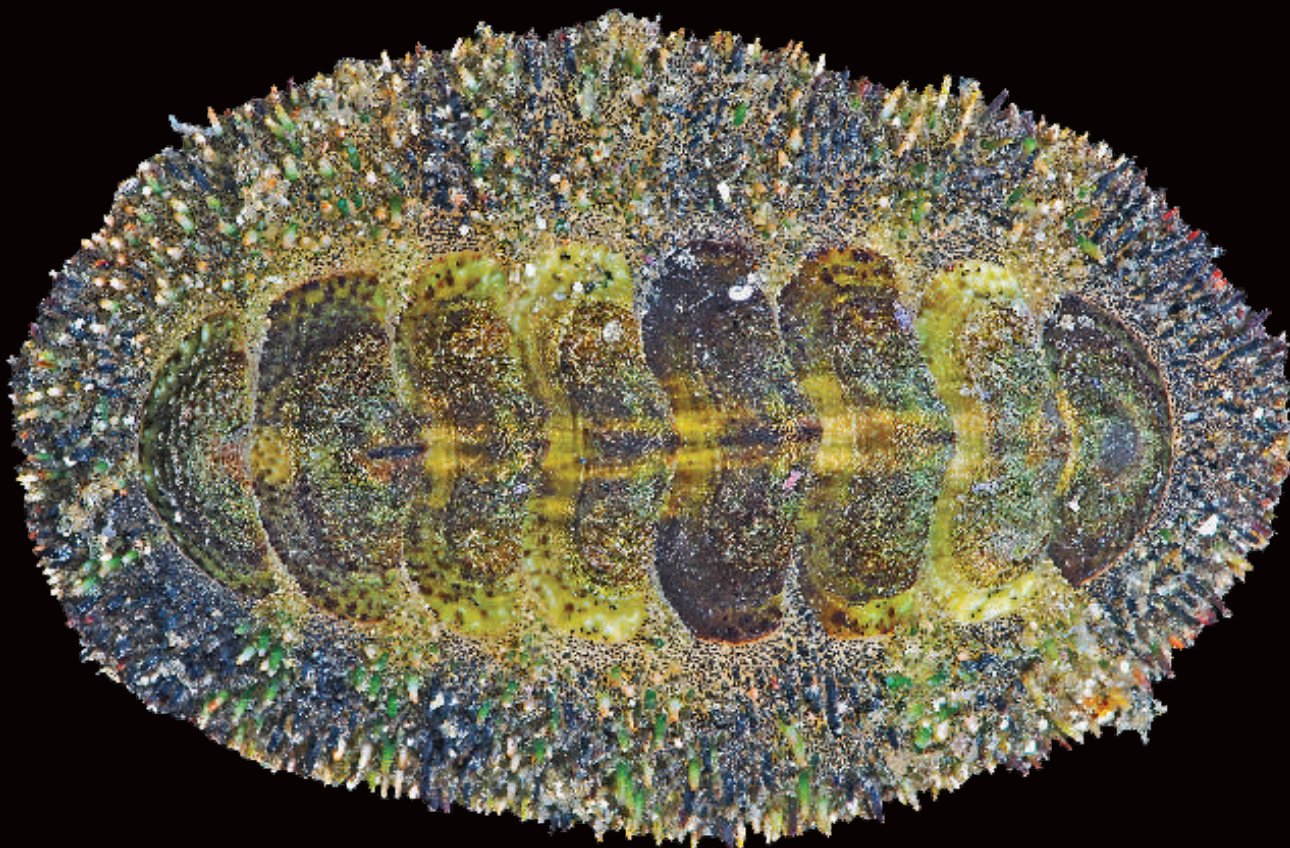




XENOPHORA

TAXONOMY

Supplément à Xenophora, Bulletin de l'Association Française de Conchyliologie



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Couverture:

Chitonidae

Acanthopleura gemmata

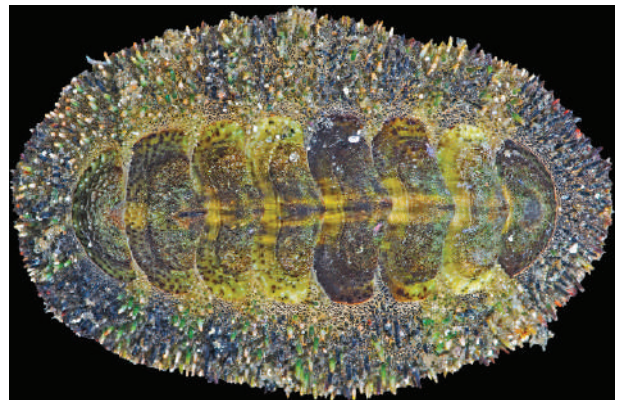
(Blainville, 1825)

MNHN La planète revisitée

Koumac 2018

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KEYWORDS

Cyprus, Mediterranean Sea, Mollusca, New Records

ABSTRACT

The present work is part of an ongoing investigation on the marine malacofauna of Cyprus by December 2023. It incorporates 17 species out of which 4 are first records, 1 is second record, 11 are first image documented records, and 1 is second image documented record for Cyprus. Main taxonomic characteristics and ecological data, such as habitat, distribution and origin, are presented and discussed.

INTRODUCTION

Marine molluscs comprise some 25% of the benthic fauna worldwide; therefore, any significant change in the molluscan species composition is anticipated to have a substantial effect on the benthic communities altogether (Gofas & Zenetos, 2003). Nevertheless, the molluscan biodiversity can be influenced by exotic species in marine areas close to gateways of introduction such as the Suez Canal in the East Mediterranean Sea. As human activities have exposed the Mediterranean molluscan fauna to extensive factors of change in the past few decades (Gofas & Zenetos, 2003), faunistic studies aid in monitoring the changes and apprehending their impacts. Cyprus is situated close to the Suez Canal in the Levantine Sea and in the way of the sea currents which are considered as responsible for the spread of the Lessepsian migrants from the Suez Canal towards the north and up to the NW Aegean Sea (Manousis & Galinou-Mitsoudi, 2014). The existing published records on the marine molluscan species in the Cypriot waters seem to be rather few (e.g. Di Monterosato, 1899; Stavrinos, 1974; Tornaritis, 1987; Barash & Danin, 1988; Cecalupo & Quadri, 1994a, b, 1995; Buzzurro & Greppi, 1997; Orr, 2000; Delongueville & Scaillet, 2008, 2009, 2010a, b; Katsanevakis *et al.*, 2009; Zenetos *et al.*, 2009; Tsiakkios & Zenetos, 2011; Kolokotronis *et al.*, 2023, 2024) while at the same time the faunistic status tends to be modified

due to natural and anthropogenic impacts. Concurrently, a review of the relevant bibliography reveals the lack of smaller species (i.e. <5 mm) (Kolokotronis *et al.*, 2022) – an indication that the area is undersearched. Accordingly, the objective of this work is to continue with the search of the Cypriot seas with emphasis on species of smaller size and give reference information for future studies.

METHODS

Sampling at the southern coasts of Cyprus (Fig. 1), handling and species recognition were conducted according to Manousis & Galinou-Mitsoudi (2014) and Mbazios *et al.* (2020). The scientific names of species are based on WoRMS (Dec. 2023). Collection stations are shown in Figure 1 while specimens in Figure 2. The specimens are deposited in the premises of Y. Varnava who gives access to the biological material for inspection by appointment.

RESULTS AND DISCUSSION

Abbreviations: C1 – first record for Cyprus; B – beached; DC1 – first image documented record for Cyprus; DC2 – second image documented record for Cyprus; PURC – previous undocumented report for Cyprus; PDC1 – previous documented first record for Cyprus; RB – rocky bottom; SB – sandy bottom; SBP – sandy bottom with *Poseidonia*; SG – shell grit; SGFN – small gear fishing nets

THE RECORDS

BIVALVIA

Modiolus adriaticus Lamarck, 1819 (Fig. 2a), 1 shell, SBP, 22 m, Xylophagou, 34°56'N - 33°49'E, DC1, PURC Öztürk *et al.* (2004), description in Gofas *et al.* (2011).

GASTROPODA

Seila trilineata (R. A. Philippi, 1836) (Fig. 2b), 1 shell, B, Akrotiri, Limassol, 34°38'N - 32°54'E, DC1, PURC Öztürk *et al.* (2004), description in Rolán & Fernandes (1990) and Scaperrotta *et al.* (2012).

Melanella translucens (Monterosato, 1890) (Fig. 2c), 1 shell, 10 m, 2 km South of Potamos, Liopetri, 34°57'N - 33°53'E, C1, a rather uncommon species also reported for Greece (Manousis, 2021), presentation in Cossignani & Ardevini (2011). The species has been referred from 100 m deep waters (<https://www.marinespecies.org/aphia.php?p=image&pic=67458&id=139867>).

Alvania colossophilus Oberling, 1970 (Fig. 2d), 1 shell, 2 m, SB, Agia Napa, 34°58'N - 34°00'E, DC1, PURC Cecalupo & Quadri (1995), Öztürk *et al.*, (2004), Di Franco *et al.* (2021), description in Scaperrotta *et al.* (2012).

Alvania peloritana Aradas & Benoit, 1874 (Fig. 2e), 1 shell, 10 m, SBP, 2 km South of Potamos, Liopetri, 34°57'N - 33°53'E, C1, description in Amati *et al.* (2019).

Alvania subcrenulata (Bucquoy, Dautzenberg & Dollfus, 1884) (Fig. 2f), 1 shell, 2 m, SBP, 1 km South of Potamos, Liopetri, 34°57'N - 33°53'E, DC1, PURC Di Franco *et al.* (2021), description in Scaperrotta *et al.* (2012).

