

The status of the northeastern Atlantic and Mediterranean small mussel drills of the *Ocenebrina aciculata* complex (Mollusca: Gastropoda: Muricidae), with the description of a new species

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SUMMARY: The northeastern Atlantic and Mediterranean small mussel drills of the *Ocenebrina aciculata* complex are here revised and consist of at least 3 species. The type species, *Ocenebrina aciculata* (Lamarck, 1822), characterized by a slender shell with rounded whorls and primary and secondary spiral cords of approximately similar size, lives throughout the northeastern Atlantic and Mediterranean Sea at depths usually ranging between 0 and 105 m. Its synonymy is here stabilized by a neotype selection for *Murex corallinus* Scacchi, 1836. *Ocenebrina corallinoides* Pallary, 1912 (= *Ocenebrina buzzurroi* Cecalupo and Mariani, 2008, new synonymy), characterized by a strongly elongate and weakly convex shell and primary and secondary spiral cords of approximately similar size, is endemic to the Gulf of Gabès and is here considered a distinct species, pending genetic studies. *Ocenebrina reinai* n. sp. is here described from the central Mediterranean Sea (where it is sympatric with *O. aciculata*) on the basis of morphological diagnostic features of shell (rarest presence of labral tooth, commoner presence of infrasutural apertural denticle, dark spots on the ribs and spiral sculpture with differently sized primary and secondary cords and smaller threads) and radula, confirmed by genetic data. Divergence in COI sequences with sympatric samples of *O. aciculata* (>7%), confirm their status as a distinct species. A comparative table reporting diagnostic features of the congeneric species of the complex and those with which the new species was previously misidentified is offered.

Keywords: Mollusca, Muricidae, *Ocenebrina aciculata* complex, *Ocenebrina reinai*, new species, Mediterranean Sea.

RESUMEN: EL ESTATUS DE LAS ESPECIES DEL GRUPO DE *OCINEBRINA ACICULATA* (MOLLUSCA: GASTROPODA: MURICIDAE) DEL ATLÁNTICO NORESTE Y DEL MEDITERRÁNEO, CON LA DESCRIPCION DE UNA NUEVA ESPECIE. – Se revisa la taxonomía de las pequeñas especies de gasterópodos murícidos del grupo de *Ocenebrina aciculata* (Lamarck, 1822). Se consideran válidas tres especies, de las que una se describe como nueva. *O. aciculata* es la especie tipo del género, está caracterizada por una concha alargada, espiras redondeadas, cordones primarios y secundarios aproximadamente del mismo tamaño, y está distribuida en el área del Atlántico noreste y del Mediterráneo, entre 0 y 105 m de profundidad. Para estabilizar su sinonimia se ha seleccionado un neotipo para *Murex corallinus* Scacchi, 1836. *O. corallinoides* Pallary, 1912 (= *Ocenebrina buzzurroi* Cecalupo and Mariani, 2008, nueva sinonimia) es endémica del Golfo de Gabès, y se distingue por su concha muy alargada y poco convexa, con cordones primarios y secundarios aproximadamente del mismo tamaño. Se considera una especie distinta, a la espera de estudios genéticos. *O. reinai* n. sp. se describe aquí, y se ha encontrado en Mediterráneo central, donde vive simpátrica con *O. aciculata*, de la que se distingue por caracteres morfológicos de la concha (rara presencia del diente labral, diente apertural infrasutural más frecuente, manchas oscuras en las costas axiales, cordones primarios y secundarios de tamaño diferente) y de la rádula, confirmados por datos genéticos. Las secuencias del gen mitocondrial COI indican una distancia genética con *O. aciculata* en simpatria de más de 7%, confirmando su estatus de especie distinta. Se presenta una tabla comparativa de las diferencias entre las especies más similares.

Palabras clave: Mollusca, Muricidae, *Ocenebrina aciculata* complex, *Ocenebrina reinai*, nueva especie, mar Mediterráneo.

INTRODUCTION

Molluscs are an important component of the marine fauna, and some groups, such as gastropods, play key roles in the benthic communities. Among them, muricids include predators of interest because of their potential impact on marine resources (oyster drills, mussel drills and rock shells). The taxonomy of the northeastern Atlantic and Mediterranean Muricidae has been recently reviewed (Houart 2001), highlighting the relative richness of this family in the area (ca. 60 species, of which around 40 in the Mediterranean), and the need for a careful revision of several groups. One of the genera still deserving special attention is *Ocinebrina* Jousseaume, 1880, comprising small species characterized by a fusiform shell up to 26.82 mm high, with a small paucispiral protoconch, 5–6.5 teleoconch whorls in the adults, a short and ventrally sealed siphonal canal and a varicose outer lip, with usually 5–6 internal denticles (Houart 2001). Their anatomy is largely unknown, with the sole exception of some recently figured radulae (e.g. Houart 2001, Cecalupo *et al.* 2008). Thirteen recent species of *Ocinebrina* are currently listed in the Mediterranean Sea (Houart 2001, Bonomolo and Buzzurro 2006, Cecalupo *et al.* 2008), split into 2 groups of morphological affinity:

- the *Ocinebrina aciculata* complex, including *O. aciculata* (Lamarck, 1822), the type species of the genus; *O. buzzurroi* Cecalupo and Mariani, 2008; and *O. corallinoides* Pallary, 1912;
- the *Ocinebrina edwardsii* complex, including *O. edwardsii* (Payraudeau, 1826); *O. carmelae* Cecalupo, Buzzurro and Mariani, 2008; *O. erronea* (Settepassi, 1977 ex Monterosato ms.); *O. helleri* (Brusina, 1865); *O. hispidula* Pallary, 1904; *O. hybrida* (Aradas and Benoît, 1876); *O. ingloria* (Crosse, 1865); *O. nicolai* Monterosato, 1884; *O. paddeui* Bonomolo and Buzzurro, 2006; and *O. piantonii* Cecalupo, Buzzurro and Mariani, 2008.

In the present paper we revise the *Ocinebrina aciculata* complex morphologically. Specimens ascribed to this complex are known throughout the Mediterranean Sea and the adjacent Atlantic waters up to Scilly and the Channel Islands to the north and Mauritania and northern Senegal to the south, at depths ranging between 0 and 105 m. *O. aciculata* and *O. corallinoides* share slender shells with rounded whorls, a spiral sculpture of primary and secondary cords of approximately similar size and the presence of an occasional labral tooth. The synonymy of the former is here stabilized by the selection of a neotype for *Murex corallinus* Scacchi, 1836, while *O. buzzurroi* is considered as a junior synonym of the latter. Finally, a new species from the central Mediterranean is described on the basis of diagnostic morphological features of shell and soft parts, supported by genetic data on samples strictly sympatric with *O. aciculata*.

MATERIALS AND METHODS

Sample localities are summarized under each taxon in the Systematics, with detailed listing in Appendix B. Samples used for molecular taxonomy were collected by SCUBA diving in the “Secche di Tor Paterno” Marine Protected Area (Central Tyrrhenian Sea, Italy). Sampling methods include an air-lift suction sampler on coralligenous substrate and in rhizomes of *Posidonia oceanica* (Linnaeus) Delile, 1813, and a hand net with a 20×40 cm opening on *Posidonia* leaves (P. G. Albano, L. Argenti, R. Maltini, M. Oliverio *leg.*).

Radulae were extracted from the buccal mass after tissues had been partly dissolved in a 10% solution of sodium hydroxide (NaOH), then rinsed in distilled water, air dried, mounted on SEM stubs with opercula and protoconchs and gold-palladium coated in an SC7640 Sputter coater for SEM examination with a Jeol JSM-6700 F microscope.

Total genomic DNA was extracted using a standard proteinase K phenol-chloroform method with ethanol precipitation, as reported in Oliverio and Mariottini (2001). The DNA barcode fragments of the mitochondrial cytochrome oxidase I (COI) was amplified by polymerase chain reaction (PCR) using the universal primers LCO1490 and HCO2198 (Folmer *et al.* 1994). PCR conditions were 30 amplification cycles [30 s at 94°C, 30 s at 60°C, 1 min and 30 s at 72°C]. PCR products were purified using Exosap-IT (USB Corporation) and sequenced by Macrogen Inc. (Seoul, S. Korea). Sequences were readily aligned by hand. Base composition of nucleotide sequences was analysed with MEGA 5.0 (Tamura *et al.* 2007, 2011). Nucleotide homogeneity was tested with the χ^2 statistics implemented in PAUP* (v. 4.0b10: Swofford 2002). Genetic variation (nucleotide diversity, haplotype diversity and nucleotide differences) was calculated using DnaSP 5.10 (Librado and Rozas 2009).

