cords on the last teleoconch whorl, is present in the same geographical area (Fig. 9). The slender and sculptured protoconch adds a further item in the identification (Figs. 20–23). Specimens described and figured by Manousis et al. (2012, 2018) seem to fall within the morphological range of the species, though protoconchs appear less slender and the sculpture is not clearly distinguishable by the digital photograph only. For comparisons to *C. loiselieri* and *C. peregrina* n. sp. see under remarks of these species.

***Clathromangelia peregrina* n. sp.**

(Figs. 10–14, 25–29)

<https://www.zoobank.org/78B6A2F8-560A-4C91-84BD-32EAC6EF8064>

TYPE LOCALITY. Sicily, Messina, Taormina, Isola Bella; 37°51'05"N 15°18'05"E.

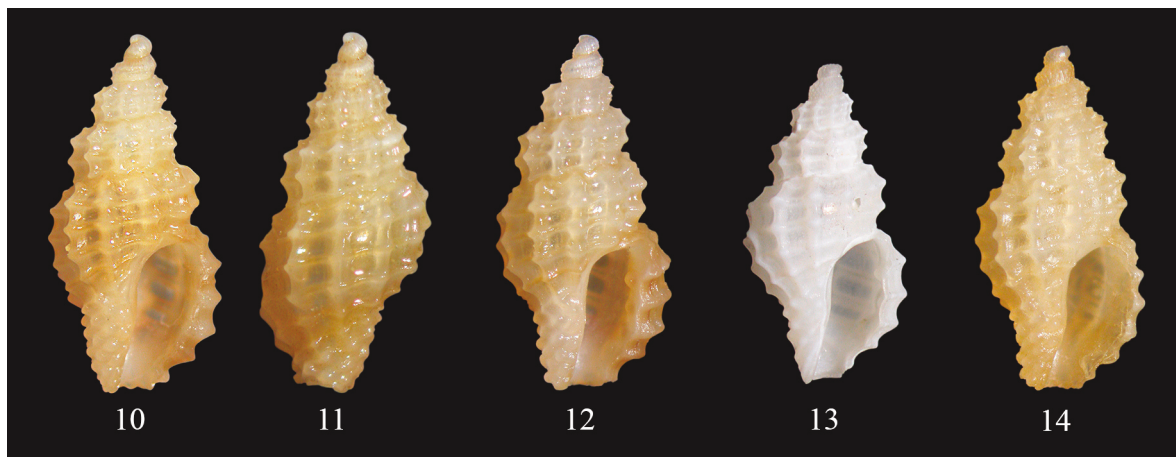
TYPE MATERIAL. Holotype. ITALY • 1 sh; Sicily, Messina, Taormina, Isola Bella; 37°51'05"N 15°18'05"E; 18–25 m depth; shell grit collected inside a cave with SCUBA, A. Villari legit, height 4.1 mm, width 2.0 mm, Figs. 10, 26; MNHN-IM-2000-39983.

Paratypes. ITALY • 1 sh; same data as for holotype; height 3.8 mm, width 1.9 mm, Figs. 11; paratype 1; AV • 1 sh; same data as for holotype;

height 4.0 mm, width 2.0 mm, Figs. 12; paratype 2; AV • 1 sh; Sicily, Lampedusa Island, Isola dei Conigli; 1–2 m depth; shell grit from intermattes of *Posidonia* beds, D. Scuderi legit, height 3.3 mm, width 1.7 mm, Figs. 13, 28, 29, 30, 31; paratype 3, MNHN-IM-2000-39984 • 2 sh; Sicily, Agrigento, Lampedusa Island, Capo Grecale; 50 m depth; shell grit collected with SCUBA, A. Reitano legit, height 3.5 mm, width 1.7 mm and height 3.6 mm, width 1.8 mm; paratypes 4–5; AR • 2 sh; Sicily, Messina, Villaggio Pace; 7 m depth; shell grit, P. Micali legit, height 5.2 mm, width 2.5 mm and height 4.8 mm, width 2.2 mm; paratypes 6–7; PM • 1 sh; Campania, Napoli, Procida Island; shell grit collected with SCUBA from intermattes of *Posidonia* beds, D. Scuderi legit, height 3.6 mm, width 1.8 mm, Fig. 14; paratype 8; DS.