Aplus coccineus (Monterosato, 1884) (Fig. 2g), 1 shell, 20 m, RB, Xylophagou, 34°57'N - 33°49'E, DC1, PURC Öztürk *et al.* (2004), description in Gofas *et al.* (2011) and Scaperrotta *et al.* (2012) as *Polia scabra* Locard, 1892 and Aissaoui *et al.* (2016) as *Aplus scaber* (Locard, 1892).

Chauvetia affinis (Monterosato, 1889) (Fig. 2h), 1 shell, B, Akrotiri, Limassol, 34°35'N - 32°55'E, DC1, PURC Di Franco *et al.* (2021), description in Scaperrotta *et al.* (2009).

Tritia louisi (Pallary, 1912) (Fig. 2i), 1 shell, B, Potamos, Liopetri, 34°58'N - 33°54'E, DC2, PDC1 Cossignani & Ardevini (2011) and Scaperrotta *et al.* (2019).

Pseudofusus patriciae (Russo & Olivieri, 2013) (Fig. 2j), 1 shell, SGFN, 60 m, Ormidia, 34°57'N - 33°46'E, C1, description in Russo (2013). The species is known from shallow waters (Russo, 2019) and now it was recorded from deeper ones, expanding its distribution.

Crassopleura maravignae (Bivona, 1838) (Fig. 2k), 1 shell, SGFN, 60 m, Larnaca Bay, 34°54'N - 33°44'E, DC1, PURC Öztürk *et al.* (2004), description in Gofas *et al.* (2011).

Raphitoma contigua (Monterosato, 1884) (Fig. 2l), 1 shell, 25 m, SBP, Cyclops Cave Protaras, 34°59'N - 34°04'E, C1, description in Pusateri *et al.* (2012).

Raphitoma farolita F. Nordsieck, 1977 (Fig. 2m), 1 shell, B, Akrotiri, Limassol, 34°35'N - 32°55'E, C2, PDC1 Kolokotronis *et al.* (2023), description in Nordsieck (1977).

Mathilda gemmulata O. Semper, 1865 (Fig. 2n), 1 shell, B, Akrotiri, Limassol, 34°35'N - 32°55'E, DC1, PURC Cecalupo & Quadri (1995), Öztürk *et al.* (2004), presentation in Cossignani & Ardevini (2011).

Omalogyra atomus (R. A. Philippi, 1841) (Fig. 2o), 1 shell, 10 m, SG, Potamos, Liopetri, 34°58'N - 33°54'E, DC1, PURC Di Franco *et al.* (2021), Öztürk *et al.* (2004), description in Gofas *et al.* (2011).

Megastomia conoidea (Brocchi, 1814) (Fig. 2p), 1 shell, 10 m, SBP, 2 km South of Potamos, Liopetri, 34°57'N - 33°53'E, DC1, PURC Barash & Danin, (1988), Cecalupo & Quadri (1995), Öztürk *et al.* (2004), Di Franco *et al.* (2021), description in Gofas *et al.* (2011).

Roxaniella jeffreysi (Weinkauff, 1866) (Fig. 2q), 2 shells, 10 m, SBP, 2 km South of Potamos, Liopetri, 34°57'N - 33°53'E, DC1, PURC Cecalupo & Quadri (1995), Öztürk *et al.* (2004), Di Franco *et al.* (2021), DESCRIPTION in Gofas *et al.* (2011).

The climate change transforms the Mediterranean Sea from a temperate to a subtropical environment while human activities induce an increase in the alien biodiversity by means of species introduction from tropical and subtropical seas. It is becoming ever more crucial for the scientists to turn and focus their attention on the effects of alien species on the native ones. This work incorporates 17 species out of which 4 are first records, 1 is second record, 11 are first image documented records, and 1 is second image documented record for Cyprus. The new records, namely *Alvania peloritana*, *Melanella translucens*, *Pseudofusus patriciae* and *Raphitoma contigua* fill their distributional gaps in the Eastern Mediterranean Sea. Once again, the smaller species come to light after intensive and detailed efforts in different environments (localities, depths, and ecotopes).

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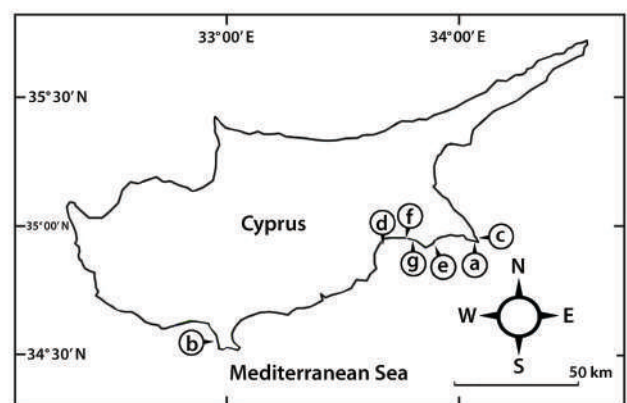


Figure 1: Map of Cyprus with locations mentioned in the text: a. Agia Napa; b. Akrotiri, Limassol; c. Cave Protaras; d. Larnaca Bay; e. Potamos, Liopetri; f. Ormidhia; g. Xylofagou



Figure 2: a. *Modiolus adriaticus* Lamarck, 1819; b. *Seila trilineata* (R. A. Philippi, 1836); c. *Melanella translucens* (Monterosato, 1890); d. *Alvania colossophilus* Oberling, 1970; e. *Alvania peloritana* Aradas & Benoit, 1874; f. *Alvania subcrenulata* (Bucquoy, Dautzenberg & Dollfus, 1884); g. *Aplus coccineus* (Monterosato, 1884); h. *Chauvetia affinis* (Monterosato, 1889); i. *Tritia lousi* (Pallary, 1912); j. *Pseudofusus patriciae* (Russo & Olivieri, 2013); k. *Crassopleura maravignae* (Bivona, 1838); l. *Raphitoma contigua* (Monterosato, 1884); m. *Raphitoma farolita* F. Nordsieck, 1977; n. *Mathilda gemmulata* O. Semper, 1865; o. *Omalogyra atomus* (R. A. Philippi, 1841); p. *Megastomia conoidea* (Brocchi, 1814); q. *Roxaniella jeffreysi* (Weinkauff, 1866). Barr = 1 mm, unless otherwise indicated.

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ABSTRACT

2 new species of Conidae from Guarapari, Brazil are described and compared with similar species.

RÉSUMÉ

Deux nouvelles espèces de Conidae sont décrites et comparées à des espèces similaires.

INTRODUCTION

In the last few decades, the efforts of a very large number of shell collectors and researchers have resulted in the finding and the description of a large number of new species in the family Conidae. Regrettably, some such descriptions have been of rather poor quality, which means that any final conclusions concerning the validity of such species will require further study.

A complete assessment of a certain population, to determine its status as a separate species, should ideally involve a large number of characteristics, besides the morphology of the shells, including radular morphology, living animal characteristics, DNA sequencing, the study of habitat and geographic distribution, etc. Unfortunately, such detailed study is not always possible, especially when (as is often the case) we have no easy access to the living animals. In such cases, the shells are all that we can use to compare any newly found population with previously defined species, in order to try a proper identification. When such efforts do not lead to a concrete decision, a population must be proposed as a new species.

Any description of a new species is no more than a proposal, hopefully well founded enough to ensure a high probability of correctness, which is simply how Science works. Naturally, whenever a new species is described, it may always happen that in subsequent studies, it is shown that it should be considered as conspecific with some other previously known one. That is also perfectly normal in a scientific study. Nevertheless, we should point out that describing a new population as a separate species does not hide any available information, whereas considering it as included in a particular species may in fact conceal and even lose significant information.

With all these aspects in mind, when studying samples from some populations found around Guarapari, Espírito Santo State, Brazil, we found two that we could not assign to any known species, and we are describing them as new species in the present paper.

SYSTEMATICS

Superfamily **Conoidea**

Family **Conidae**

Genus **Dauciconus**

Type Species: *Dauciconus valentinae* n. sp.

Type material:

The holotype (54.3 x 28.3 mm) is deposited in the Museu de Zoologia da Universidade de São Paulo, Brazil, under the registration number 166332.



Fig. 1: Holotype *Dauciconus valentinae* n. sp.

Paratypes:

- 1 – 58.8 x 31.3 mm – In the collection of Francisco & Valentina Fonseca da Silva, Lisbon
- 2 – 57.1 x 29.1 mm – In the collection of António Monteiro, Lisbon
- 3 – 58.6 x 28.5 mm – In the collection of Dâmaso Monteiro, Porto
- 4 – 42.7 x 22.3 mm – In the collection of Dâmaso Monteiro, Porto

Type Locality: Guarapari, Espírito Santo State, Brazil.

Geographic distribution: Known only from the type locality.

Description:

Shell of average size for the subgenus (maximum size registered, about 60 mm), smooth, shiny, anterior end with a few very thin cords. Low spire, with a slightly concave profile but only the early whorls more elevated. Spire whorls flat and smooth. The entire shell is of a light brown, slightly orangish colour. About halfway the body whorl there is a narrow white band, ornamented (mainly along its posterior edge) with dark brown

markings; near the shoulder, there is a relatively wide lighter band. The aperture is narrow, and its interior is whitish.

Etymology:

The new species is named after Valentina, the wife of the important Portuguese collector Francisco Fonseca da Silva, who made the specimens in his collection available for study and comparison.

