



A new species of the *Jujubinus curinii* species complex: *J. alboranensis* spec. nov. (Gastropoda: Trochidae) from the Alborán Sea

Una nueva especie del complejo de *Jujubinus curinii*: *J. alboranensis* spec. nov. (Gastropoda: Trochidae) del Mar de Alborán

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ABSTRACT

A new species of the gastropod family Trochidae, *Jujubinus alboranensis* spec. nov. from the Mediterranean Sea is described based on shell characters. The new taxon is known from the type locality only, around the Alborán Island, and was compared with members of the *J. curinii* species complex, i.e. *J. curinii* Bogi & Campani, 2005, *J. eleonorae* Smriglio, Di Giulio & Mariottini, 2014 and *J. trilloi* Smriglio, Di Giulio & Mariottini, 2014, which are morphologically the most closely related species.

RESUMEN

Una nueva especie mediterránea de gasterópodos de la familia Trochidae, *Jujubinus alboranensis* spec. nov., se describe en base a caracteres conculológicos. El nuevo taxón se conoce solamente de la localidad tipo, en torno a la isla de Alborán, y se compara con otros miembros del complejo de *J. curinii*: *J. curinii* Bogi y Campani, 2005, *J. eleonorae* Smriglio, Di Giulio y Mariottini, 2014 y *J. trilloi* Smriglio, Di Giulio y Mariottini, 2014, que son morfológicamente las especies más similares.

INTRODUCTION

The genus *Jujubinus* Monterosato, 1884 includes a small group of marine cantharidine trochids (Gastropoda, Trochidae, Cantharidinae) living mostly from the lower intertidal zone down to about 80-100 m depth, and constantly associated with algal vegetation and/or seagrass (MARIOTTINI, DI GIULIO, APOLLONI & SMRIGLIO, 2013 and references therein). *Jujubinus curinii* Bogi & Campani, 2005, from the central

Mediterranean Sea, was the first species of this genus for which a peculiar shell sculpture was described, consisting of flat spiral cords without lamellae between the spiral threads (BOGI & CAMPANI, 2005). Recently (SMRIGLIO, DI GIULIO & MARIOTTINI, 2014), two other species with similar shell sculpture have been described, i.e. *J. eleonorae* Smriglio, Di Giulio & Mariottini, 2014 and *J. trilloi* Smriglio, Di Giulio & Mariottini, 2014.

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Noteworthy, all species of the *J. curinii* complex are short-range endemics, with a very local distribution; the coralligenous bottoms of the Strait of Messina (*J. curinii*), and two offshore shoals of the Sicily Channel, Skerki Bank (*J. eleonorae*) and Talbot Bank (*J. trilloi*). An additional species of this complex is herein described from the Alborán Sea.

Abbreviations

CS-PM, Carlo Smriglio-Paolo Mariottini collection (Rome, Italy)
LIME, Interdepartmental Laboratory of Electron Microscopy, University of RomaTre (Rome, Italy)
MCZR, Museo Civico di Zoologia di Roma (Rome, Italy)
MNCN, Museo Nacional de Ciencias Naturales (Madrid, Spain)
MNHN, Muséum National d'Histoire Naturelle (Paris, France)
MO, Marco Oliverio collection (Rome, Italy)
MZB, Museo di Zoologia dell'Università di Bologna (Bologna, Italy)
SEM, Scanning Electron Microscopy
W, Width
H, Height

MATERIAL AND METHODS

Bioclastic sediment samples were collected during SCUBA diving on the bottoms of the Alborán Island (35°56'43.99" N 3°02'03.73" W), 30–37 m depth, amidst *Laminaria* forest. Sediment samples were sieved through a 1 mm mesh and the residue was sorted using a stereomicroscope. Among the sorted shells an undescribed species of the genus *Jujubinus*, represented by 122 adult specimens (plus 72 fragments and juveniles not included in the type series), was spotted and is described herein. In addition, 200 specimens of *J. curinii* from Scilla (38°15'36"N, 15°43'08"E, Strait of Messina, Mediterranean Sea) 42 m depth, 122 specimens of *J. eleonorae* from Skerki Bank (37°45'00"N, 10°50'00"E, Sicily Channel, Mediterranean Sea) 37 m depth, and 90 specimens of *J. trilloi* from Talbot Bank (37°30'00"N, 11°40'00"E, Sicily Channel, Mediterranean Sea) 25 m depth, were analysed. Current genus-level systematics is based on WoRMS (Gofas & Bouchet, 2014). Scanning Electron Microscopy (SEM) photographs were taken at LIME, using a Philips XL30.