OTHER EXAMINED MATERIAL. ITALY • 4 sh; same data as for holotype; AV • 9 sh; Sicily, Lampedusa Island, Isola dei Conigli, Cala Croce; 6–8 m depth; shell grit collected with SCUBA from intermattes of *Posidonia* beds; DS • 1 sh; Sicily, Trapani, S. Giuliano; beached shell grit; DS • 1 sh; Sicily, Trapani, Favignana Island; 30 m depth; AV. CYPRUS • 1 sh; Karpaz; shell grit collected with SCUBA; 30 m depth; DS. TUNISIA • 4 sh; Kerkennah Island, Sidi Youssef; DS, PM, AV.

DESCRIPTION OF HOLOTYPE. Shell small (5.8 mm), fusiform, with turriculate profile and elongate and shouldered spire, solid, with reticulated



Figures 10–14. *Clathromangelia peregrina* n. sp. Fig. 10: holotype, MNHN-IM-2000-39983, Taormina, Messina (Italy), apertural view, h = 4.1 mm. Fig. 11: paratype 1, dorsal view, same data of the holotype, h = 3.8 mm. Fig. 12: paratype 2, same data of the holotype, h = 4.0 mm. Fig. 13: paratype 3, MNHN-IM-2000-39984, Lampedusa Island, Agrigento (Italy), h = 3.3 mm. Fig. 14: paratype 8, Napoli, Procida Island, h = 3.6 mm.

sculpture. At high magnification the shell surface is covered by dense microgranules (Fig. 29). Teleoconch something stouter, b/h ratio 0.48, constituted by 4 slightly rounded whorls, with angular shoulder and undulated suture. Last whorl moderately inflated forming more than half of the total shell height, lw/h ratio: 0.65. Sculpture constituted by equally strong spiral ridges and axial ribs. Spirals are narrower than axials, forming on each whorl 3 primary cords, plus further two spirals on the last whorl, with adsutural primary teleoconch cord (PC I) always smaller and adherent to suture, closer to the following and less pointed than the others. Axial sculpture constituted by 12 strong orthocline straight ribs on the last whorl, slightly narrower than interspaces. Spirals and axials form a reticulate sculpture, with prominent but rounded tubercles at the intersection and rectangular pits in interspaces. Aperture narrowly oval, with thickened outer lip, shouldered at the top, al/h ratio 0.47. Inner lip with 4 not well marked denticles. Columella "S" shaped, evenly curved on the siphonal region, with narrow columellar callus and parietal callus simply connected with the not marked anal sinus. Siphonal canal not long but well defined, thick, rounded, with a short but well opened sinus. Siphonal fasciole robust, except for those on the lower part, 7 in number, with large and rounded tubercles on the top. Space between primary cords and siphonal fasciole (PSS) wide, well delimited. Colour white-yellowish, slightly darker on the last whorl, with a golden yellow spiral band on the PSS, between siphonal fasciole and primary cords, plus a narrower one at subsutural zone.

Protoconch. Paucispiral, height = 495 μm , width = 397 μm , diameter 435 μm , cylindrical, yellowish, constituted by 2.0 rounded whorls, with incised suture. They are sculptured with 28–30 axial orthocline riblets, sinuous at the suture, which became divided into two rows of scales on absutural zone. Axial riblets are crossed by faint irregular and dense spiral treads. A single well marked carina is present on the median zone of the last whorl. This latter gives rise to the second, median spiral ridge of the first teleoconch whorl. Nucleus small, 71.4 μm wide, with aligned micro-papillae forming numerous, thin spiral threads on the first post-nuclear whorl. Protoconch-teleoconch boundary sharp and sinuous.

External soft parts not known.

VARIABILITY. Differences between paratypes and the holotype are not marked and concern mainly the colour, which could range from pale yellowish to whitish, with the golden yellow basal band which could miss in some specimens (Fig. 13), and the height, which could range from 3.5 to 5.4 mm in fully grown specimens.