Habitat:

The known specimens of this species were found by divers at depths of 30 to 50 m, and inside plastic traps for octopuses, down to depths of 70 m. During the night, specimens are occasionally found on the edge of rock boulders, whereas in daytime they are usually hidden amongst coral rubble.

Discussion:

Mainly because of its size, the new species can only be compared with two other Brazilian species, namely *D. riosi* (Petuch, 1986) and *D. worki* (Petuch, 1998). The latter has been identified by some authors as a synonym of *D. eversoni* (Petuch, 1987), described from Honduras; Monnier *et al* (2018), however, completely separate the two species and several authors, including ourselves, consider that the two do not even belong to the same genus *Dauciconus*.

The new species can be distinguished from both *D. riosi* and *D. worki* by the presence of a wide light-coloured band near the shoulder, not present in either *D. riosi* or *D. worki*. The shells of the new species are globally slenderer than those of *D. riosi* or *D. worki*, which present a more triangular profile.

Also, the anterior end of the shells of *D. worki* is, according to its original description, "ornamented with 10-12 thin cords", whereas the new species bears fewer cords. In *D. worki*, the spire whorls are "distinctly canaliculate, incised with 3 faint spiral threads", but such features are absent in the new species. Finally, the spire of *D. worki* presents "numerous evenly spaced, pale orange-tan crescent-shaped flammules", but in the new species the spire is of a uniform colour (matching the ground colour of the body whorl), only occasionally with a few darker flammules.

The colouration of *D. riosi* is different from that of the new species: besides the absence of the above-mentioned white band near the shoulder, the shells of *D. riosi* vary in colour from yellow to orange (whereas those of the new species show a quite constant light brown to orangish colour) and have, according to the original description, "numerous crowded vertical flammules of dark brown or reddish-brown (whereas the new species only presents sparse dark flammules along the central white band); moreover, in *D. riosi*, there is a "second band of dark flammules around the anterior end", something that is absent from all the specimens of the new species examined.

Finally, the spire of *D. riosi* is "orange with numerous crescent-shaped dark brown flammules", a feature that, as noticed above, is not present in the specimens of the new species, and the interior of the aperture is pale orange, whereas in the new species it is whitish.

SYSTEMATICS

Superfamily **Conoidea**

Family **Conidae**

Genus **Jaspidiconus**

Type Species: *Jaspidiconus ildae* n. sp.

Type material:

The holotype (18.5 x 9.3) is deposited in the Museu de Zoologia da Universidade de São Paulo, Brazil, under the registration



number 166333.

Fig. 2: Holotype of *Jaspidiconus ildae* n. sp.

Paratypes:

- 1 – 17.4 x 9.1 – In the collection of António Monteiro, Lisbon
- 2 – 19.0 x 9.7 – In the collection of António Monteiro, Lisbon
- 3 – 17.0 x 8.8 – In the collection of António Monteiro, Lisbon
- 4 – 21.5 x 10.7 – In the collection of Francisco & Valentina Fonseca da Silva, Lisbon
- 5 – 21.3 x 11.1 – In the collection of Francisco & Valentina Fonseca da Silva, Lisbon
- 6 – 19.3 x 10.3 – In the collection of Francisco & Valentina Fonseca da Silva, Lisbon
- 7 – 17.9 x 9.5 – In the collection of Dâmaso Monteiro, Porto
- 8 – 18.5 x 9.4 – In the collection of Dâmaso Monteiro, Porto
- 9 – 17.8 x 9.5 – In the collection of Dâmaso Monteiro, Porto

Type Locality: South of Guarapari, Espírito Santo State, Brazil.

Geographic distribution: Known only from the type locality, which includes the beaches South of Guarapari, from Meaípe to Anchieta.

Description:

Shell small (under 20 mm), slightly elongated, with straight sides. Spire elevated; shoulder sharply angled, smooth. Body whorl with numerous incised spiral sulci, more abundant towards the anterior end, whereas on the posterior third, below the shoulder, the shell is smooth.

The shell is greyish, with a rich pattern of brown dots forming spiral lines., but often coalescing into brown blotches. A spiral row of dark dots is present along the shoulder and can also be seen all along the previous whorls. The aperture is straight, and its interior is violet brown. The protoconch is elevated, pointed

and of a pale colour.

Etymology: The new species is named after Ilda Bianchi, the mother of the Brazilian diver Alfredo Bodart, known to his friends as Nego, who found the specimens under study.

Habitat: The species has been found in a rocky area on sandy bottom, in relatively shallow water.

Discussion:

The new species should be compared with other *Jaspidiconus* found in the Brazilian shores, but we must bear in mind the extent of the coast, which completely separates populations. For instance, the recently described *J. beatrizlimae* Lima & Cossignani, 2023 needs not concern us here, since it is found near Recife, about 2,000 km to the north of Guarapari.

Keeping this in mind, the new species must be first compared with *J. simonei* Petuch & Myers, 2014, which is found in Guarapari Canal, which already establishes a clear geographical separation. Although not too different, the shell of *J. simonei* is more elongated, with a red-orange colour instead of the dull brown in the new species; the interior of the aperture is also orange; the sculpture of the body whorl is also stronger in *J. simonei*.

Both *J. ramosorum* Petuch & Berschauer, 2019 and *J. keppensi* Petuch & Berschauer, 2018 live on the southern part of Bahia State, but they differ significantly from the new species: *J. keppensi* has a wider shell, with a strongly beaded shoulder, and the body whorl has a pale violet or pale blue background, whereas the interior of the aperture is orange to dark brown, with a lighter band near the lip; on the other hand, the shell of *J. ramosorum* is consistently larger, much slenderer and noticeably more cylindrical than that of the new species, with a very dark aperture, the spire is “elevated and subscalariform” (according to the original description, the body whorl is “smooth and shiny”, sculpted with “faintly-incised spiral sulci”, and the body whorl is “deep blue or blue-purple, with [...] longitudinal flammules arranged in irregular zebra-striped pattern”.

J. josei Petuch & Berschauer, 2016 lives much further north: it was reported from “central Bahia State [...], primarily from [...] areas near Itapoã and north of Salvador”, more than 1,200 km from Guarapari. Anyway, morphologically it is easily separable from the new species, having a larger “stocky, barrel-shaped, inflated” shell, with slightly convex sides, the body whorl is “shiny and polished” and its colour is “variable, ranging from pale lavender [...], pale blue, pink or pale tan”.

Other species that could bear comparison with the new one are *J. barragrandensis* Crabos, Oliveira, Queiroz & Almeida, 2022 *J. marinae* Petuch & Myers, 2014, *J. anacarolinae* Cossignani, 2019 and *J. elenae* Pereira de Queiroz, Crabos, Passos de Almeida & Oliveira, 2023. But their range of distribution is between 1,000 km (for *J. barragrandensis*) and 2,000 km (for the other three) north of Guarapari and their morphological characteristics are so distinct that there is really no need for any detailed comments.

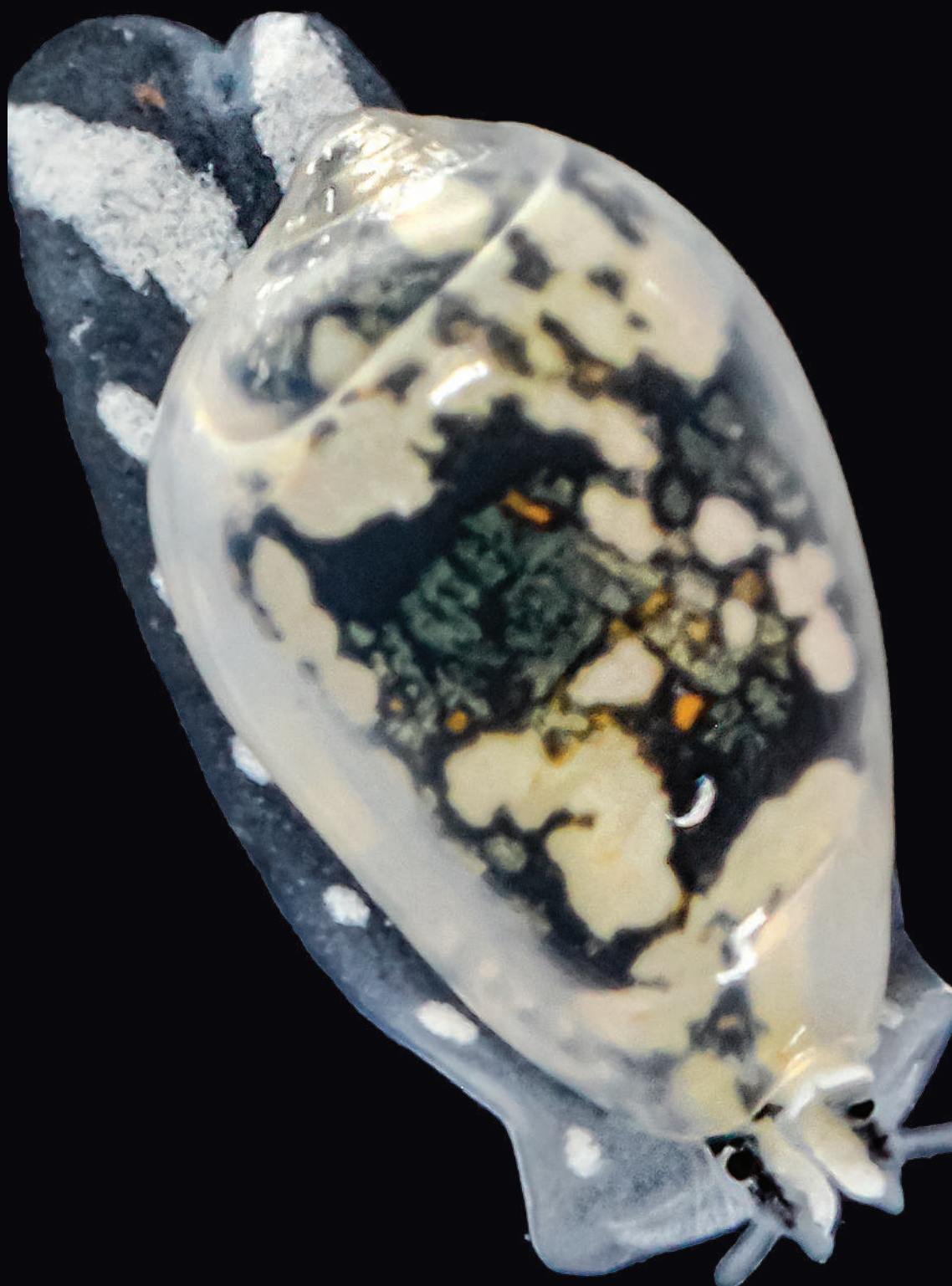
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Plate 1:

1a, 1b *Dauciconus valentinae* n. sp. Holotype, MZUSP 166332 ; 2a, 2b. Paratype 2 ; 3a, 3b. Paratype 3; 4a, 4b. Paratype 4;
5a, 5b. *Jaspidiconus ildae* n. sp. Holotype, MZUSP 166333 ; 6a, 6b. Paratype 6 ; 7 Paratype 7.



Cystiscidae & Marginellidae
MNHN La planète revisitée
Koumac 2019, KB667 PM830
Photographie : Philippe MAESTRATI

EXTENDING THE LIST OF MARINE MOLLUSCA FOR CYPRUS (BY FEBRUARY 2024)

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KEYWORDS

Cyprus, Mediterranean Sea, Mollusca, New Records

ABSTRACT

The present work is a continuation of the investigation on the marine molluscs of Cyprus by February 2024. It incorporates 58 species out of which 12 and 6 are first and second records, respectively, and 28 and 8 are first and second image documented records, respectively. Essential taxonomic characteristics and ecological data, such as distribution and habitat are presented.

INTRODUCTION

Marine molluscs comprise a large proportion (some 25%) of the benthic fauna worldwide; therefore, any significant change in the molluscan species composition is anticipated to have a substantial effect on the benthic communities as a whole (Gofas & Zenetos, 2003). The Mediterranean molluscan fauna is comprised of 1482 gastropod and 410 bivalve species (Oliverio, 2003) and following researches added more species. This fact encourages scientists to continue their effort to discover more molluscs, at least in their local waters. Nevertheless, the molluscan biodiversity can be influenced by exotic species in marine areas close to gateways of introduction such as the Suez Canal in the East Mediterranean Sea, and the progress of the Mediterranean environment becoming subtropical due to the climate change. As human activities have exposed the

Mediterranean molluscan fauna to extensive factors of change in the past few decades (Gofas & Zenetos, 2003), faunistic studies aid in monitoring the changes and apprehending their impacts. Cyprus is situated close to the Suez Canal in the Levantine Sea and in the way of the sea currents which are considered responsible for the spread of the Lessepsian migrants from the Suez Canal towards the north and up to the NW Aegean Sea (Manousis & Galinou-Mitsoudi, 2014). The existing published records on the marine molluscan species in the Cypriot waters seem to be rather few (e.g. Di Monterosato, 1899; Stavrinos, 1974; Tornaritis, 1987; Barash & Danin, 1988; Cicalupo & Quadri, 1994a, 1994b, 1995; Buzzurro & Greppi, 1997; Orr, 2000; Delongueville & Scaillet, 2008, 2009, 2010a, 2010b; Katsanevakis *et al.*, 2009; Zenetos *et al.*, 2009; Tsiakkios & Zenetos, 2011; Kolokotronis *et al.*, 2023, 2024; Varnava *et al.*, 2024) while at the same time the faunistic status tends to be modified due to natural and anthropogenic impacts. Concurrently, a review of the relevant bibliography reveals the lack of smaller species (i.e. <5 mm) (Kolokotronis *et al.*, 2022) – an indication that the area is undersearched, and a large number of species that have been reported without image documentation. After that, the objective of this work is to continue with the search of the Cypriot seas with emphasis on species of smaller size and give reference information for future studies.

METHODS

Samples were recorded in 6 collection stations (Fig. 1). Sampling, handling and species recognition were conducted according to Manousis & Galinou-Mitsoudi (2014) and Mbazios *et al.* (2020). In cases when specimens were of very small size and not perfect condition we present them with cf.. The scientific names of species are based on WoRMS (February 2024). The representatives of the collected specimens are depicted in Figs. 2 to 6. All specimens are deposited in the premises of D. Kolokotronis, M. Papatheodoulou and Y. Varnava who give access to the biological material for inspection by appointment.

RESULTS AND DISCUSSION

Abbreviations: Be – beached; C1 – first record for Cyprus; C2 – second record for Cyprus; DC1 – first image documented record for Cyprus; DC2 – second image documented record for Cyprus; ESW – “Elpida” Shipwreck; JSP - Jubilee Shoals Pissuri; Lio - Liopetri; MB – mixed bottom; Par – Paralimni; PURC – previous undocumented report for Cyprus; RB – rocky bottom; SB – sandy bottom; Sof – Softades; Xy – Xylophagou

THE RECORDS

BIVALVIA

Austronucula cf. perminima (Monterosato, 1875) (Fig. 2a), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, *A. perminima* C1 by Di Franco *et al.* (2021), description from synonym in Gofas *et al.* (2011).

Ennucula cf. aegeensis (Forbes, 1844) (Fig. 2b), 1 shells, MB, 30 m, JSP 34°38'N-32°43'E, *E. aegeensis* has not been reported for Cyprus, description in Gofas *et al.* (2011).

Crenella arenaria Monterosato, 1875 ex H. Martin, ms. (Fig. 2c), 1 shell, MB, 20 m, JSP 34°38'N-32°43'E, PURC Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Dacrydium hyalinum (Monterosato, 1875) (Fig. 2d), 2 shells, MB, 30 m, JSP 34°38'N-32°43'E, C1, description in Gofas *et al.* (2011).

Gregariella semigranata (Reeve, 1858) (Fig. 2e), 1 shell, SB, 21-23 m, Par 35°04'N-34°01'E, C1, description in Gofas *et al.* (2011).

Limatula gwyni (Sykes, 1903) (Fig. 2f), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, PURC Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011) and Scaperrotta *et al.* (2013), with image for 1.6 mm).

Limea crassa (Forbes, 1844) (Fig. 2g), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, C1, presentation in Cossignani & Ardivini (2011).

Lucinella divaricata (Linnaeus, 1758) (Fig. 2h), 1 shell, SB, 21-23 m, Par 35°04'N-34°01'E, PURC Tornaritis (1987), DC1, description in Gofas *et al.* (2011).

Parvicardium carrozzai van Aartsen & Goud, 2001 (Fig. 2i), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, C1, original description in van Aartsen & Goud (2001).

Pitar rudis (Poli, 1795) (Fig. 2j), 1 shell of juvenile individual, 27 m, ESW 34°57'N -33°41'E, DC1 Varnava *et al.* (2024), DC2, description in Scaperrotta *et al.* (2009) and Gofas *et al.* (2011).

GASTROPODA

Scissurella costata d'Orbigny, 1824 (Fig. 3a), 1 shell, 30 m, RB, JSP 34°38'N-32°43'E, PURC Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Sinezona semicostata Burnay & Rolán, 1990 (Fig. 3b), 29 shells, 30 m, RB, JSP 34°38'N-32°43'E, C1, description in Micali & Geiger (2015).

Steromphala umbilicaris (Linnaeus, 1758) (Fig. 3c), 21 shells, Be, Lio 34°58'N-33°53'E, PURC Di Franco *et al.* (2021), DC1, description from synonym in Gofas *et al.* (2011).

Calliostoma gualterianum (R. A. Philippi, 1848) (Fig. 3d), 1 shell, 27 m, RB, JSP 34°38'N-32°43'E, C1, short description and presentation in Alf *et al.* (2020) and presentation in WoRMS (<https://www.marinespecies.org/aphia.php?p=image&tid=141755&pic=99324>).

Dizoniopsis coppolae (Aradas, 1870) (Fig. 3e), 1 shell, 30 m, RB, JSP 34°38'N-32°43'E, PURC Öztürk *et al.* (2004), DC1, presentation in Giannuzzi-Savelli *et al.* (1999), description in Bouchet *et al.* 2010.

Ersilia mediterranea (Monterosato, 1869) (Fig. 3f), 1 shell, 30 m, RB, JSP 34°38'N-32°43'E, PURC Öztürk *et al.* (2004), DC1, presentation in Cossignani & Ardivini (2011).

Melanella levantina (Oliverio, Buzzurro & Villa, 1994) (Fig. 3g), 1 shell, MB, 20 m, JSP 34°38'N-32°43'E, PURC Öztürk *et al.* (2004), DC1, presentation in Cossignani & Ardivini (2011).

Sticteulima jeffreysiana (Brusina, 1869) (Fig. 3h), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, PURC Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Alvania beanii (Hanley in Thorpe, 1844) (Fig. 3i), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, DC1 from synonym Tornaritis (1987), DC2, description in Gofas *et al.* (2011) and Scaperrotta *et al.* (2011).