SYSTEMATICS

Class GASTROPODA Cuvier, 1795
Family TROCHIDAE Rafinesque, 1815
Genus *Jujubinus* Monterosato, 1884

Type species: *Trochus matoni* Payraudeau, 1826 (by subsequent designation of von Martens, 1885: 52, in the Zoological Record).

Jujubinus alboranensis spec. nov. (Figs 1A–C, 2A–C, 3A–I)

Type material: 122 shells from the type locality. Holotype, MNHN IM-2000-30131; paratype 1, MNHN IM-2000-30132; paratype 2, MZB60153; paratype 3, MZB60154; paratype 4, MCZR00225A; paratype 5, MCZR00225B; paratypes 6–7, MNCN 15.05/60160; paratypes 8–20: CS-PM; paratypes 21–122: MO.
Type locality: Alborán Island (35°56'43.99"N 3°02'03.73"W), Alborán Sea, western Mediterranean Sea.

Etymology: The species is named after the type locality, in the Alborán Sea.

Diagnosis: Small and slightly turriculate shell; sculpture of incised spiral lines; prosocline lamellae absent between cords.

Description (in parenthesis data of the holotype): Shell of relatively small size

for the genus, height (H) 6.5–8.9 (6.8) mm, width (W) 5.0–6.0 (5.3) mm, conical, light. Protoconch smooth, 370–410 (390) μ m in W, comprising about 1.5 whorls. Teleoconch of 4.5–5.5