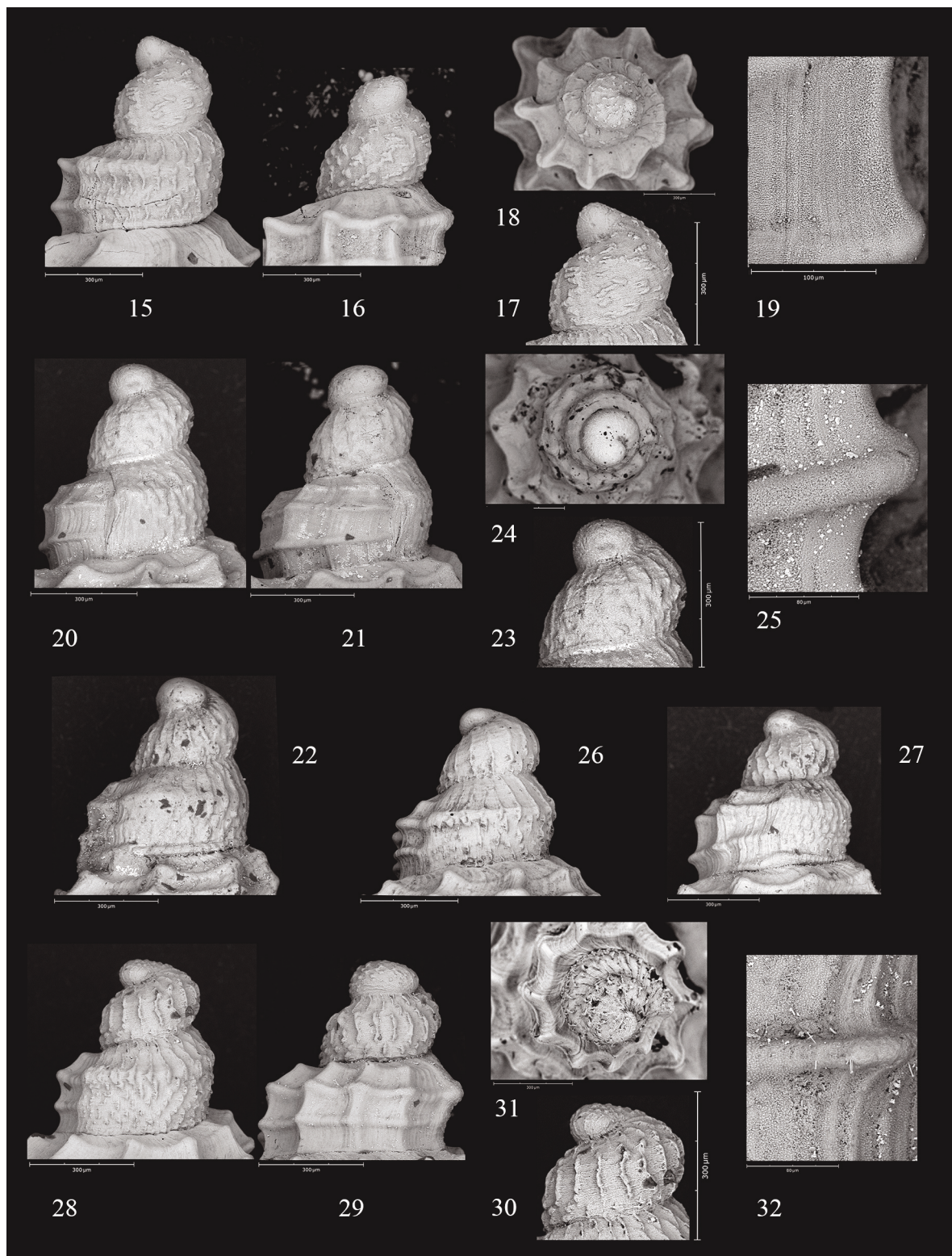
DISTRIBUTION AND BIOLOGY. This is the species of the group of light coloured *Clathromangelia* which seems to be wider distributed, from the Eastern Mediterranean to the Tyrrhenian sea, but wherever almost rare (Fig. 40).

Only known after dry material, since no living specimens were collected. The bioclastic coarse sediments which contained materials of the new species were collected at low depths, from 6–8 to almost 30 m, usually from intermattes of *Posidonia* beds.

STRATIGRAPHIC DISTRIBUTION. No fossil material is known of this species.

ETYMOLOGY. Since the distribution localities of the species seem to almost correspond to the adventurous trip undertaken by foreign people to reach the Italian coasts, from the ancient Phoenicians and Greeks to the recent migrants, we want to dedicate the species to their memory.