Phylogenetic relationships among the sequences were inferred by the neighbour-joining method, using the Kimura-2-Parameters (K2P) nucleotide substitution model, as implemented in the MEGA 5.0 software (Tamura *et al.* 2007, 2011). Relationships between individual sequences were also inferred on networks of haplotypes by statistical parsimony (by TCS v. June 2008: Jobb 2008).

Abbreviations

Abbreviations used for spiral cords and internal denticles in Muricidae follow Merle (2001, 2005) and are illustrated in Figure 2C: (IP) infrasutural primary cord, (adis) adapical infrasutural secondary cord, (abis) abapical infrasutural secondary cord, (P1–P6) primary cords of the convex part of the teleoconch whorl, (s1–s6) secondary cords of the convex part of the teleoconch whorl, (t) threads, (ID) infrasutural apertural denticle on ventral face, and (D1–D5) apertural denticles of the convex part of the whorl on ventral face.

Other abbreviations: CAS, Chicago Academy of Science (Chicago, Illinois); MHNG, Muséum d'Histoire Naturelle de Genève (Genève, Switzerland); MNHM, Museo Civico di Storia Naturale (Milano, Italy); MNHN, Muséum national d'Histoire naturelle (Paris, France); MSNT, Museo di Storia Naturale (Trieste, Italy); MSNVE, Museo di Storia Naturale (Venezia, Italy); MZN, Museo Zoologico, Centro Museale Università degli Studi di Napoli Federico II (Naples, Italy); NHMUK, The Natural History Museum (London, U.K.); SZN, Stazione Zoologica Anton Dohrn di Napoli (Naples, Italy); PAP, Paolo Giulio Albano private collection (Bologna, Italy); GBP, Giuseppe Bonomolo private collection (Jesi, Italy); FCP, Fabio Crocetta private collection (Naples, Italy); FDP, Fabio Daga private collection (Carbonia, Italy); SDP, Sergio Duraccio private collection (Naples, Italy); WHP, Winfried Engl private collection (Düsseldorf, Germany); GFP, Giuseppe Fasulo private collection (Naples, Italy); RHP, Roland Houart private collection (Landen, Belgium); MOP, Marco Oliverio private collection (Rome, Italy); MRP, Michele Reina private collection (Palermo, Italy); PSP, Paolo Sordino private collection (Naples, Italy); TH, total height; TW, total width; dd, empty shell(s); lv, live collected specimen(s).

SYSTEMATICS

Family MURICIDAE Rafinesque, 1815
Subfamily OCINEBRINAE Cossman, 1903
Genus *Ocinebrina* Jousseaume, 1880

Type species by original designation: *Fusus corallinus* [sic!] Scacchi (= *Murex corallinus* Scacchi, 1836 = *Murex aciculatus* Lamarck, 1822)

Ocinebrina aciculata (Lamarck, 1822) (Figs 1 A-H; 2 G, J)

Murex aciculatus Lamarck, 1822: 176.
Murex corallinus Scacchi, 1836: 12.
Murex inconspicuus Sowerby G.B. II, 1834: 5 (67), Fig. 81.
Murex pistacia Reeve, 1845: plate XXXIV - species 174; Houart 2001: 70, Figs. 78-79 (2 syntypes figured).
Fusus acrisius Nardo, 1847: 59-60.
Fusus titii Stossich, 1865: 31.
Murex subaciculatus Locard, 1886: 164.
Ocinebra wardiana Baker, 1891: 134, plate 11: Fig. 5; Vokes 1994: 120, Fig. 11 (holotype figured).
Ocinebrina (Corallinia) scalaropsis Settepassi, 1977 ex Monterosato ms.: VI, plate 2: Figs. 25-29.

Type material. *Murex aciculatus*: no type material present in MNHN or in MHNG (Y. Finet, pers. comm.). *Murex corallinus*: neotype here designated (MZN Z7010) (Figs. 1 G, H). *Murex inconspicuus*: no type material present in NHMUK (R. Houart, unpublished data). *Murex pistacia*: 3 syntypes (NHMUK 1972021). *Fusus acrisius*: 14 syntypes (MSNVE 21980). *Fusus titii*: no type material present in MSNT (A. Colla, pers. comm.). *Murex subaciculatus*: not found. *Ocinebra wardiana*: holotype (CAS 20698). *Ocinebrina (Corallinia) scalaropsis*: not found.

Type localities. *Murex aciculatus*: near Vannes (France), Atlantic Ocean. *Murex corallinus*: off Cuma (Pozzuoli, Naples, Italy), Mediterranean. *Murex inconspicuus*: Jersey (English Channel), Atlantic

Ocean. *Murex pistacia*: unknown locality. *Fusus acrisius*: Gulf of Venice (Italy), Mediterranean. *Fusus titii*: northern Adriatic Sea, Mediterranean. *Murex subaciculatus*: Toulon (France), Mediterranean. *Ocinebra wardiana*: "Australia" (see discussion in Vokes 1994). *Ocinebrina (Corallinia) scalaropsis*: unknown locality.

Material examined. The available type material and specimens and shells from the Channel Islands, France, Spain, Portugal, the Azores, Madeira, the Canary Islands, Morocco, Italy, Tunisia, Malta, Slovenia, Croatia, Greece and Turkey (see details in Appendix B).

Distribution. Along the east Atlantic coasts up to Scilly and the Channel Islands to the north and up to Mauritania and northern Senegal to the south, including the Azores, Madeira, Selvagens and the Canary Islands, and presumably throughout the entire Mediterranean Sea (Houart 2001) (Fig. 3).

Morphology. Shell of medium size for the genus, TH up to 18 mm, fusiform and solid. Protoconch paucispiral of 1.25-1.5 rounded whorls, globose, apparently smooth but with a microsculpture of small granules often arranged in spiral rows. Teleoconch uniformly pale brown, dark brown, reddish, pinkish or orangeish, occasionally black or white, usually of 6 convex whorls at maturity, slightly elongate and usually rounded, with the last whorl consisting of about $\frac{3}{4}$ of total height in adult specimens. Subsutural ramp rounded with impressed suture. Spiral sculpture in the convex part of the whorl consisting of 6 low, weakly squamose and rounded primary cords and approximately equally sized secondary cords. P1 and P2 start in the early teleoconch, IP starts at half of the first teleoconch whorl, while s1, s2 and abis start at half of the second teleoconch whorl. Axial sculpture consisting of low, weak, broad, rounded ribs: 9-15 on the first teleoconch whorl; 15-18 on the second whorl; 13-16 on the third whorl; 11-16 on the fourth whorl; 11-15 on the fifth whorl; 9-13 on the last whorl. Outer lip weakly crenulate and with 5 weak to strong internal denticles (some could appear double), occasionally with a labral tooth, formed by the extension of P4. Labral varix slightly nodose, weak, narrow and rounded. Columellar lip moderately expanded ventrally, smooth, adherent apically and slightly erect abapically. Aperture from narrow to moderately large, elongate-ovate, from pinkish to whitish coloured inside. Siphonal canal short, narrow, straight, ventrally sealed. Animal reddish. Operculum corneous from pale to dark brown, D-shaped/ovate, with subterminal nucleus surrounded by many concentric ridges. Radula typical of Ocinebrinae, with sickle-shaped lateral teeth with a broad base, rachidian bearing short and thick central and lateral cups with a short and thick inner lateral denticle on the base. Marginal area with short denticles and a thick marginal cusp.