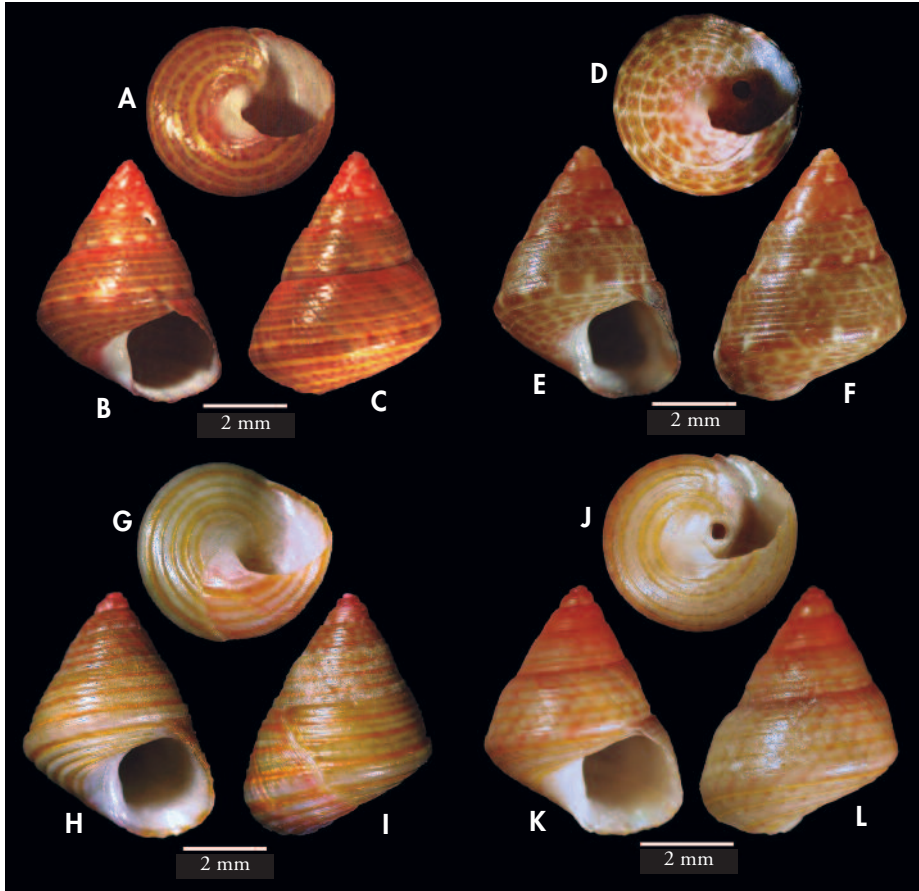


Figure 1. A-C: *Jujubinus alboranensis* spec. nov., Alborán Island, 30-37 m. Holotype, 6.8 mm (H) x 5.3 mm (W) (MNHN IM-2000-30131); D-F: *J. curinii*, 5.3 mm (H) x 4.1 mm (W), from Scilla, Strait of Messina, Mediterranean Sea, 42 m depth (CS-PM_Jcu001); G-I: *J. eleonora*, Holotype, 5.7 mm (H) x 4.7 mm (W), from Skerki Bank, Sicily Channel, Mediterranean Sea, 37 m depth (MNHN 25883); J-L: *J. trilloi*, Holotype, 5.4 mm (H) x 4.6 mm (W), from Talbot Bank, Sicily Channel, Mediterranean Sea, 25 m depth (MNHN 25882). Figures 1 D-L after SMRIGLIO ET AL. (2014: figs 1.1-3, 1.7-9, 1.13-15 © 2014 Magnolia Press).

Figura 1. A-C: *Jujubinus alboranensis* spec. nov., Isla de Alborán, 30-37 m. Holotipo, 6,8 mm (H) x 5,3 mm (W) (MNHN IM-2000-30131); D-F: *J. curinii*, 5,3 mm (H) x 4,1 mm (W), de Scilla, Estrecho de Messina, Mar Mediterráneo, 42 m de profundidad (CS-PM_Jcu001); G-I: *J. eleonora*, Holotipo, 5,7 mm (H) x 4,7 mm (W), del Banco Skerki, Canal de Sicilia, Mar Mediterráneo, 37 m de profundidad (MNHN 25883); J-L: *J. trilloi*, Holotipo, 5,4 mm (H) x 4,6 mm (W), del Banco Talbot, Canal de Sicilia, Mar Mediterráneo, 25 m de profundidad (MNHN 25882). Figuras 1 D-L reproducidas de SMRIGLIO ET AL. (2014: figs 1.1-3, 1.7-9, 1.3-15 © 2014 Magnolia Press).

(4.5) slightly convex whorls. Sculpture of 8-10 (9) flat, closely set abapical spiral cords of about the same strength, including the 2-3 (3) peripheral ones forming the basal cord, slightly shoul-

dered, and 7-8 (8) regularly spaced, basal spiral cords large and flat. Suture incised. Teleoconch surface covered by barely visible prosocline growth striae, irregularly set. Base convex, umbilicus