REMARKS. This species has been probably confused in the past (Cecalupo et al., 2008, pl. 67, Fig. 1 a, b) with *C. loiselieri* or with *C. strigilata*, due to its light coloured shell background colour, but really the shell structure recalls better that of the *C. granum* group of species (*C. fatamorganae* Scuderi, Reitano et Villari 2025, *C. granum*, *C. martinastellae* Scuderi, Reitano et Villari, 2025). In particular, specimens with pale colour are more similar to the new species. The protoconch micro-sculpture and outline are very different from all the other congeners. For the presence of only one carina on the last portion, its protoconch is morphologically more comparable to that of *C. martinastellae* but whorls are not carinated and riblets are more numerous, giving rise to two rows of spirals at the base of the whorl, which seem a little detached from suture. As concerns the shell, entirely white specimens of *C. martinastellae* are not uncommon in Tunisian Gulf (Fig. 33): the stouter, more robust shell and sculpture, with less incised sutures and the thicker siphonal canal and



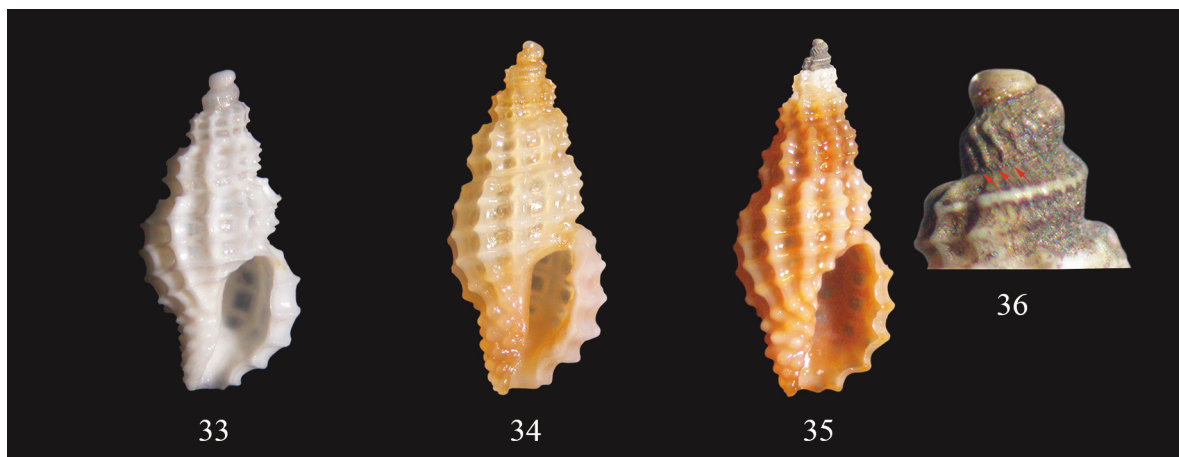
Figures 15–32. SEM photographs of protoconchs and details of the shell surface of *Clathromangelia*. Figs. 15–19: *C. loiselieri*, same data of Figs. 6–7. Figs. 20, 21, 23–25: *C. strigilata*, same data of Figs. 8. Fig. 22: same data of Fig. 9. Figs. 26–32: *C. peregrina* n. sp. Figs. 26: same data of Fig. 10; Fig. 27, 32: specimen from Sidi Youssef, Kerkennah Islands (Tunisia); Figs. 28–31: same data of Fig. 13.

external lip distinguish the new species from the former. Paler coloured shells of *C. granum* (Fig. 34) fall within the colour range of the species, though brownish hues are more common. In these specimens the darker zone is not restricted to a thin subsutural line and a more wide band passing inside PSS, as in *C. peregrina* n. sp., but almost the entire siphonal canal, the columellar region and the apical whorls; the shell is more elongated, in particular the last whorl (lw/h ratio: 0.67 vs. 0.65 in *C. peregrina* n. sp.), but less broad (b/h ratio: 0.44 vs. 0.5). Compared to *C. fatamorganae* (Figs. 35–36) differences with the new species on these parameters are more evident, being the former slender than *C. granum*.