Remarks. Shells of this species are easily diagnosed from most of the other *Ocinebrina* spp. by the rounded primary cords and equally sized secondary spiral cords

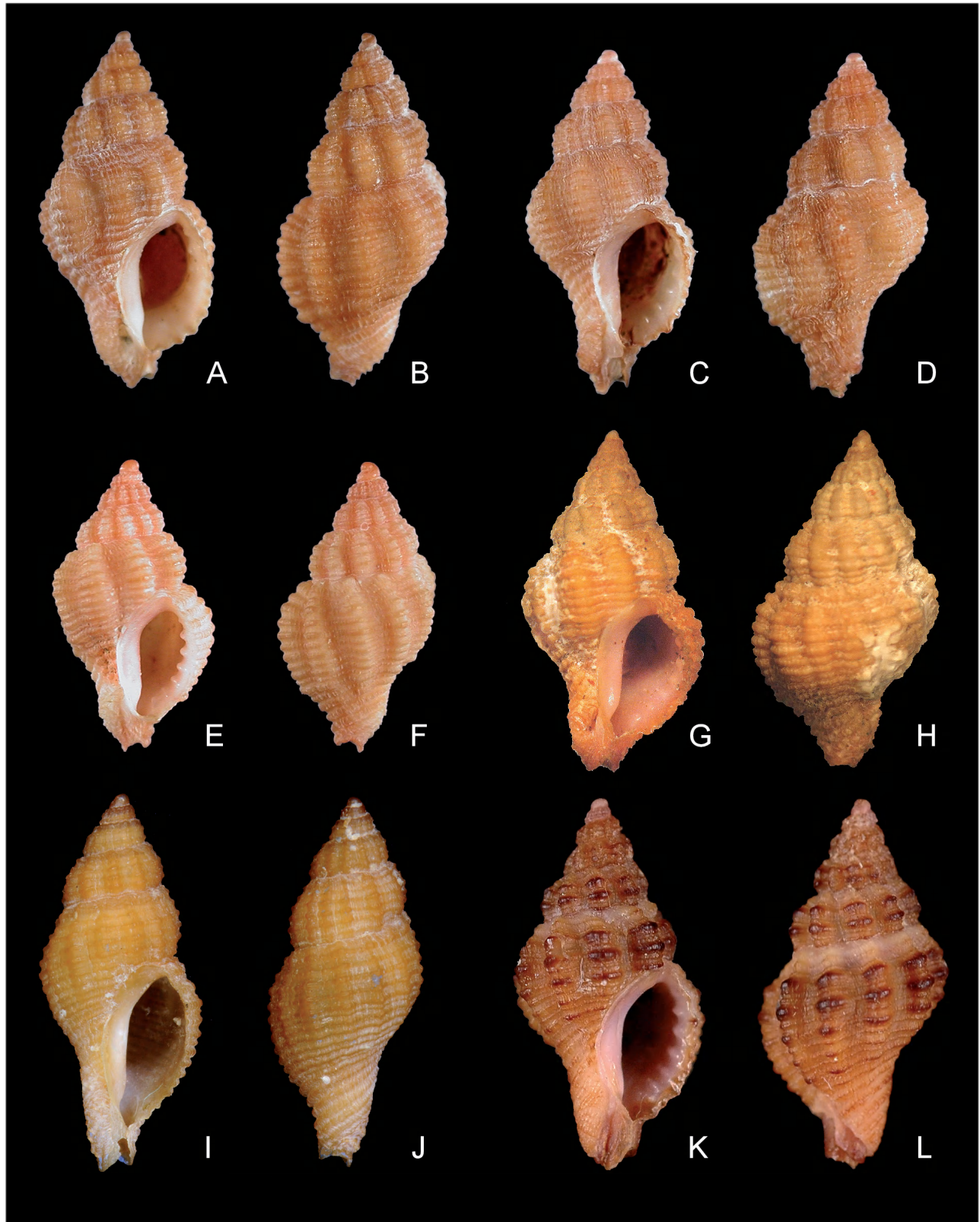


FIG. 1. – Shells of species of the *Ocinebrina aciculata* complex. A, B, *O. aciculata*, Erquy, Brittany, France (height 15.8 mm), RHP; C, D, *O. aciculata*, Fuengirola, Spain (height 11.1 mm), RHP; E, F, *O. aciculata*, Siracusa, Sicily, Italy (height 8.7 mm), RHP; G, H, *O. aciculata*, Scacchietello, Baia, Naples, Italy (height 11.9 mm), neotype of *Murex corallinus* Scacchi, MZN Z7010; I, J, *O. corallinoides*, Sfax, Tunisia (height 9.6 mm), holotype of *O. aciculata exilis* Houart, MNHN 0362; K, L, *O. reinai* n. sp., Procida Island, Naples, Italy, holotype (height 9.9 mm), MNHN 24566.

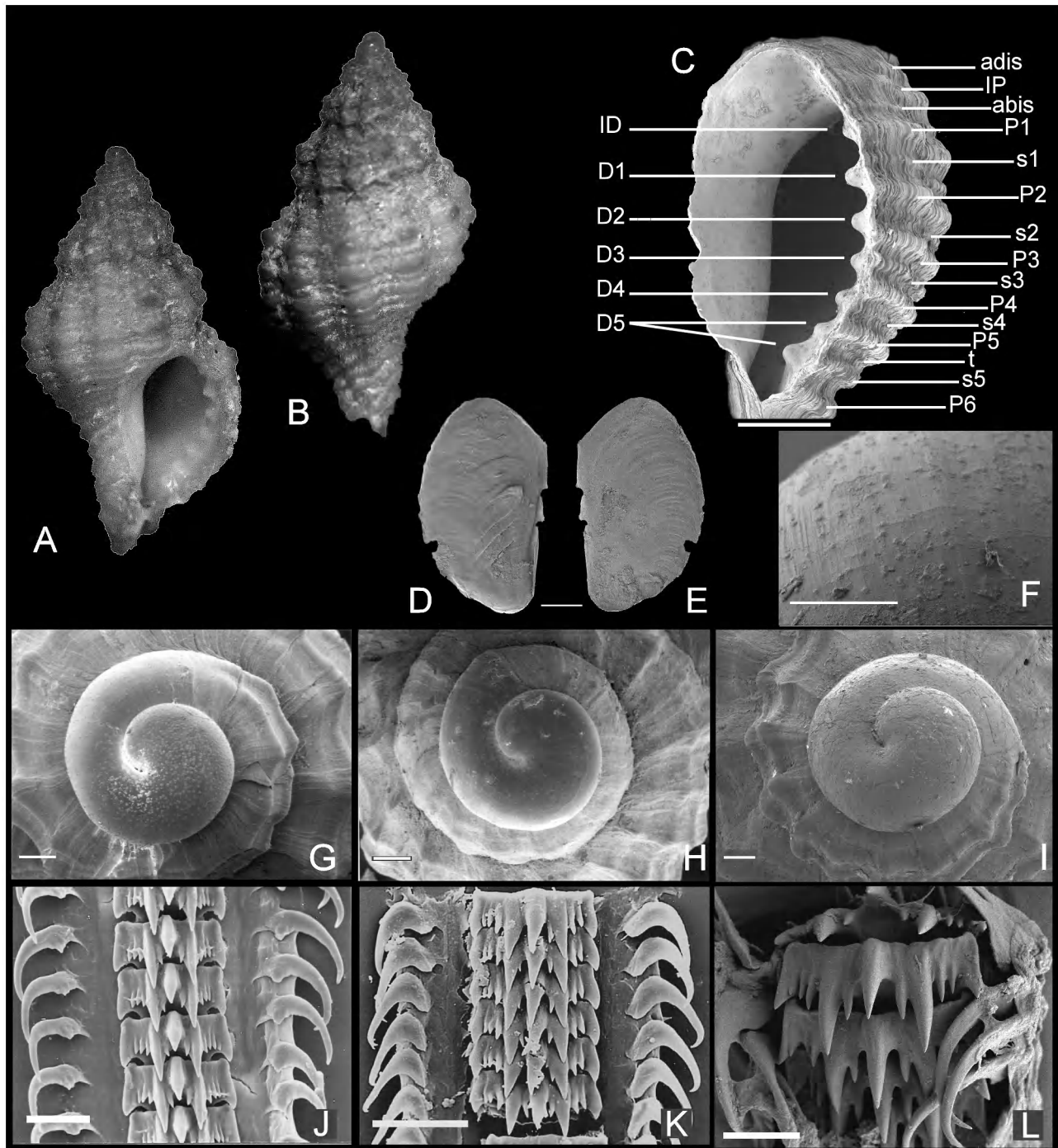


FIG. 2. – Shells and radulae of species of the *Ocinebrina aciculata* complex. A, B, *O. reinai* n. sp., Procida Island, GFP; C, *O. reinai* n. sp., Capraia Island, acronyms for primary and secondary spiral cords and threads (see text), FCP; D, E, *O. reinai* n. sp., Procida Island, operculum, paratype A, MZN Z7008; F, I, protoconch of *O. reinai* n. sp., Procida Island, FCP; G, protoconch of *O. aciculata*, Feteiras, RHP; H, protoconch of *O. corallinoides*, Sfax, RHP; J, radula of *O. aciculata*, Feteiras, RHP; K, radula of *O. corallinoides*, Sfax, RHP; L, radula of *O. reinai* n. sp., Procida Island, paratype A, MZN Z7008. Scale bars, 1 mm (C), 500 µm (D-E), 100 µm (F-I), 50 µm (J-K), 10 µm (L).