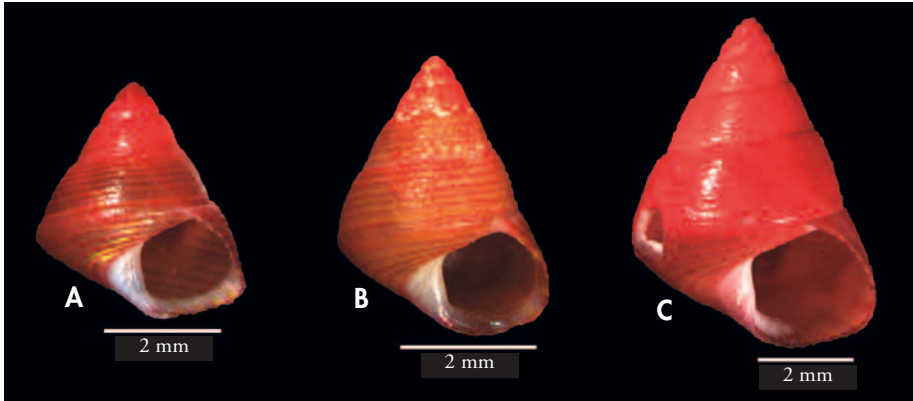


Figure 2. *Jujubinus alboranensis* spec. nov., paratypes, Alborán Island, 30-37 m. A: paratype 2, 4.2 mm (H) x 3.9 mm (W), (MZB 60153); B: paratype 4, 6.2 mm (H) x 5.0 mm (W), (MCZR 00225A); C: paratype 3, 7.0 mm (H) x 5.4 mm (W), (MO Jalb001).

Figura 2. *Jujubinus alboranensis* spec. nov., paratipos, Isla de Alborán, 30-37 m. A: paratipo 2, 4,2 mm (H) x 3,9 mm (W), (MZB 60.153); B: paratipo 4, 6,2 mm (H) x 5,0 mm (W), (MCZR 00225A); C: paratipo 3, 7,0 mm (H) x 5,4 mm (W), (MO Jalb001).

closed also in juveniles, covered with a white callus. Aperture quadrangular, with the columellar callus thickened in the middle portion. Interior of the aperture whitish, nacreous. Colour of protoconch and initial teleoconch whorls bright red; remaining whorls and base with alternating brownish-reddish and yellowish-orange spiral stripes (of different size in the holotype), with the upper part of the brownish-reddish stripe dotted with red.

Distribution: Only known from the type locality.

Discussion: PEÑAS, ROLÁN, LUQUE, TEMPLADO, MORENO, RUBIO, SALAS, SIERRA & GOFAS (2006) reported on the molluscan fauna of the Alborán Island, describing 8 new species, and highlighting other endemic species, along with the great diversity of molluscs found in the area. Among several remarkable species (e.g. *Mitrolumna wilhelminae*, *Chauvetia recondata*, *Chauvetia mamillata*, *Calliostoma conulus*: PEÑAS ET AL., 2006: 144) they reported *Jujubinus ruscurianus* (Weinkauff, 1868) from several stations, albeit qualifying (PEÑAS ET AL., 2006: 144) peculiarities with respect to typical *Jujubinus ruscurianus*. Their material including the

specimen figured alive (PEÑAS ET AL., 2006: fig. 424, as *Jujubinus* sp.) corresponds to *J. alboranensis* spec. nov. (J. Templado, pers. comm.). Actually, *Jujubinus alboranensis* spec. nov. (Figs 1A-C, 2A-C, 3A-I) differs from most of the Atlantic and Mediterranean *Jujubinus* species (including *Jujubinus ruscurianus*) by its teleoconch sculpture with flat spiral cords, lacking the typical prosocline lamellae in the spiral furrows between cords. SEM analysis has confirmed the lack of prosocline lamellae in shells of *J. alboranensis* spec. nov. (Figs 3A-I), which in some species may be hardly visible under optical microscope in case of even slightly worn specimens. This peculiar sculpture is shared only with the species of the *J. curinii*-complex (SMRIGLIO ET AL., 2014 and references therein), i.e. *J. curinii* (Fig 1D-F, 4A), *J. eleonora* (Fig 1G-I, 4B) and *J. trilloi* (Fig 1J-L, 4C). The new species is known so far only from the type locality, in the Alborán Sea (Fig 5). *J. alboranensis* spec. nov. clearly differs from *J. eleonora*, by its more conical outline, the weaker spiral sculpture and the constantly different colour pattern. From *J. curinii* it can be easily separated by its less incised suture, the more convex