Alvania marmarisensis Bitlis & Öztürk, 2017 (Fig. 3j), 4 shells, MB, 20 m and 30 m, JSP 34°38'N-32°43'E, C1, description in Bitlis & Öztürk, (2017).

Manzonina crassa (Kannmacher, 1798) (Fig. 3k), 7 shells, MB, 20 m and 30 m, JSP 34°38'N-32°43'E, PURC Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Obtusella intersepta (S. V. Wood, 1857) (Fig. 3l), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, C1, description in Gofas *et al.* (2011), and figured in Giannuzzi-Savelli *et al.* (2002).

Pusillina marginata (Michaud, 1830) (Fig. 3m), 3 shells, MB, 30 m, JSP 34°38'N-32°43'E, PURC Öztürk et al. (2004), DC1, presentation in Giannuzzi-Savelli et al. (2002) and description in Scaperrotta et al. (2015).

Caecum auriculatum de Folin, 1868 (Fig. 3n), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, PURC Öztürk et al. (2004), DC1, description in Gofas et al. (2011).

Caecum clarkii Carpenter, 1859 (Fig. 3o), 1 shell, MB, 20 m, JSP 34°38'N-32°43'E, PURC Di Franco et al. (2021), DC1, description in Gofas et al. (2011).

Caecum subannulatum de Folin, 1870 (Fig. 3p), 6 shells, MB, 30 m, JSP 34°38'N-32°43'E, PURC Di Franco et al. (2021), DC1, description in Gofas et al. (2011).

Caecum trachea (Montagu, 1803) (Fig. 3q), 3 shells, MB, 20 m and 30 m, JSP 34°38'N-32°43'E, PURC Öztürk et al. (2004), DC1, description in Gofas et al. (2011).

Petalopoma elisabettae Schiaparelli, 2002 (Fig. 3r), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, PURC Öztürk et al. (2004), DC1, description in Schiaparelli (2002).

Dermomurex scalaroides (Blainville, 1829) (Fig. 3s), 1 shell, MB, 20 m, JSP 34°38'N-32°43'E, DC1 Varnava et al. (2024), DC2, description in Gofas et al. (2011).

Protatlanta souleyeti (E. A. Smith, 1888) (Fig. 4a), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, DC1 Öztürk et al. (2004), DC2, description in Gofas et al. (2011).

Mangelia pallaryi (F. Nordsieck, 1977) (Fig. 4b), 2 shells, Be, Sof 34°49'N-33°33'E, PURC Öztürk et al. (2004), DC1, description in Spada et al. (2023).

Rissoella angeli Manousis, 2021 (Fig. 4c), 5 shells, MB, 30 m and 30 m, JSP 34°38'N-32°43'E, C1, description in Manousis et al. (2021).

Hyalogyra* cf. *zibrowii Warén, 1997 (Fig. 4d), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, *H. zibrowii* C1 by Di Franco et al. (2021), description in Warén et al. (1996), Gofas et al. (2011) and Romani et al. (2021).

Tomura depressa (Granata-Grillo, 1877) (Fig. 4e), 1 shell, MB, 20 m and 30 m, JSP 34°38'N-32°43'E, PURC Di Franco et al. (2021), DC1, description in Gofas et al. (2011).

Ammonicera fischeriana (Monterosato, 1869) (Fig. 4f), 2 shells, MB, 30 m, JSP 34°38'N-32°43'E, PURC Öztürk et al. (2004), DC1, description in Gofas et al. (2011) and Giannuzzi-Savelli et al. (2014).

Omalogyra disculus Palazzi, 1988 (Fig. 4g), 2 shells, MB, 30 m, JSP 34°38'N-32°43'E, C1 Varnava et al. (2024), C2, description in Gofas et al. (2011).

Omalogyra simplex (O. G. Costa, 1861) (Fig. 4h), 6 shells, MB, 30 m, JSP 34°38'N-32°43'E, C1 Di Franco et al. (2021), C2, description in Gofas et al. (2011).

Brachystomia carrozzai (van Aartsen, 1987) (Fig. 4i), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, PURC from synonym Öztürk et al. (2004), DC1, description in Gofas et al. (2011) and Giannuzzi-Savelli et al. (2014).

Careliopsis modesta (de Folin, 1870) (Fig. 5a), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, C1, description in Giannuzzi-Savelli et al. (2014).

Carinorbis clathrata (Philippi, 1844) (Fig. 5b), 1 shell, Be, Sof 34°49'N-33°33'E, PURC from synonym Tornaritis (1987), DC1, description in Gofas et al. (2011).

Eulimella acicula (Philippi, 1836) (Fig. 5c), 4 shells, MB, 20 m and 30 m, JSP 34°38'N-32°43'E, PURC Öztürk et al. (2004), DC1, description in Gofas et al. (2011).

Folinella excavata (R. A. Philippi, 1836) (Fig. 5d), 7 shells, MB, 30 m, JSP 34°38'N-32°43'E, DC1 Varnava et al. (2024), DC2, description in Gofas et al. (2011).

Odostomella bicincta (Tiberi, 1868) (Fig. 5e), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, C1 Varnava et al. (2024), C2, description in Gofas et al. (2011).

Odostomella doliolum (Philippi, 1844) (Fig. 5f), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, PURC from synonym Tornaritis (1987), DC1, description in Gofas et al. (2011) and Giannuzzi-Savelli et al. (2014).

Odostomia striolata Forbes & Hanley, 1850 (Fig. 5g), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, PURC Öztürk et al. (2004), DC1, description in Gofas et al. (2011).

Parthenina angulosa (Monterosato, 1889) (Fig. 5h), 4 shells, MB, 30 m, JSP 34°38'N-32°43'E, C1, description in Giannuzzi-Savelli et al. (2014).

Parthenina indistincta (Montagu, 1808) (Fig. 5i), 4 shells, MB, 30 m, JSP 34°38'N-32°43'E, PURC from synonym Öztürk et al. (2004), DC1, description in Giannuzzi-Savelli et al. (2014).

Parthenina suturalis (Philippi, 1844) (Fig. 5j), 2 shells, MB, 30 m, JSP 34°38'N-32°43'E, PURC from synonym Öztürk et al. (2004), DC1, description in Giannuzzi-Savelli et al. (2014).

Tragula fenestrata (Jeffreys, 1848) (Fig. 5k), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, C1 Öztürk et al. (2004), C2, description from synonym in Gofas et al. (2011).

Turbonilla pusilla (R. A. Philippi, 1844) (Fig. 5l), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, DC1 Varnava et al. (2024), DC2, description in Giannuzzi-Savelli et al. (2014).

Cima cylindrica (Jeffreys, 1856) (Fig. 6a), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, C1 Giannuzzi-Savelli et al. (2014), C2, description in Giannuzzi-Savelli et al. (2014).

Cima minima (Jeffreys, 1858) (Fig. 6b), 2 shells, MB, 30 m, JSP 34°38'N-32°43'E, C1 Giannuzzi-Savelli et al. (2014), C2, description in Giannuzzi-Savelli et al. (2014).

Ebala nitidissima (Montagu, 1803) (Fig. 6c-e), 3 shells, MB, 30 m, JSP 34°38'N-32°43'E, DC1 Varnava *et al.* (2024), DC2, description in Giannuzzi-Savelli *et al.* (2014).

Ebala pointeli (de Folin, 1868) (Fig. 6f), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, PURC from synonym Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011) and presentation in Peñas & Rolán, (2013).

Retusa tornata (R. B. Watson, 1883) (Fig. 6g), 1 shell, SB, 21-23 m, Par 35°04'N-34°01'E, C1, presented in WoRMS (<https://www.marinespecies.org/aphia.php?p=image&pic=154454&id=141137>).

Retusa umbilicata (Montagu, 1803) (Fig. 6h), 1 shell, MB, 27 m, ESW 34°57'N-33°41'E, DC1 Varnava *et al.* (2024), DC2, description in Gofas *et al.* (2011).

***Retusa* sp.** (Fig. 6i-k), 3 shells, MB, 30 m, JSP 34°38'N-32°43'E. Shell bubble shaped, pale pink with fine spiral sculptural decoration and the inner lip of the aperture reflecting over the columella.

Styliola subula (Quoy & Gaimard, 1827) (Fig. 6l), 1 shell, MB, 30 m, JSP 34°38'N-32°43'E, PURC Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

DISCUSSION

The present work is a continuation of our investigation on the marine molluscs of Cyprus. As always (Kolokotronis *et al.*, 2024), we consider the Island as comprising a single geographical entity and we handle zoogeographical issues accordingly by using place names of both Greek-Cypriot and Turkish-Cypriot communities. It incorporates 58 species out of which 12 are first records, 6 are second records, 28 are first image documented records, and 8 are second image documented records. Out of the 3 species that we refer as cf., *Austronucula perminima* and *Hyalogyra zibrowii* have been previously reported for Cyprus. The very small shells of *Retusa* sp., even if they represent juveniles, seem not to fit well in their taxonomical characters to other congeners. Almost half of the presented species are of a size <5 mm. As observed in the results section of this work, a large proportion of the first reports for the Island refer to species described mainly from the West and Central Mediterranean Sea (e.g. Cachia *et al.*, 1996, 2001; Cecalupo *et al.*, 2008; Cossignani & Ardochini, 2011; Gofas *et al.*, 2011), and the Levantine Sea (e.g. Barash & Danin, 1992), an indication that the local biodiversity is in need of farther and thorough revision across the island. In essence, the Cypriot molluscan biodiversity is not explored adequately yet, and more species are waiting to see the light of publicity. The clean oligotrophic waters of the East Mediterranean Sea, the variety of substrates, depths and costal length and diversity, the climate change as well as the human activities (e.g. navigation, expansion of the Suez Canal) seem to be in support of our anticipations. The climate change transformation of the Mediterranean Sea, in particular, from temperate to subtropical environment and the human activities that induce an increase in the alien biodiversity by means of species introduction from tropical and subtropical seas make ever more crucial for the scientists to turn and focus their attention on those effects on the molluscs' diversity of

the Island. Moreover, any new alien record comprises an alert signal for its expansion, distribution and future effects on the whole Mediterranean Sea environment. The work continues on all molluscan families and expands in more areas and depths of the Cypriot Seas.