(Houart 2001), a character shared only with *Ocinebrina corallinoides* Pallary, 1912 (see below). Similarly to most common and widespread northeastern Atlantic and Mediterranean species, the nomenclatural history of *Ocinebrina aciculata* is somewhat complicated by a long list of synonyms (see Houart 2001 and the Ap-

pendix A herein for additional comments). Among the synonyms, *Murex corallinus* Scacchi, 1836 is the only taxon described from within the geographic range of the new species we describe herein (see below) that shows constant, yet subtle morphological differences from *O. aciculata*. The description of *Murex corallinus*

Scacchi, 1836 was explicitly based on specimens with clean shells not incrustated by sponges (Scacchi 1836) and both the original description (no dark spots on the ribs) and the drawings (similarly sized primary and secondary spiral cords are evident) clearly indicate the typical *Ocenebrina aciculata*. As no type material of *Murex corallinus* Scacchi, 1836 (Cretella *et al.* 2005, N. Maio, pers. comm.) has been found to stabilize this synonymy, we have here designated as neotype a shell of 11.9×6.5 mm (Figs. 1 G, H) from Scacchietello (Baia, Naples) (MZN Z7010). Admittedly, a neotype selection for *Murex aciculatus* Lamarck, 1822 would also be desirable. However, given the evidence that in *Ocenebrina* some hidden biodiversity can be uncovered only with a genetic approach, we prefer to leave this designation to a future genetic and morphological revision of *Ocenebrina aciculata* throughout its entire range.

***Ocenebrina corallinoides* Pallary, 1912**
(Figs 1 I, J; 2 H, K)

Ocenebrina corallinoides Pallary, 1912: 221, plate - Fig. 48.

Ocenebrina aciculata corallinoides Nordsieck, 1968: 120, plate 19 - Fig. 71.11.

Ocenebrina aciculata exilis Houart, 2001: 62-63, Figs. 8-9, 167-168, 324-325.

Ocenebrina buzzurroi Cecalupo and Mariani, 2008 in Cecalupo *et al.* 2008: 90-91, plate 43: Figs. 1-7.

Type material. *Ocenebrina corallinoides*: not found; *Ocenebrina aciculata exilis*: holotype (MNHN 0362) (Figs. 1 I, J); *Ocenebrina buzzurroi*: holotype (MNHM 33489).

Type localities. *Ocenebrina corallinoides*: near Sfax, Gulf of Gabès (Tunisia); *Ocenebrina aciculata exilis*: NW of Bou Grara Sea (Tunisia); *Ocenebrina buzzurroi*: Borj el Hissar (Tunisia).

Material examined. The available type material and specimens and shells from the Gulf of Gabès (Tunisia) (Kerkennah, Sfax, Djerba and Bou Grara) (see details in Appendix B).

Distribution. Currently known only from the Gulf of Gabès (Tunisia) (Pallary 1912, Houart 2001, Cecalupo *et al.* 2008) (Fig. 3).

Morphology. Shell of medium size for the genus, TH up to 14.2 mm at maturity, slender and lanceolate. Protoconch paucispiral of 1.5-1.75 rounded whorls, globose, apparently smooth but with weak, low, spiral threads. Teleoconch uniformly light tan, yellow-tan or pale brown, usually of 5 convex whorls at maturity, strongly elongate and weakly convex, with the last whorl consisting of about ½ of total height in adult specimens. Subsutural ramp rounded with impressed suture. Spiral sculpture in the convex part of the whorl consisting of 6 low, weakly squamose and rounded primary cords and approximately equally sized secondary cords, and occasionally smaller threads. P1 and P2 start in the early teleoconch with P1 always weak and low. IP starts on the second whorl, soon followed by s1, s2 and abis. Axial sculpture consisting of low, weak, broad, rounded ribs: 15-16 on the first

whorl; 13-17 on the second whorl; 12-15 on the third whorl; 14 on the fourth whorl; 9-11 on the last whorl. Outer lip weakly crenulate and with 5 weak internal denticles (some could appear double), and with an occasional labral tooth, formed by the extension of P4. Labral varix low, shallow, delicate. Columellar lip flaring, smooth; rim partially erect, adherent at adapical extremity. Aperture pale, moderately large and ovate. Siphonal canal short, narrow, straight, ventrally sealed. Animal reddish, with sparse whitish or yellowish speckles. Operculum corneous, brown, D-shaped/ovate, with subterminal nucleus, surrounded by concentric ridges. Radula typical of *Ocenebrinae*, with sickle-shaped lateral teeth with a broad base, rachidian bearing elongate, but quite thick, central and lateral cups with an elongate inner lateral denticle on base. Marginal area with short denticles and a thick marginal cusp.

Remarks. December 15, 1912 is the date of publication of *O. corallinoides* as reported into the original frontispiece, and not 1910 or 1920 as erroneously reported elsewhere (see Bonomolo and Buzzurro 2006, Cecalupo *et al.* 2008, Bank and Menkhurst 2009). This taxon was then reported and illustrated as subspecies of *O. aciculata* by Nordsieck (1968), who assigned it to Monterosato, following Pallary (1912), who probably referred to a name in Monterosato's manuscript. In the last revision of the European Muricidae, this taxon was rediscovered and described as *O. aciculata exilis* Houart, 2001 (see Houart 2001). Because of the reported co-occurrence of specimens of *O. aciculata* (Lamarck, 1822) in the Gulf of Gabès (Pallary 1912; Cecalupo *et al.* 2008) and to its peculiar morphological and radular features, *O. aciculata exilis* was raised to species level and then synonymized with *Ocenebrina corallinoides* Pallary, 1912 (Bonomolo and Buzzurro 2006; Cecalupo *et al.* 2008). Finally, Cecalupo and Mariani (in Cecalupo *et al.* 2008) described *O. buzzurroi*, from Sfax, which was evidently based on juveniles of *O. corallinoides*. The reported diagnostic features are mostly size-related (smaller size, fewer whorls), the results of miscounting (more numerous axial ribs), or within the range of variation of *O. corallinoides* (stronger P4, ending with a labral tooth, thicker shell).

***Ocenebrina reinai* Bonomolo and Crocetta n. sp.**
(Figs 1 K, L; 2 A-F, I-L)

?*Ocenebrina aciculata corallinoides sensu* Parenzan 1970: p. 167, Fig. 648 (not *Ocenebrina corallinoides* Pallary, 1912).

Ocenebrina helleri (Brusina, 1865) *sensu* Houart 2001 (in part): 180, Figs. 344, 345, 346, 347 only (not *Fusus helleri* Brusina, 1865).

Ocenebrina nicolai (Monterosato, 1884) *sensu* Giannuzzi-Savelli, Pusateri, Palmeri and Ebreo 2003: Figs. 105a, 105b, 105c (not *Ocenebrina nicolai* Monterosato, 1884).

Ocenebrina aciculata (Lamarck, 1822) *sensu* Giannuzzi-Savelli, Pusateri, Palmeri and Ebreo 2003 (in part): 61, Fig. 84 only.

Ocenebrina aciculata (Lamarck, 1822) *sensu* Albano and Sabelli 2009 (in part?): 61 (upper image only?) (not *Murex aciculatus* Lamarck, 1822).