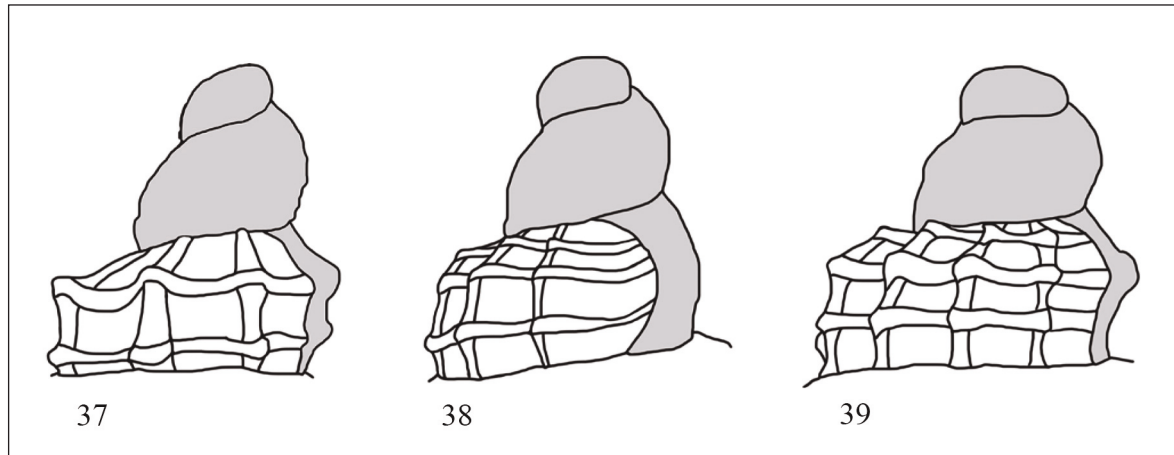
Clathromangelia peregrina n. sp. differs from the congeners *C. loiselieri* and *C. strigilata* for a more solid, stouter shell, yellowish in colour with an evident golden yellow band, which encircles the last whorl on the PSS and colours of yellow the penultimate lower external denticle of the strong, thick lip. The shell of *C. strigilata* is entirely white, elongated and delicate, with not very scaled whorls and numerous spiral ridges (usually more than 6 on the last whorl), while that of *C. loiselieri* is entirely yellowish, elongated and delicate, with shouldered whorls which bear delicate axial ribs and spiral ridges (3 in the last whorl and traces of PSI), darker in most specimens. Protoconchs of these three species are

quite different as general outline. Seen in position 2 it is conical in *C. loiselieri* and *C. strigilata* with acute nucleus projected upward and with evident and rough sculpture in the former, dome shaped with more delicate, predominantly axial sculpture in the latter. Seen in position 1 that of *C. loiselieri* appears almost detached, that of *C. strigilata* is obtuse, and on the last portion, just before the protoconch/teleoconch boundary, two well marked carinae are visible in the former, while the rough median swelling of the latter is not to be considered a real carina. The protoconch of *C. peregrina* n. sp. is cylindrical, more flattened on the sides and compressed on the top, with a smaller nucleus and a peculiar sculpture of evident axial riblets which gives rise to two detached rows of scales at the base. A single carina is present in the last portion. The first teleoconch whorl in *C. loiselieri* bears only two spiral ridges, while both *C. strigilata* and *C. peregrina* n. sp. have three carinae, all equidistant in the latter and with the upper two placed closer in the former.

Among the fossil species *C. marinae* Oliverio, 1995 from Lower Pliocene of Tuscany has a stouter, smaller shell, not scaled at sutures and with spiral ridges stronger than axial ribs, more numerous (4 primary plus other 3 on the last whorl); anal sinus markedly tilted on the right. The protoconch has regularly rounded whorls and a different uniform sculpture, constituted by minute pointed tubercles



Figures 33–36. Shells of *Clathromangelia* in apertural view. Fig. 33: *C. martinastellae*, entirely white specimen, Lampedusa Island, Agrigento (Italy), h = 3.3 mm. Fig. 34: *C. granum*, almost whitish specimen, S. Giovanni Li Cuti, Catania (Italy), h = 5.1 mm. Figs. 35–36. *C. fatamorganae*, paler coloured shell, and its protoconch artificially coloured with Silver Protein stain solution (red arrows indicate the punctiform papillae aligned to the characteristic spiral lines at the base of the second whorl), h = 5.2 mm.



Figures 37–39. Sketches of the protoconch outline of *Clathromangelia loiselierii* (Fig. 37), *C. strigilata* (Fig. 38) and *C. peregrina* n.sp. (Fig. 39) seen from aside in position 2.