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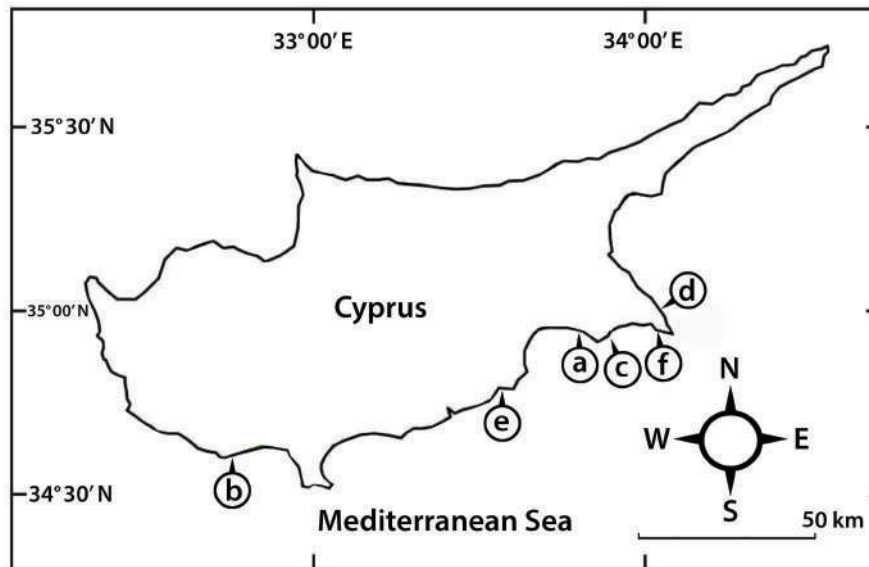


Figure 1: Map of Cyprus with locations mentioned in the text: a. ESW - “Elpida” Shipwreck; b. JSP - Jubilee Shoals Pissuri; c. Lio - Liopetri; d. Par - Paralimni; e. Sof - Softades; f. Xy - Xylophagou

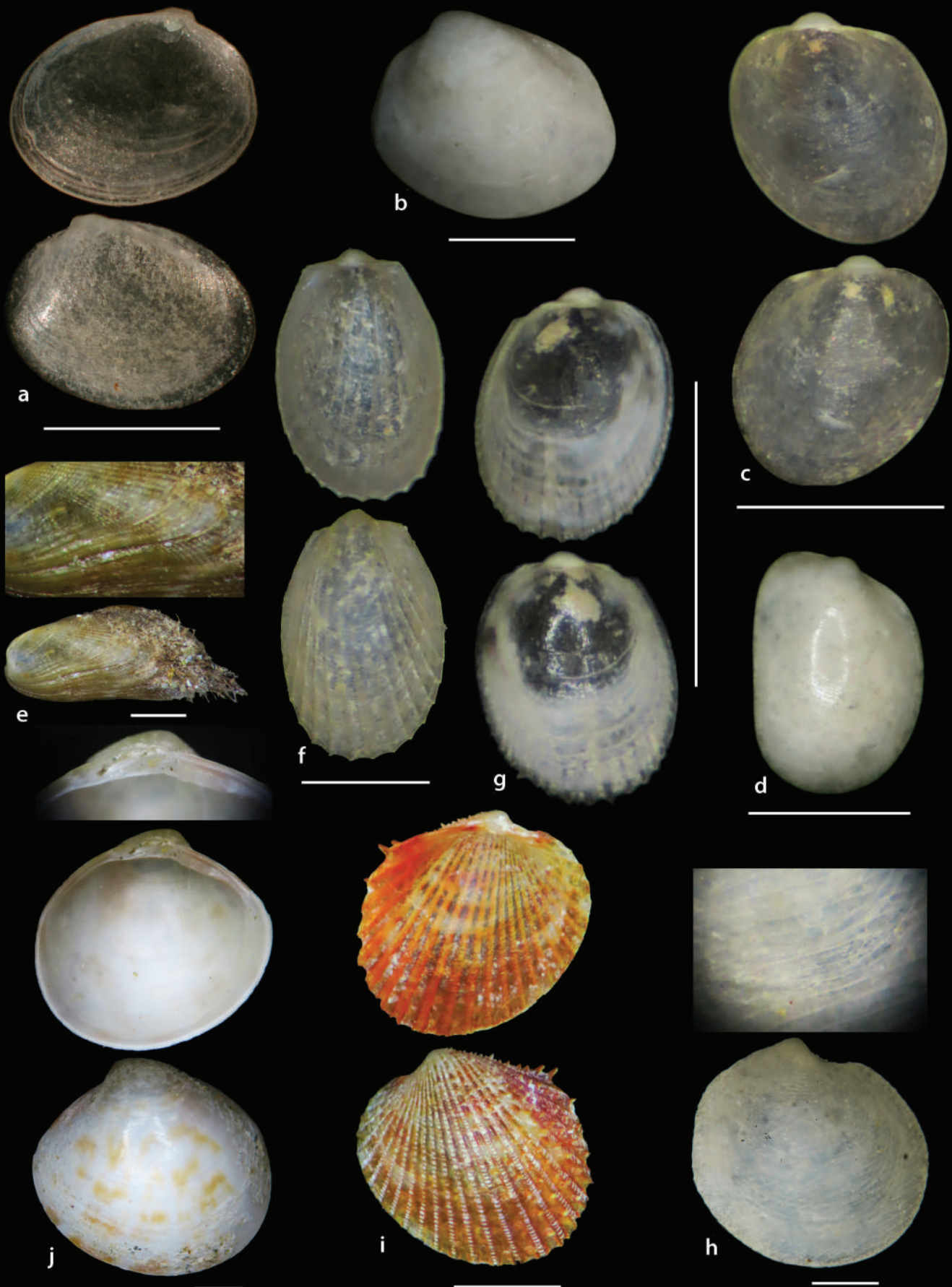


Figure 2: a. *Austronucula* cf. *perminima* (Monterosato, 1875); b. *Ennucula* cf. *aegeensis* (Forbes, 1844); c. *Crenella arenaria* Monterosato, 1875 ex H. Martin, ms.; d. *Dacrydium hyalinum* (Monterosato, 1875); e. *Gregariella semigranata* (Reeve, 1858); f. *Limatula gwyni* (Sykes, 1903); g. *Limea crassa* (Forbes, 1844); h. *Lucinella divaricata* (Linnaeus, 1758); i. *Parvicardium carrozzai* van Aartsen & Goud, 2001; j. *Pitar rudis* (Poli, 1795). Barr = 1 mm.