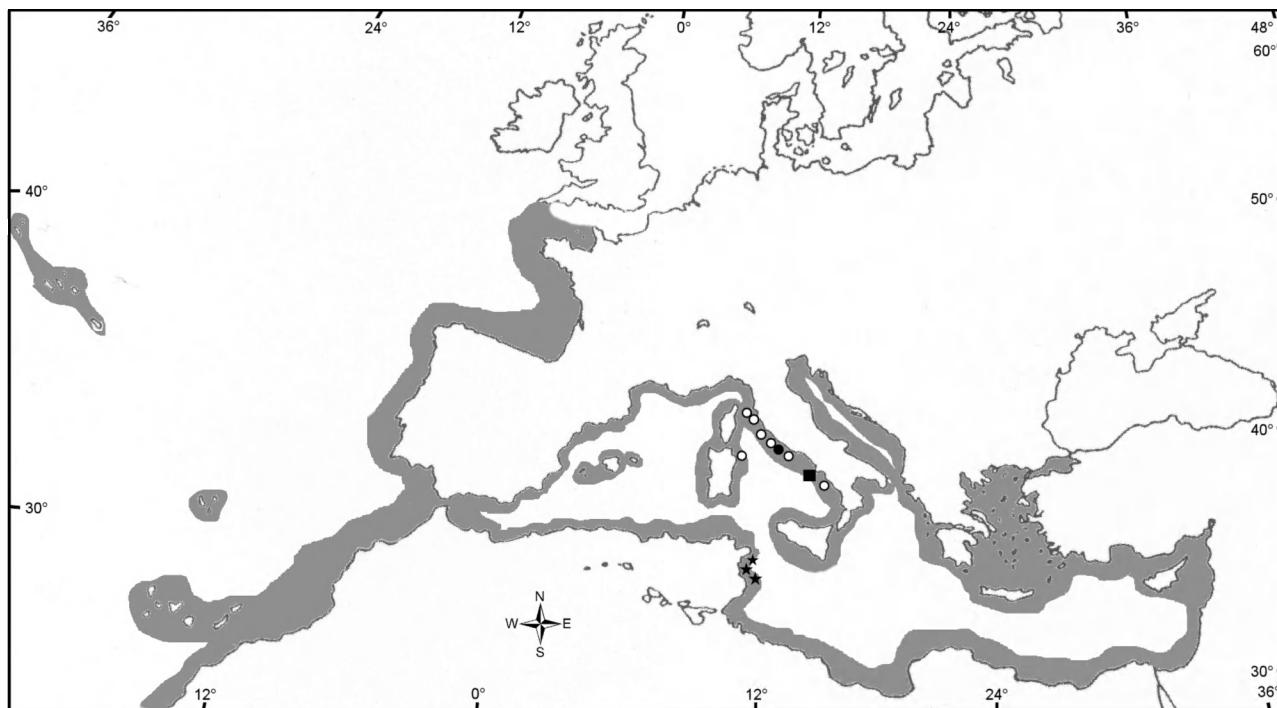


FIG. 3. – Distribution of the species of the *O. aciculata* complex. *O. aciculata*, shaded area. *O. corallinoides*, stars. *O. reinai* n. sp., circles; square, Procida Island, type locality; closed circle, Secche di Tor Paterno, sampling locality for the genetic study.

Type material. Holotype: Procida Island, 40°46'N, 014°01'E; MNHN 24566, 1v (9.9×5.1 mm), 40 m depth, September 2010, F. Crocetta leg. (Figs. 1 K, L); Paratypes: A: Procida Island, 40°46'N, 014°01'E, MZN Z7008, 1 dd (8.8×4.5 mm) and radula and operculum mounted and coated, 40 m depth, September 2010, F. Crocetta leg.; B: Gulf of Naples, SZN MOL 677, 1 dd (9.2×4.9 mm), C. Praus Franceschini leg.; C: Gulf of Naples, SZN MOL 677, 1 dd (9.1×4.7 mm), C. Praus Franceschini leg.; D: Gulf of Naples, SZN MOL 686, 1 dd (8.4×4.5 mm), C. Praus Franceschini leg.; E: Gulf of Naples, SZN MOL 686, 1 dd (8.5×4.3 mm), C. Praus Franceschini leg.; F: Gulf of Naples, SZN MOL 686, 1 dd (6.1×3.3 mm), C. Praus Franceschini leg.

Type locality. Procida Island (Naples, Campania, Italy), 40°46'N, 014°01'E, 40 m depth.

Material examined. The type material and 25 specimens and 18 shells from Italy (Tuscany, Latium, Campania and Sardinia) (see details in Appendix B).

Description. Shell of medium size for the genus, TH up to 12.3 mm and TW 5.5 mm (9.9×5.1 in the holotype), fusiform, solid and with slightly scalariform appearance. Protoconch paucispiral of 1.5-1.75 whorls (1.75 in the holotype), amber in colour, globose, apparently smooth but with a micro-sculpture of several irregularly-shaped granules, ca. 10 µm in diameter. Weak growth lines and horizontal veins sometimes present only in very well preserved specimens. Teleoconch uniformly pale brown, reddish or orange, occasionally with a very tiny, whitish spiral band in the median zone; dark spots on ribs, in proximity of the spiral cords, more evident in freshly collected specimens. Teleoconch of 4.5-5.5 convex whorls (5 in the holotype) at maturity, slightly elongated but rounded and broad in the median zone, with the last

whorl consisting of ca. 2/3 of TH. Subsutural ramp slightly angled, broad, with adpressed suture. Spiral sculpture in the convex part of the whorl consisting of 6 nodose and rounded primary cords stronger than secondary cords, and often smaller threads (present in the holotype). P1 and P2 start in the early teleoconch, IP on the second whorl, soon followed by s1, s2 and abis that can start from the second to the third whorl (holotype: s1 from the half of the second whorl, s2 and abis from the third whorl). Axial sculpture consisting of low, rounded and nodose ribs: 13-15 on the first teleoconch whorl; 10-13 on the second whorl; 10-11 on the third whorl; 9-11 on the fourth whorl; 8-10 on the last whorl (in the holotype: 13 on the first whorl, 11 on the second whorl; 10 on the third whorl; 10 on the fourth whorl; 9 on the last whorl). Outer lip crenulate, erect, with 5 internal denticles (sometimes one could appear double) and an additional ID on the ventral face of the infrasutural ramp (as in the holotype). The ID can be reduced, or occasionally absent in some specimens, as in the paratype A and in specimens with a not completely formed lip. Labral varix nodose, weak, narrow and rounded. Columellar lip slightly expanded ventrally, smooth, adherent adapically and weakly erect abapically. Aperture moderately narrow, elongate-ovate, lucid, pale violet. Labral tooth, formed by the extension of P4, rarely present (absent in the holotype). Siphonal canal moderately long for the genus, ventrally sealed and dorsally spirally sculptured. Animal reddish. Operculum corneous from pale to dark brown, D-shaped/ovate, with subterminal nucleus surrounded by many concentric ridges.

TABLE 1. – Comparative table of the species of the *Ocinebrina aciculata* complex and those with which *Ocinebrina reinai* was previously misidentified (data amended from Houart 2001, Cecalupo *et al.* 2008, Alfonso *et al.* 2010).

	<i>O. aciculata</i> (Lamarck, 1822)	<i>O. corallinoides</i> Pallary, 1912	<i>O. reinai</i> Bonomolo and Crocetta n. sp	<i>O. helleri</i> (Brusina, 1865)	<i>O. nicolai</i> Monterosato, 1884
Shell TH (in mm)	up to 18	up to 14.2	up to 12.3	up to 20	up to 16
Protoconch	w: 1.25-1.5	w: 1.5-1.75	w: 1.5-1.75	w: 1.5	w: 1.5
w: whorls	m: small granules or rows of small granules	m: weak, low, spiral threads	m: growth lines from weak to absent, small irregularly-shaped granules and occasionally weak veins	m: unknown	m: unknown
m: microsculpture					
Teleoconch					
ga: general aspect	ga: slender with rounded whorls	ga: strongly elongate and weakly convex	ga: fusiform and with slightly scalaniform appearance	ga: slender and scalariform	ga: broadly ovate, fusiform, tuberculated
w: whorls	w: up to 6	w: up to 5	w: up to 5.5	cp: from pale orange to light tan with a whitish spiral band	w: up to 5
cp: colour pattern	cp: uniformly pale brown, dark brown, reddish, pinkish or orangeish, occasionally black or white	cp: light tan, yellow-tan or pale brown	cp: uniformly pale brown/reddish/orange with dark spots on ribs		cp: pale orange or light tan with whitish spiral bands
Teleoconch sculpture of the convex part of the last whorl					
a: axial	a: 9-13 low, broad, rounded ribs, varix absent	a: 9-11 low, broad, rounded ribs, varix absent	a: 8-10 low and broad ribs, varix absent	a: 11-13 broad, rounded, nodose ribs, occasionally with an erratically placed varix	a: 7-11 low ribs, occasionally with an erratically placed varix
s: spiral	s: 6 primary cords and approximately similarly sized secondary cords	s: 6 primary cords and approximately similarly sized secondary cords	s: 6 primary cords alternated by smaller secondary cords	s: 6 high, rounded, primary cords alternated by smaller secondary cords	s: 6 broad, low primary cords alternated by secondary cords
t: threads	t: absent	t: occasionally present	t: often present	t: absent	t: occasionally present
Aperture					
ga: general aspect	ga: from small to moderately large, elongate-ovate, from pinkish to whitish coloured inside	ga: moderately large, ovate, pale	ga: elongate-ovate, narrow, pale violet with purple internal colour	ga: moderately large, ovate, white with brown internal colour	ga: small, ovate, whitish with light pale pinkish-orange tan
cl: columellar lip	cl: narrow, smooth, weakly erect abapically, adherent	cl: narrow, smooth, weakly erect abapically, adherent	cl: smooth, slightly expanded ventrally, weak erect abapically, adherent	cl: narrow, smooth, weakly erect abapically, adherent	cl: smooth, glossy and weakly erect abapically, adherent
d: denticles	d: weakly crenulate, erect	d: 5 weak, occasionally some denticles could appear double	d: 5 weak, sometimes one could appear double	d: 5 strong and well marked, sometimes one could appear double	ol: weakly erect, slightly broad, crenulate
ID: infrasutural apertural denticle	ID: weakly crenulate, erect	ID: occasionally present	ID: occasionally present	ID: occasionally present	d: 5 strong and well marked
lt: labral tooth	lt: occasionally present	lt: occasionally present	lt: rarely present	lt: absent	ID: absent
Radula	c: short and thick	C: elongate but quite thick	c: elongate	unknown	lt: absent
rachidian cusps:	l: short and thick	l: elongate but quite thick	l: elongate		unknown
c: central					
l: lateral					
Animal colour pattern	reddish	reddish	reddish	creamish	creamish
Depth range (in m)	0-105	6-15	3-70	40-50	5-50