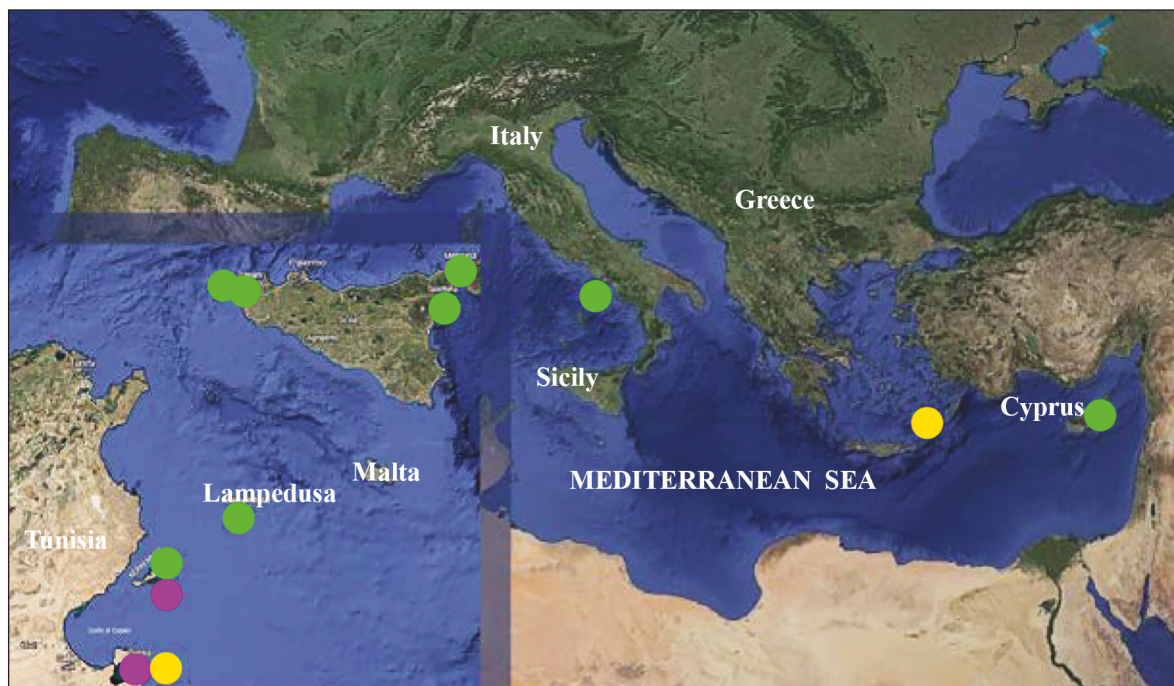


Figure 40. Map of the sampling Mediterranean Sea localities. Pink circles = *Clathromangelia strigilata*; yellow circles = *C. loiselierii*; green circles = *C. peregrina* n. sp.

organized in numerous thin axial rows, crossed by thin but evident spiral treads. There are no true spiral carinae on the last portion, but axial ribs became shouldered in the middle. Only two spiral ridges are present on the first teleoconch whorl.

Clathromangelia tavianii Oliverio, 1995 from Lower Pliocene of Tuscany has a bigger shell and almost the same number of whorls, less scaled,

more fusiform and with less incised sutures. Sculpture is similar to that of *C. peregrina* n. sp. but with only two spirals on the first teleoconch whorl. The protoconch is slender and with well-rounded whorls and the sculpture is finely and densely reticulated.

Clathromangelia terpsichore Chirli et Linse, 2011 from early-middle Pleistocene of Rhodes

island has a sub-cylindrical outline with squared whorls and aperture, a large subsutural ramp and the adapical spiral cord is stronger than the others.

DISCUSSION

From the point of view of the shell chromatism only, in the *Clathromangelia* species of the group of *C. granum*, in which all the representatives have a shell brownish in colour, the white shells represent only rare albinism (see for example *C. martinastellae* in Fig. 33). The three extant species here considered are instead almost entirely white-yellowish or honey brownish in background colour, with darker apical whorls and spiral sculpture in *C. loiselieri* and with a golden-yellow largest spiral band on the last whorl in *C. peregrina* n. sp.

After previous revisions (van Aartsen & Zenetou, 1987; Oliverio, 1995), the two well-known species *C. loiselieri* and *C. strigilata* are taxonomically stabilized, while the third, morphologically similar to these has been here described as *C. peregrina* n. sp.

The general shell structure with different shell ratio as well as the number of spiral ridges on the first teleoconch whorl seem good morphological characters for the distinction of these three species. The presence of more or less numerous spiral ridges on the last whorls is useful too in distinguishing the species, even if some variability is present (see above under *C. strigilata*). Constant and good elements are thus the protoconch outline and sculpture, as underlined in Scuderi et al. (2025). In particular, the general outline makes evident differences between these three species, when seen in lateral view in position 2 (as sketched in Figs. 37–39): the shape of nucleus and its orientation and dimensions are better valuable. Both *C. loiselieri* and *C. strigilata* are slender than *C. peregrina* n. sp. and the shape of nucleus is different. In the classical position 1, the entire shape of protoconchs is better visible and is also well different and with a different number of carinae. The combination of both teleoconch and protoconch characters, considered in their intraspecific variability, ensures distinction between species in a very satisfactory way.

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