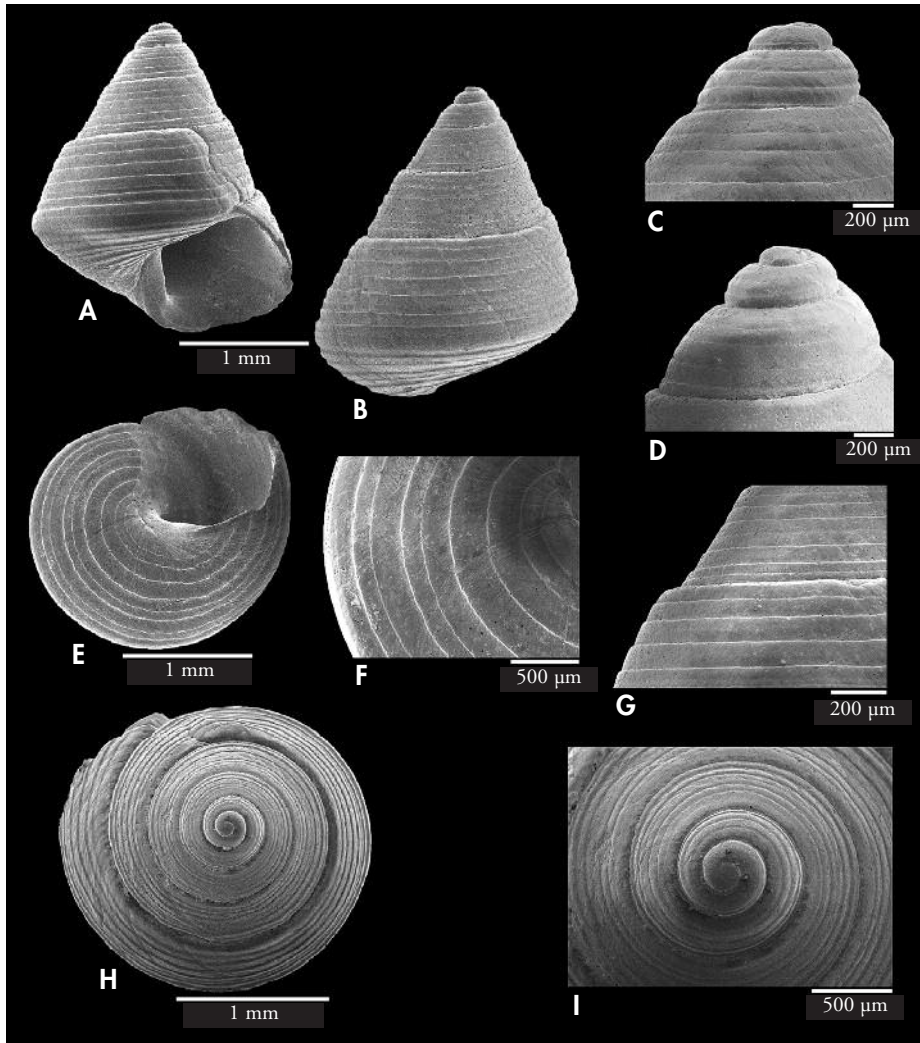


Figure 3. *Jujubinus alboranensis* spec. nov., Alborán Island, 30-37 m, paratype 6 (CS-PM Jalb006).
 Figura 3. *Jujubinus alboranensis* spec. nov., Isla de Alborán, 30-37 m, paratipo 6 (CS-PM Jalb006).

teleoconch whorls and the constantly different colour pattern. From *J. trilloi* it can be separated by its lower H/W ratio (1.2 v. 1.4, respectively), the flatter teleoconch whorls and the constantly different colour pattern. Additionally, *J. alboranensis* spec. nov. constantly attains a larger adult size with the same number of whorls, compared the other members of the *J. curinii*-complex. The four species of the *J. curinii*-complex comprise a very

homogeneous group, sharing peculiar features that strongly suggest a common ancestry. Noteworthy, each species is endemic to the respective (and distinct) type locality (Fig 5), a very unusual pattern for *Jujubinus*. A molecular phylogenetic study of this group of Cantharidinae, currently in progress, may help elucidate the actual relationships of the *J. curinii*-complex with the other species currently ascribed to *Jujubinus*.