TABLE 2. – DNA diversity in sympatric samples of *Ocinebrina aciculata* and *O. reinai*.

Species	N	Haplotypes and haplotype diversity - Hd	Nucleotide diversity - π	Mean genetic distance - K2P
<i>O. aciculata</i> (Lamarck, 1822)	8	6 0.92857	0.00331	0.003 (0.001)
<i>O. reinai</i> Bonomolo and Crocetta n. sp.	8	4 0.64286	0.00152	0.002 (0.001)

Internal surface usually with 3 or 4 growth lines and a callous rim. Radula typical of Ocinebrinae, with sickle-shaped lateral teeth with a broad base, rachidian bearing elongated central and lateral cups, with very elongated inner lateral denticle on base. Marginal area with short denticles and a thick marginal cusp.

Etymology. Named after Michele Reina (Palermo, Italy), Sicilian malacologist, palaeontologist and naturalist.

Distribution. The species is currently known from the central Mediterranean Sea, from 43°33'N to 40°34'N and from 010°13'E to 014°12'E (Fig. 3). At Procida Island (type locality), where most observations were carried out, it is rather common at depths from 20 m down to ca. 40 m, with rare specimens collected alive up to 3 m and down to ca. 70 m depth. The specimen figured by Giannuzzi-Savelli *et al.* (2003: Figs. 105a, 105b, 105c, as *O. nicolai*) is stated to come from Malaga (southern Spain), where despite extensive surveys *O. reinai* has never been found. We therefore prefer to keep that record as likely erroneous.

Remarks. *Ocinebrina reinai* is clearly part of the *O. aciculata* complex, given the similar shell shape (with rounded teleoconch whorls and occasional presence of labral tooth) and the reddish colour of the animal, but it also resembles *O. helleri* and *O. nicolai* in the spiral sculpture. In fact, it has been misidentified under all these names in the recent literature (see synonymies). It mainly differs from *O. aciculata* and *O. corallinoides* in 2 constant teleoconch features: the dark spots on the ribs, more evident in living specimens, and the spiral sculpture, with differently sized primary and secondary cords and smaller threads. It also differs from *O. nicolai* in the absence of nodose varices and the presence of low and weak ribs, the occasional presence of ID and labral tooth, the spiral sculpture, the dark spots on the ribs and the reddish colour (whitish in *O. nicolai*) of the animal (Houart 2001, Bonomolo and Buzzurro 2006, Afonso *et al.* 2010); and from *O. helleri* in the less rounded whorls, the weaker spiral sculpture, the occasional presence of ID and labral tooth, the absence of spinelets on labral varix, the dark spots on the ribs, and the reddish colour of the animal (whitish in *O. helleri*) (Houart 2001, Bonomolo and Crocetta, unpublished data). In Table 1 differences from these congeneric species are summarized.

A muricid taxon from Capri, apparently named *in schedis* by Monterosato, was listed by Praus Franceschini (1906) as *Ocinebrina bellini* and by Bellini (1929) as *Ocinebrina aciculata* var. *bellinii*. These names were never accompanied by a valid description, and thus remain *nomina nuda* (ICZN, 1999: Art. 12 and Glossary). No material is preserved at MZN with this name (N. Maio, pers. comm.), but 2 specimens of *O. reinai* were deposited at SZN by Praus Franceschini under the name *Tritonalia (Ocinebrina) aciculata* var. *bellinii* (MOL 677). However, the 3 specimens deposited as *Tritonalia (Ocinebrina) aciculata* (MOL 686) by the same Praus Franceschini also belong to *O. reinai*, and thus there is no certainty that a name in honour of Bellini was used, in the past, to unequivocally identify the new species. Finally, *Ocinebrina reinai* was presumably described and figured by Parenzan (1970) as *Ocinebrina aciculata corallinoides* (Monterosato), a junior primary homonym of *Ocinebrina corallinoides* Pallary, 1912, and by Settepassi (1977) as *Ocinebrina nicolai* forma *longicauda*, an infrasubspecific rank name and thus not available (ICZN, 1999: Art. 45.5, 45.6).

MOLECULAR TAXONOMY

Partial sequences of the mtDNA encoding the COI were obtained from 16 specimens, collected at a single locality in the central Tyrrhenian Sea and morphologically ascribed to *O. aciculata* (Lamarck, 1822) (8 spms) and *O. reinai* Bonomolo and Crocetta n. sp. (8 spms). The sequences have been deposited at the European Molecular Biology Laboratory (EMBL - Accession numbers *Ocinebrina aciculata*: FR851899-FR851906; *Ocinebrina reinai*: FR851907-FR851914). A total of 658 bp were unambiguously aligned, without gaps, with 53 variable positions, resulting in 10 distinct haplotypes (total haplotype diversity, Hd: 0.9; total nucleotide diversity, π : 0.03849; see Table 2 for values of each species). Six haplotypes were exclusive of *O. aciculata* and 4 of *O. reinai*, without shared haplotypes, and with one distinct network of haplotypes for each species (Fig. 4).

The mean genetic distance (K2P) within each species was 0.003 (SD 0.001) in *O. aciculata*, and 0.002 (SD 0.001) in *O. reinai*. The distance between the 2 species was 0.072 (SD 0.011), with an *Fst* of 0.965 (Hudson *et al.* 1992). A neighbour-joining tree portraying the genetic distance between each individual sequence is reported in Figure 4.