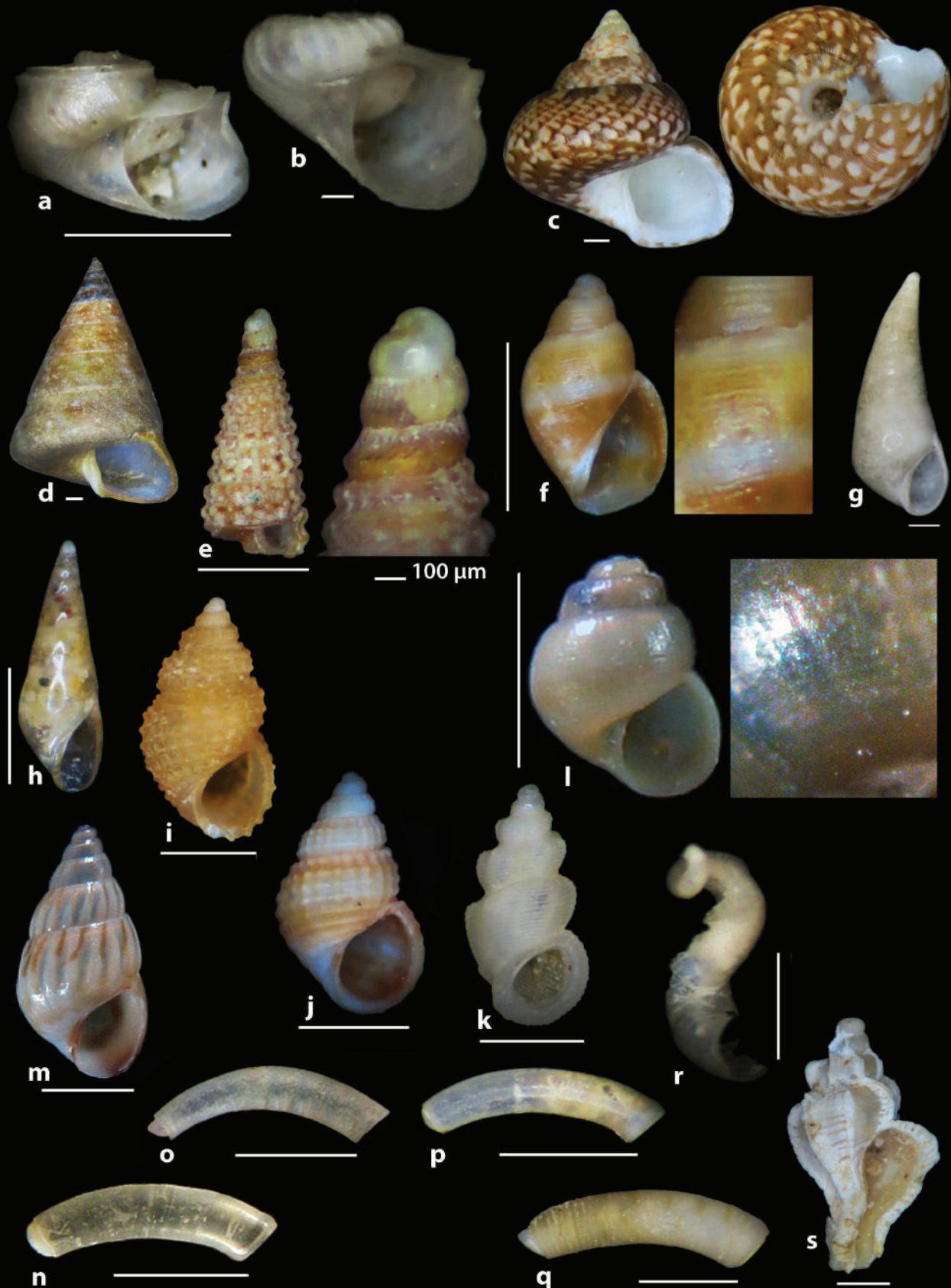


Figure 3: a. *Scissurella costata* d'Orbigny, 1824; b. *Sinezona semicostata* Burnay & Rolán, 1990; c. *Steromphala umbilicar* (Linnaeus, 1758); d. *Calliostoma gualterianum* (R. A. Philippi, 1848); e. *Dizoniopsis coppolae* (Aradas, 1870); f. *Ersilia mediterranea* (Monterosato, 1869); g. *Melanella levantina* (Oliverio, Buzzurro & Villa, 1994); h. *Sticteulima jeffreysiana* (Brusina, 1869); i. *Alvania beanii* (Hanley in Thorpe, 1844); j. *Alvania marmarisensis* Bitlis & Öztürk, 2017; k. *Manzonina crassa* (Kanmacher, 1798); l. *Obtusella intersecta* (S. V. Wood, 1857); m. *Pusillina marginata* (Michaud, 1830); n. *Caecum auriculatum* de Folin, 1868; o. *Caecum clarkii* Carpenter, 1859; p. *Caecum subannulatum* de Folin, 1870; q. *Caecum trachea* (Montagu, 1803); r. *Petalopoma elisabetae* Schiaparelli, 2002; s. *Dermomurex scalaroides* (Blainville, 1829). Barr = 1 mm, unless otherwise indicated.



Figure 4: a. *Protatlanta souleyeti* (E. A. Smith, 1888); b. *Mangelia pallaryi* (F. Nordsieck, 1977); c. *Rissoella angeli* Manousis, 2021; d. *Hyalogyra* cf. *zibrowii* Warén, 1997; e. *Tomura depressa* (Granata-Grillo, 1877); f. *Ammonicera fischeriana* (Monterosato, 1869); g. *Omalogyra disculus* Palazzi, 1988; h. *Omalogyra simplex* (O. G. Costa, 1861); i. *Brachystomia carrozzai* (van Aartsen, 1987). Barr = 1 mm, unless otherwise indicated.

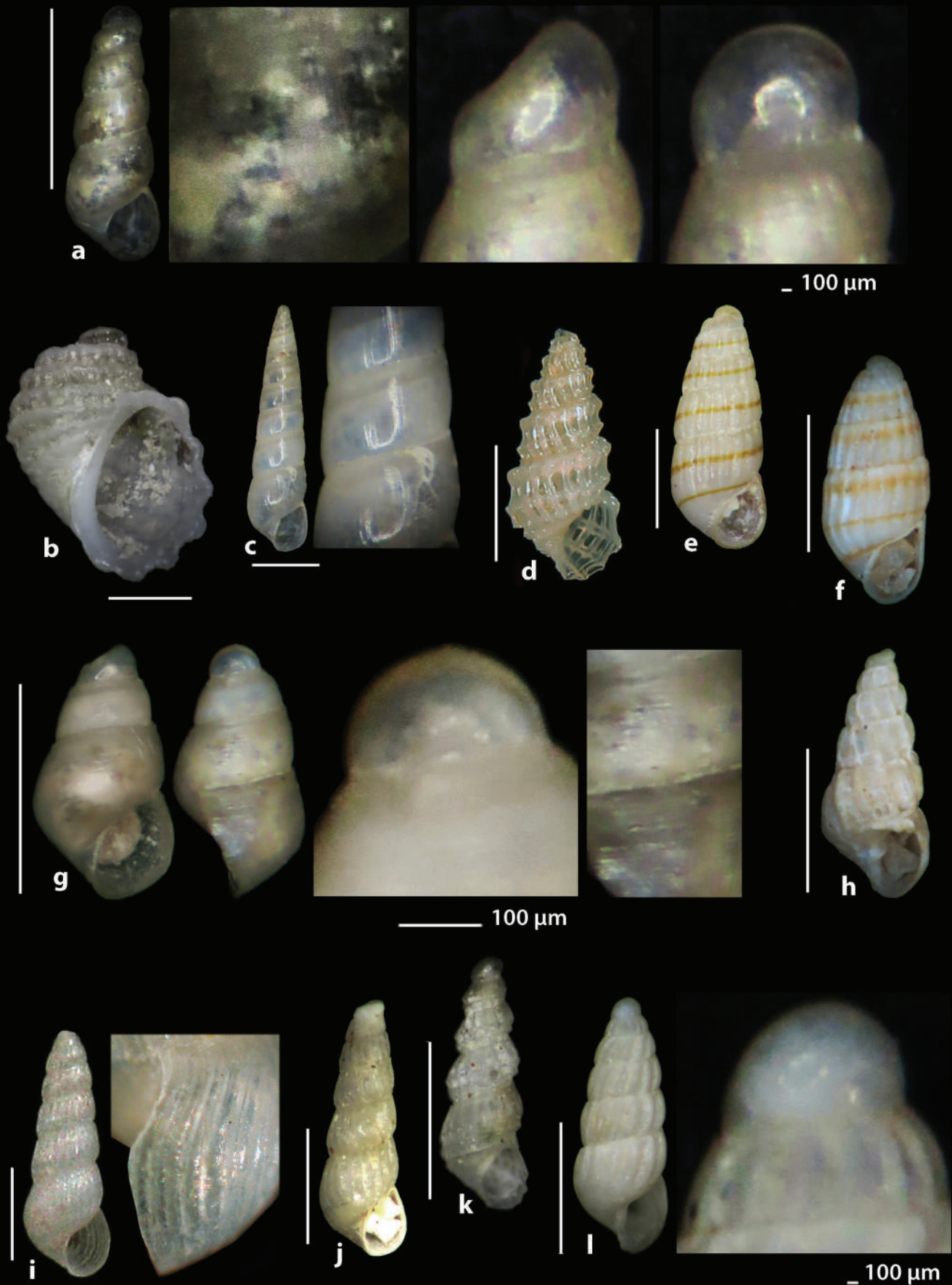


Figure 5: a. *Careliopsis modesta* (de Folin, 1870); b. *Carinorbis clathrata* (Philippi, 1844); c. *Eulimella acicula* (Philippi, 1836); d. *Folinella excavata* (R. A. Philippi, 1836); e. *Odostomella bicincta* (Tiberi, 1868); f. *Odostomella doliolum* (Philippi, 1844); g. *Odostomia striolata* Forbes & Hanley, 1850; h. *Parthenina angulosa* (Monterosato, 1889); i. *Parthenina indistincta* (Montagu, 1808); j. *Parthenina suturalis* (Philippi, 1844); k. *Tragula fenestrata* (Jeffreys, 1848); l. *Turbonilla pusilla* (R. A. Philippi, 1844). Barr = 1 mm, unless otherwise indicated.