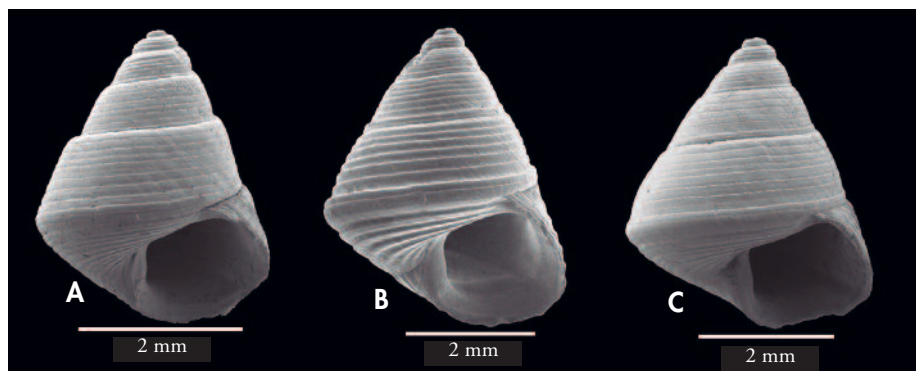


Figure 4. A: *Jujubinus curinii* from Scilla, Strait of Messina, Mediterranean Sea, 42 m depth, (CS-PM Jcu001); B: *Jujubinus eleonorae*, holotype, from Skerki Bank, Sicily Channel, Mediterranean Sea, 37 m depth, (MNHN 25883); C: *Jujubinus trilloi*, holotype, from Talbot Bank, Sicily Channel, Mediterranean Sea, 25 m depth, (MNHN 25882). All figures after SMRIGLIO ET AL. (2014: figs 2.1, 2.5, 2.9 © 2014 Magnolia Press).

Figura 4. A: *Jujubinus curinii* de Scilla, Estrecho de Messina, Mar Mediterráneo, 42 m de profundidad, (CS-PM Jcu001); B: *Jujubinus eleonorae*, holotipo, Banco Skerki, Canal de Sicilia, Mar Mediterráneo, 37 m de profundidad, (MNHN 25883); C: *Jujubinus trilloi*, holotipo, Banco Talbot, Canal de Sicilia, Mar Mediterráneo, 25 m de profundidad, (MNHN 25882). Todas las figuras reproducidas de SMRIGLIO ET AL. (2014: Figs. 2.1, 2.5, 2.9 © 2014 Magnolia Press).

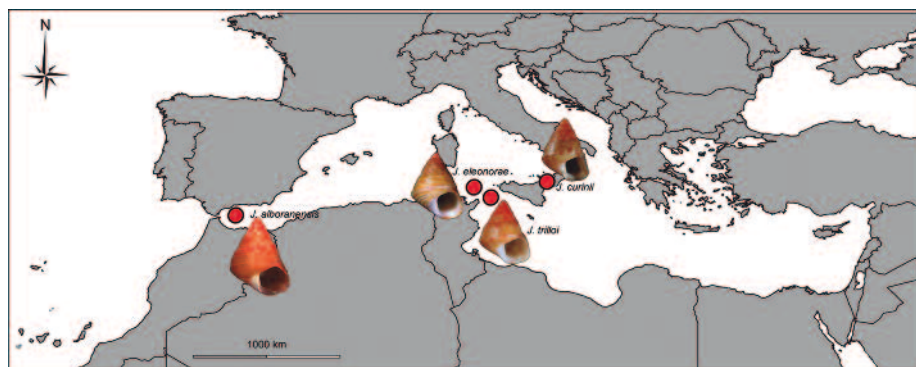


Figure 5. Distribution of *Jujubinus alboranensis* spec. nov., *Jujubinus eleonorae*, *Jujubinus trilloi*, and *Jujubinus curinii*.

Figura 5. Distribución de *Jujubinus alboranensis* spec. nov., *Jujubinus eleonorae*, *Jujubinus trilloi* y *Jujubinus curinii*.

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