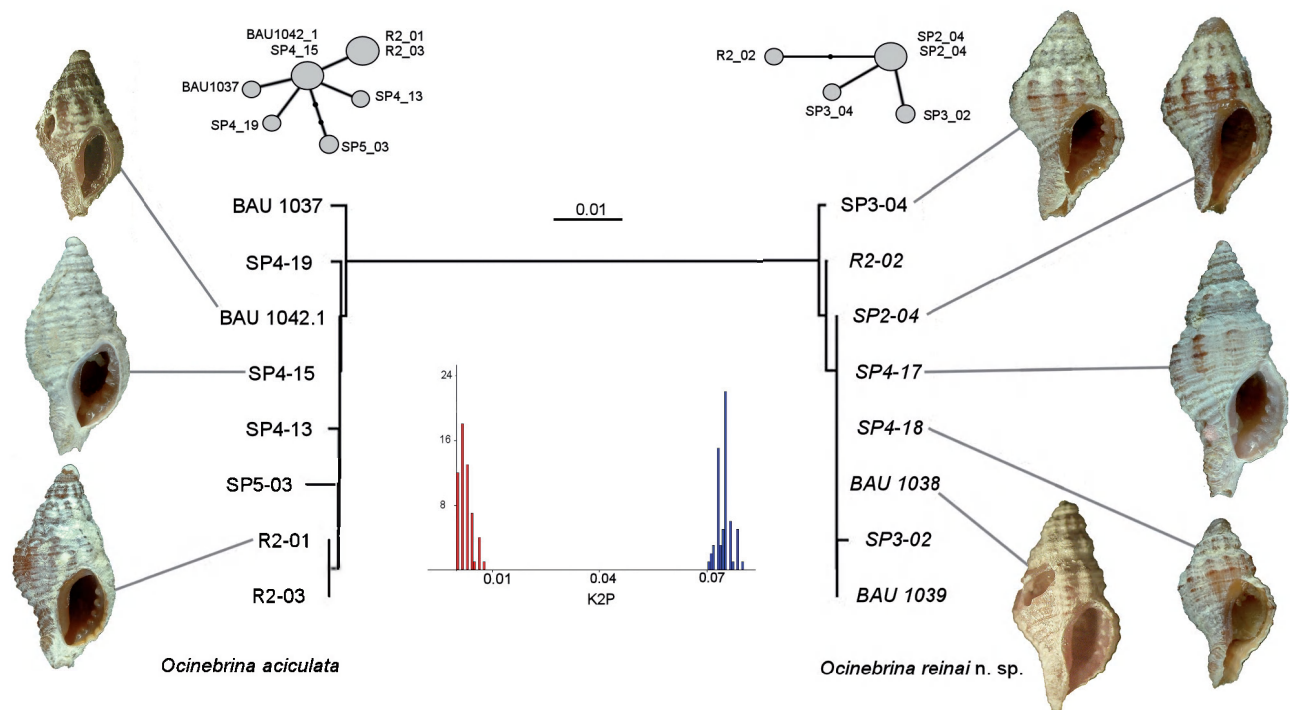


FIG. 4. – Neighbor-joining tree for specimens of *O. aciculata* and *O. reinai* n. sp. from Secche di Tor Paterno (Central Tyrrhenian Sea). Scale bar: 1% K2P genetic divergence. Histograms report K2P genetic divergence in intraspecific (left) and interspecific (right) comparisons. Network of haplotypes based on statistical parsimony analysis.

DISCUSSION

Recent estimates report approximately 17000 species of marine organisms in the Mediterranean, and molluscs are one of the most diverse group (12.4%) in term of species number (Coll *et al.* 2010). The marine mollusc fauna of the Mediterranean Sea is commonly considered as the best known in the world (Oliverio 2003). Nevertheless, the pace at which new taxa are discovered and described every year is still remarkably high. During the last 10 years (2001-2010), a total of 103 new species of molluscs have been described from the Mediterranean Sea (S. Gofas and M. Oliverio, unpublished data). The large majority of these new taxa have been described solely on the basis of morphology, and also in the present case *O. reinai* n. sp. was initially differentiated by morphological traits only from the very similar *O. aciculata*. The genetic divergence found between strictly sympatric samples of the 2 species in the COI fragment used as DNA barcode (over 7%) is well over the threshold commonly accepted for species distinction (i.e. >3%: Hebert *et al.* 2003). Nevertheless, in many cases, intra- vs. interspecific morphological variation is hardly separated, and genetic data can be crucial. The ongoing research with a combined study by morphology and molecular taxonomy of the small *Ocinebrina* species of the northeastern Atlantic and Mediterranean Sea (this study and unpublished data from the authors

and M. Oliverio's laboratory) is also revealing an unexpected diversity with interesting biogeographic implications, definitively addressing the need for a thorough redefinition of the patterns of diversity of northeastern Atlantic and Mediterranean muricids.

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APPENDIX A. – Additional nomenclatural notes on *Ocinebrina aciculata* (Lamarck, 1822)

Several authors reported *Fusus gyrinus* Brown, 1827 among the synonyms of *O. aciculata*, but Brown (1827) was referring to *Murex gyrinus* Montagu, 1808. Montagu (1808) originally referred to *Murex gyrinus* Linnaeus, 1758, a Ranellidae, *Gyrineum gyrinum* (Linnaeus, 1758). The same holds for *Fusus lavatus* Philippi, 1836. Philippi (1836) was referring his living *O. aciculata* to *Fusus lavatus* as figured in Basterot (1825), which may or may not be a fossil specimen of *Ocinebrina aciculata* from the “bassin tertiaire du sud-ouest de la France”. Unfortunately, the same Basterot (1825) was originally referring to *Buccinum lavatum* Brander (1766) and to Sowerby J.D.C. (1825), that clearly were using the name for a buccinid or a fasciolarid, not a Muricidae. Neither Basterot’s nor Philippi’s use of *lavatum* could thus result in a valid name for whatever species. *Fusus minutus* Deshayes, 1833 has been indicated as a junior synonym of *O. aciculata* (Lamarck, 1822). Deshayes (1833) was actually referring to *Fusus minutus* Lamarck, 1803 from the Eocene of Paris, which is, however, invalid as a junior primary homonym of the buccinid *Fusus minutus* Röding, 1798. *Murex badius* Reeve, 1845, described with unknown distributional data, has been often reported as a junior synonym of *O. aciculata* (Lamarck, 1822). It is now *Orania badia* (Reeve, 1845). *Murex aciculatus* var. *badia* Jeffreys, 1867, *Ocinebrina corallina* var. *major* Pallary, 1900, *Ocinebra* (*Ocinebrina*) *pseudoscalaris* Coen, 1914, *Ocinebra* (*Ocinebrina*) *corallinum* var. *scalariformis* Coen, 1914, *Ocinebra* (*Ocinebrina*) *corallinum* var. *atra* Coen, 1914, *Ocinebra* (*Corallinia*)

aciculatum var. *scalariformis* Coen, 1933 are *nomina nuda* (ICZN, 1999: Art. 12 and Glossary). *Murex aciculatus* var. *curta* Bucquoy, Dautzenberg and Dollfus, 1882 and *Murex aciculatus* var. *minor* Bucquoy, Dautzenberg and Dollfus, 1882, *Ocinebrina aciculata* var. *cingulifera* Pallary, 1920 and *Ocinebrina aciculata* var. *elongata* Pallary, 1920 have infrasubspecific rank and are thus not available (ICZN, 1999: Art. 45.5, 45.6). Other names, all manuscript names of Monterosato, introduced as varietal names (explicitly and as unambiguously revealed by the content of the work) by Settepassi (1977) have infrasubspecific rank and are thus also not available (ICZN, 1999: Art. 45.5, 45.6): *Ocinebrina* (*Corallinia*) *titti minor*, *Ocinebrina* (*Corallinia*) *corallina elongata*, *Ocinebrina* (*Corallinia*) *corallina spongiderma* and *Ocinebrina* (*Corallinia*) *corallina scalariformis*. Settepassi (1977) also figured and described specimens of *O. aciculata* as subspecies *elongata* and subspecies *inflata* of *Ocinebrina halleriana* [sic!], an unjustified emendation of *Fusus halleri* Brusina, 1865 = *Ocinebrina halleri* (Brusina, 1865). We feel that also for these names an infrasubspecific rank could be applied as unambiguously revealed by the content of the work (both are cited as found together with the nominotypical, so we could assume that Settepassi considered them as forms of *O. halleri*). In any case they would be invalid as junior synonyms of *O. aciculata*. In addition, Settepassi (1977) did not consistently use binomial nomenclature. Although there is not yet a specific decision of ICZN, there are precedents of works that were rejected on such grounds.

APPENDIX B. – Additional material examined.

Ocinebrina aciculata (Lamarck, 1822)

Channel Islands: Guernsey, 3 lv (RHP).

France: Erquy, on harbour wall at very low tide, 6 lv (RHP), 3 lv, 3 dd (GBP); Le Verdelet, 3 lv (RHP); St. Lunaire, 3 lv (RHP); Roscoff, 5 lv (RHP). Corsica, region of Calvi, 1 lv, 1 dd (RHP); Calvi, many lv and dd (RHP); Barneville (Normandie), on rocks at low tide, 4 lv (GBP); L'Arcoquest, on rocks at low tide, 2 lv (GBP); Paimpol, -15 m among oysters, 2 lv, 2 dd (GBP); Mont S. Michel, beach, 1 dd (GBP).

Spain: Vigo, on rocks, 5 lv (RHP); Ceuta, 9 lv (RHP); Ceuta, -80/100 m, fishing nets residuals, 4 lv, 1 dd (MOP); Alboran Is., 35°56'94"N 003°00'90"E, -32 m, bioclastic sands with *Laminaria*, 2 lv 10 dd (MOP); Alboran Is., 35°56'10"N 003°01'48"E, -17 m, bioclastic sands, 10 dd (MOP); Alboran Sea -80/100 m, 4 lv, 10 dd (GBP); Algeciras, Cádiz, 3 lv (RHP); El Alquíán, Almería, Dishers, 3 lv (RHP); Almería, trawlers, 3 lv (GBP); Fuengirola, in fisher nets, 20 lv (RHP); Marbella, 4 lv (RHP); Málaga, -6 m, 2 lv (GBP); Málaga, trawlers, 7 lv, 2 dd (GBP); Algeciras, 2 dd (GFP); Torremolinos, -2 m, 2 dd (PSP); Adra, Málaga, trawlers - 70 m, 8 lv (GBP); Amella de Mar, low depth, 1 lv (GBP).

Portugal: Amaração de Pera, Fisher boat, 7 lv (RHP); Sagres harbour, 3 lv (RHP), 2 lv (GBP); Olhão, -5/10 m, 3 lv (MOP), 5 lv (GBP); off Ponda da Piedade, Lagos, -45/50 m, octopus trap, 1 lv (MOP) 9 lv (GBP); -50/80 m gill nets, 5 lv (GBP); Vilamoura, low depth, 4 lv (GBP); Catalazede Beach, Oeiras, Lisbona, beach, 9 dd (GBP); Burgau, gill nets on coralline bottom, -45/50 m, 2 lv (GBP).

Azores: Sao Miguel Is., Feteiras, 3 lv (RHP); Fajal Is., Ponta dos Capelinhos, intertidal, 1 dd (MOP).

Madeira: 2 lv, 6 dd (RHP).

Canary Islands: Lanzarote, Arrecife, 1 lv (RHP); Gran Canaria, Las Palmas, 1 lv (RHP); Tenerife, -3 m, 2 lv (GBP).

Morocco: Fedala, 2 dd (RHP); Rabat, 2 lv (RHP); Pointe Imes-souane, beached, 1 dd (MOP).

Italy: Giglio Island, - 60 m, 5 lv (GBP); Tuscan Archipelago, trawlers, -70/80 m, 4 lv (GBP); Capraia, -50/60 m, 1 lv, 2 dd (GBP); La Maddalena, from fishermen, -50/60 m, 3 lv and 5 dd (GBP); off Alghero, fishing net residuals, -40/80 m, 4 lv 4 dd (MOP); Porto Torres, -40 m, 2 lv (GFP); Giannutri Is., Grottoni (42°15'N, 011°06'E), -47 m, 7 dd (MOP); Ladispoli (Roma), beach, 3 dd (GBP); Fiumicino, trawlers, 3 lv, 2 dd (GBP); off Montalto di Castro, fishing net residuals, -50/60 m, 1 lv (MOP); "Secche di Tor Paterno" Marine Protected Area: Stn R2 (41°36'13"N, 012°20'30"E, *Posidonia oceanica* patches on hard substratum, foliar layer, -24 m); Stns SP4-SP5 (41°36'13"N, 12°20'30"E, *P. oceanica* field on soft substratum, rhizome layer, -26 m) S8, S9: 41°36'18" N - 12°20'30" E, horizontal hard coralligenous substratum with *Eunicella* spp., -25 m, suction sampler, 8 lv used for genetics (SP4-19, R2-03, SP4-15, SP4-13, SP5-03, R2-01, S8-BAU1037, S9-BAU-1042.1); Posilipo, beached, 12 dd (GFP); Secca di Miseno, gill nets, -30 m, 1 dd (PSP); Procida Island, shell grit, -2/3 m, 9 dd (PSP), 75 dd (FCP), 94 dd (GFP), 4 dd (SDP), 4 dd (GBP); Vivara Island, -10/15 m, shell grit, 21 dd (FCP); Capri Island, 2 lv, -10 m, shell grit (GFP); Ischia Island, -10 m, 1 dd (PSP); Marina di Puolo, from fishermen, 56 lv and dd (SDP); Li Galli/Vetara, - 39m: 1 dd (SDP); Catanzaro Lido, from fishermen, 2 lv (PSP); Monopoli, beached, 2 dd (PAP); Gallipoli, coralligenous, 4 lv (GFP); Porto Cesareo, from fishermen, 3 lv (PAP); Gallipoli, scuba diving -8/14 m, 1 lv (PAP); Messina,

Posidonia meadows -6/7 m, 6 lv (FCP); Messina, from fishermen, -80 m, 2 lv (GBP); Cannizzaro (Catania), - 40/45 m, 4 lv, 6 dd (GBP); Pozzillo, scuba diving -10/20 m, 1 lv (PAP); Siracusa, 5 lv (RHP), 7 dd (GFP); Acitrezza, -9/19 m, 5 lv (RHP); Brucoli, 8 lv and dd (RHP), 4 dd (GFP); Marettimo Is., -15/40 m, 3 dd (MOP); Favignana Is., -15/30 m, 1 dd (PAP); Golfo di Carini, from fishermen, -50/70 m, 41 lv, 14 dd (GBP); Grado, 3 lv (GBP); Chioggia, 1 lv (RHP), 1 lv (PAP); Lido di Venezia, -28 m, 2 lv, 1 dd (RHP); Falconara Marittima, Ancona, beach, 3 dd (GBP); Silvi Marina, Pescara, 2 dd (GBP); Cupra Marittima, beach, 2 dd (GBP).

Tunisia: Bizerta, 1 lv (GFP).

Malta: St. Julian's Bay, shell grit -15 m, 1 dd (PAP); Wied-iz-Zurriq, shell grit -36 m, 1 dd (PAP).

Slovenia: Punta Grossa, -2 m, on algae, 4 lv (GBP); Punta Grossa -2/3 m amidst *Cystoseira*, 4 lv (FCP); Portorose, shell grit, 1 dd (GFP).

Croatia: Salvore, from fishermen, 14 lv, 7 dd (GBP); Salvore, from fishermen, -20 m, 2 lv (FCP); Spalato, from fishermen, - 60 m, 2 lv (GBP); Zadar, -1/5 m, under rocks, 2 lv (FCP); Rovinj, from fishermen, 1 lv (PAP).

Greece: Saronikos Gulf, from fishermen, 2 dd (GBP).

Turkey: Tenedos (Bozcaada), from fishermen, - 60 m, 3 lv (GBP).

Ocinebrina corallinoides (Pallary, 1912)

Tunisia: Gulf of Gabès: Kerkennah, beach, 4 dd (GFP); Sidi Youssef, beach, 11 dd (SDP), 19 dd (GBP); Sfax, fishing nets residuals, 1 lv (MOP); Borj Djillidj, Djerba, 2 lv (RHP); Bou Grara, littoral, 3 lv (RHP); NW of Bou Grara Sea, -10/15 m, 2 paratypes of *O. aciculata exilis* Houart, 2001 (RHP).

Ocinebrina reinai Bonomolo and Crocetta n. sp.

Italy: Livorno, 43°33'N, 010°13'E trawler residuals, 1 dd (RHP), 1 dd (WHP); Capraia Island, 43°01'N, 009°51'E, 4 lv, 1 dd (GBP), 1 dd (FCP), 1 dd (MRP), 1 dd (FDP); Montalto di Castro, 42°18'N, 011°33'E, gill nets, 1 lv, 1 dd (GBP); off Ladispoli, gill nets, 3 lv, 1 dd (GBP); "Secche di Tor Paterno" Marine Protected Area: Stn S1 (41°36'21"N, 012°20'28"E, horizontal coralligenous substratum with *Eunicella* spp., -25 m), Stn S22 (41°36'13"N, 012°20'30"E, horizontal coralligenous substratum with rare *Eunicella* spp., -20 m), Stn R2 (41°36'13"N, 012°20'30"E, *Posidonia oceanica* patches on hard substratum, foliar layer, -24 m); Stns SP2-SP3 (41°36'21"N, 012°20'28"E, *P. oceanica* patches on hard substratum, rhizome layer, -26 m), Stns SP4-SP5 (41°36'13"N, 12°20'30"E, *P. oceanica* field on soft substratum, rhizome layer, -26 m) 8 lv used for genetics (SP3-04, R2-02, SP2-04, SP4-17, SP4-18, SP3-02, S1/BAU1038, S22/BAU1039); Pozzuoli, 40°48'N, 014°06'E, gill nets, 2 lv (PSP); Procida Island, 40°46'N, 014°01'E, snorkelling, in *P. oceanica* patches, 1 lv, (GFP); - 38 m, dredge, 1 dd (GFP); Marina di Puolo, 40°37'N, 014°18'E, gill nets, 2 lv (SDP); Mergellina, 40°49'N, 14°13'E beached, 4 dd (GFP); Capri Island, 40°34'N, 014°12'E, 1 lv, 4 dd (GBP), 2 lv, -10 m, shell grit (GFP); Tavolara Island (Sardinia), 40°54'N, 009°42'E, 1 lv, 1 dd (GBP).