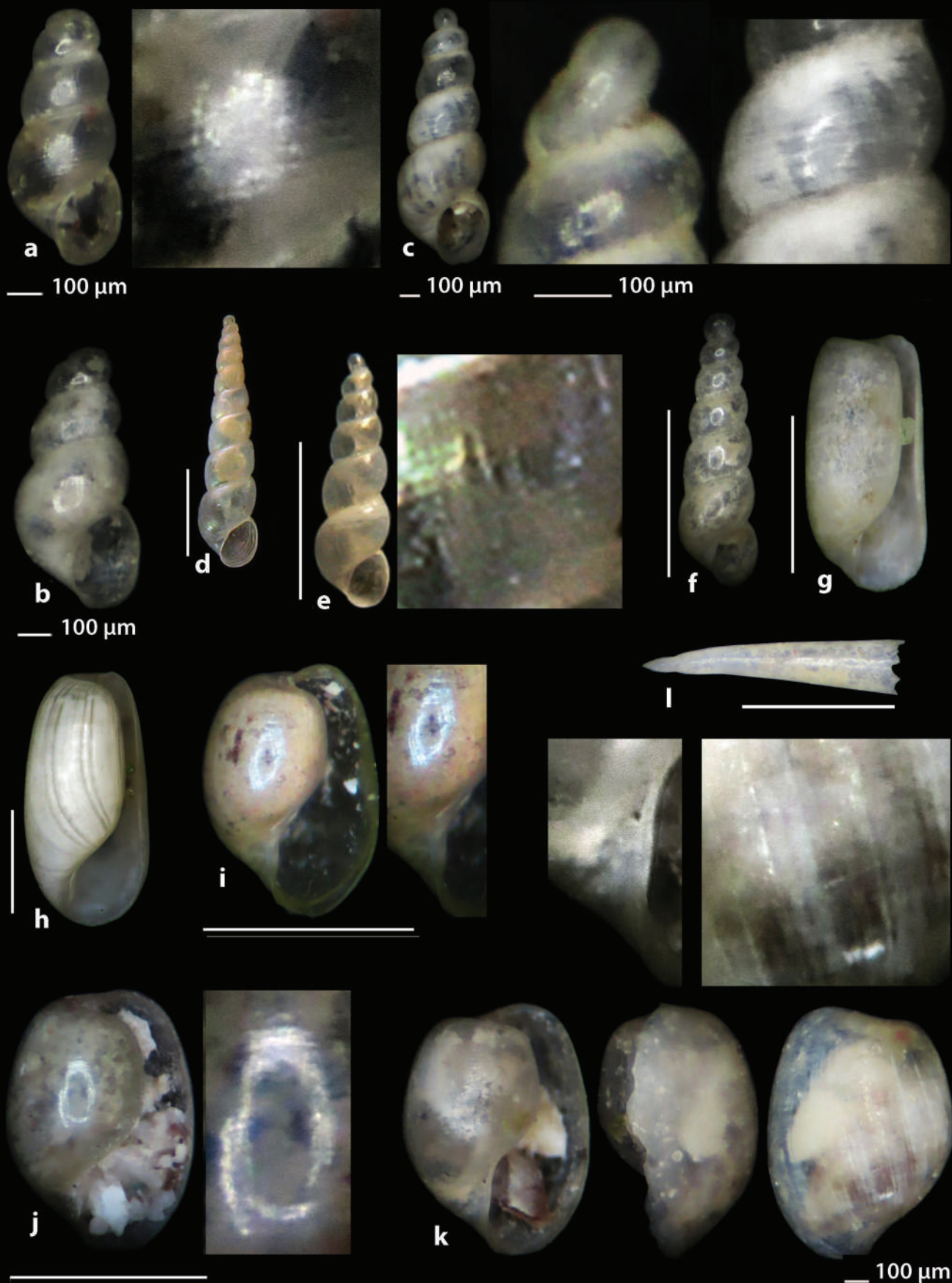


Figure 6: a. *Cima cylindrica* (Jeffreys, 1856); b. *Cima minima* (Jeffreys, 1858); c-e. *Ebala nitidissima* (Montagu, 1803); f. *Ebala pointeli* (de Folin, 1868); g. *Retusa tornata* (R. B. Watson, 1883); h. *Retusa umbilicata* (Montagu, 1803); i-k. *Retusa* sp.; l. *Styliola subula* (Quoy & Gaimard, 1827). Barr = 1 mm, unless otherwise indicated.

DESCRIPTION OF A NEW *ENAETA* SPECIES FROM NORTHEASTERN BRAZIL

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ABSTRACT

We describe here a new *Enaeta* sp. from Rio do Fogo, Rio Grande do Norte, Cearian Subprovince, Brazil, named *Enaeta brasiliiana* n. sp., distinguishable from *Enaeta reevei* (Dall, 1907) by its inflated aspect and its deeper habitat.

RÉSUMÉ

Nous décrivons ici une nouvelle espèce d' *Enaeta* n. sp. de Rio do Fogo, Rio Grande do Norte, Sous-Province de Ceara, Brésil, nommée *Enaeta brasiliiana* n. sp., distincte de *Enaeta reevei* (Dall, 1907) par son aspect enflé et la profondeur de son habitat.

Keywords

Brazilian Molluscan Province, Cearean subprovince, Rio do Fogo, Rio Grande do Norte, Family Volutidae, Lyriini tribe, *Enaeta*, lecithotrophic development

Abbreviations

NHMUK National History Museum of United Kingdom, London, UK

MNRJ Museu Nacional Rio de Janeiro, Brazil

OC Olivier Crabos reference collection

INTRODUCTION

The family Volutidae includes several genera, like for instance *Amoria*, *Cymbiola*, and *Volutaconus*, that are greatly attractive to collectors, from an aesthetical point of view. That is certainly not the case for the small *Enaeta* species from the Atlantic Ocean; they do not have such an appeal, as they are small and beige and brown shells, without much that really catches the eye.

Following an article where we described the new species *Enaeta baili* from Abrolhos Arquipelago, Bahia, Brazil, in *Xenophora Taxonomy* 42, we will introduce here a species that was included in the *Enaeta reevei* species group by Bail and Poppe in 2001. As a matter of fact, following the description of the three Atlantic species *E. cylleniformis* (Sowerby I, 1844) from Bahamas, *E. guildingii* (Sowerby I, 1844) from Caribbean and *E. reevei* (Dall, 1907) from Caribbean too, during the XIX Century, some doubts remained as to the possibility that the areas where they were said to have been found were too large for a non-planktonic larva genus.

More recently, the Brazilian species of the group were separated from the Caribbean ones, with the descriptions of *E. leonardhilli* Petuch 1982, from Fernando de Noronha, Brazil and *E. baili* Crabos 2024, from Abrolhos, Brazil; during the same period, *E. lindae* Petuch 2013, from Bahamas and *E. bessei* Petuch 2013, from Honduras, were also described.

This resulted in considerably reducing the distribution area of *E. guildingii*, limiting it to St Vincent and Martinique Islands, in the Caribbean.

We now realize that there were no intermediate populations between the Northern Atlantic populations of *E. reevei* and the Brazilian population, and that the latter presents specificities that differentiate it from the type. From this starting point we want to demonstrate here there is a need to describe a new species that we call *E. brasiliiana*.

SYSTEMATIC

Order Neogastropoda Wenz 1938

Superfamily Volutioidea Rafinesque 1815

Family Volutidae Rafinesque 1815

Tribe Lyriini Pilsbry & Olsson 1954

Genus *Enaeta* H Adams & A Adams 1853

Enaeta brasiliiana n. sp.

Type material:

Holotype MNRJ 36957, 14,4 mm, gift from Rodrigo Hazin

Paratype 1: OC collection, 15,7 mm

Paratype 2: Eduardo Schirrmeister collection, 15 mm

Type locality:

Rio do Fogo, Rio Grande do Norte, 20 to 25 meters deep, under stones.

Distribution:

Known only from the type locality. There were misinterpretations about its presence in Guarapari (Espírito Santo) but the local fishermen and divers from Espírito Santo told us that it did not exist there.

Description:

Shell from 13 to 16 mm, inflated shape, very constant oval shape, mamillated protoconch with two pale whorls, followed by 5 teleoconch whorls, the first two being strongly ribbed axially and spirally. The three last whorls are light cream with three pale pink spiral bands on the body whorl and small pale tent pattern on other parts, sometimes on light brown spots. The penultimate whorl is inflated and looks like a *Demoulia* (Nassariidae) whorl with a fold, which is obliquely inserted. There is a single well-marked tooth on the upper internal part of the lip, and an elongated brown spot is present on the external edge of the lip. Siphonal notch deeply marked.

Ecology:

Under rocks (as most *Enaeta*).

DISCUSSION

The syntypes of *E. reevei* (Dall, 1907) at NHMUK are very similar and represent the Utila Island (Honduras) population designated as the type for this species. The species was described as *Voluta guttata* Reeve, 1849, but the name was preoccupied, so Dall had to rename it. The shells measure from 14 to 17 mm,

and are clearly elongated, with an axial ribbing of very variable intensity. This differentiates them from *E. brasiliiana* n. sp., which is not axially ribbed on the body whorl. In addition, the Honduran type population comes from shallow water (1 to 3 meters deep) whereas *E. brasiliiana* n. sp. was only found in depths of 20 to 25 meters.

The ratio length/width of the *E. reevei* syntypes is 2.31 (but as these syntypes are eroded I suspect it would be 2.34 with entire protoconch), whereas in *E. brasiliiana* n. sp. it averages 2.25 in the 3 examined specimens. *E. brasiliiana* n. sp. shell has an inflated aspect that is not found on *E. reevei*.

It should also be stressed that no shell with lecithotrophic development could pass the Amazon mouth barrier with sweet water blocking species migration. That fact does – in our opinion – prevent any of the different Northern Atlantic population of this species (namely Yucatan, Martinique Island, Utila Island, Roatan, Cuba) from crossing the Amazonas barrier and developing in Brazil, another reason why we believe we have a distinct species in Northeastern Brazil.

Concerning the Cuban population of *E. reevei* Dall, 1907, the shell shape is quite similar to *E. brasiliiana* n. sp. even if the penultimate whorl of the Cuban shells is not as inflated as in our species.

ETYMOLOGY

The term “brasiliiana” refers to the fact that this is a strictly Brazilian species.

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Plate 1: 1. *Enaeta brasiliiana* Holotype, 14,4 mm, Rio do Fogo, Rio Grande do Norte, Brazil. MNRJ36957. Picture courtesy of Femorale. 2. *Enaeta brasiliiana* Paratype 1, 15,7 mm, Rio do Fogo, Rio Grande do Norte, Brazil Courtesy E Schirrmeister. 3. *Enaeta brasiliiana* Paratype 2, 15 mm, Rio do Fogo, Rio Grande do Norte, Brazil. 4. *E. reevei* syntype 1968148_1 NHMUK. 5. *E. reevei* syntype 1968148_2 NHMUK.

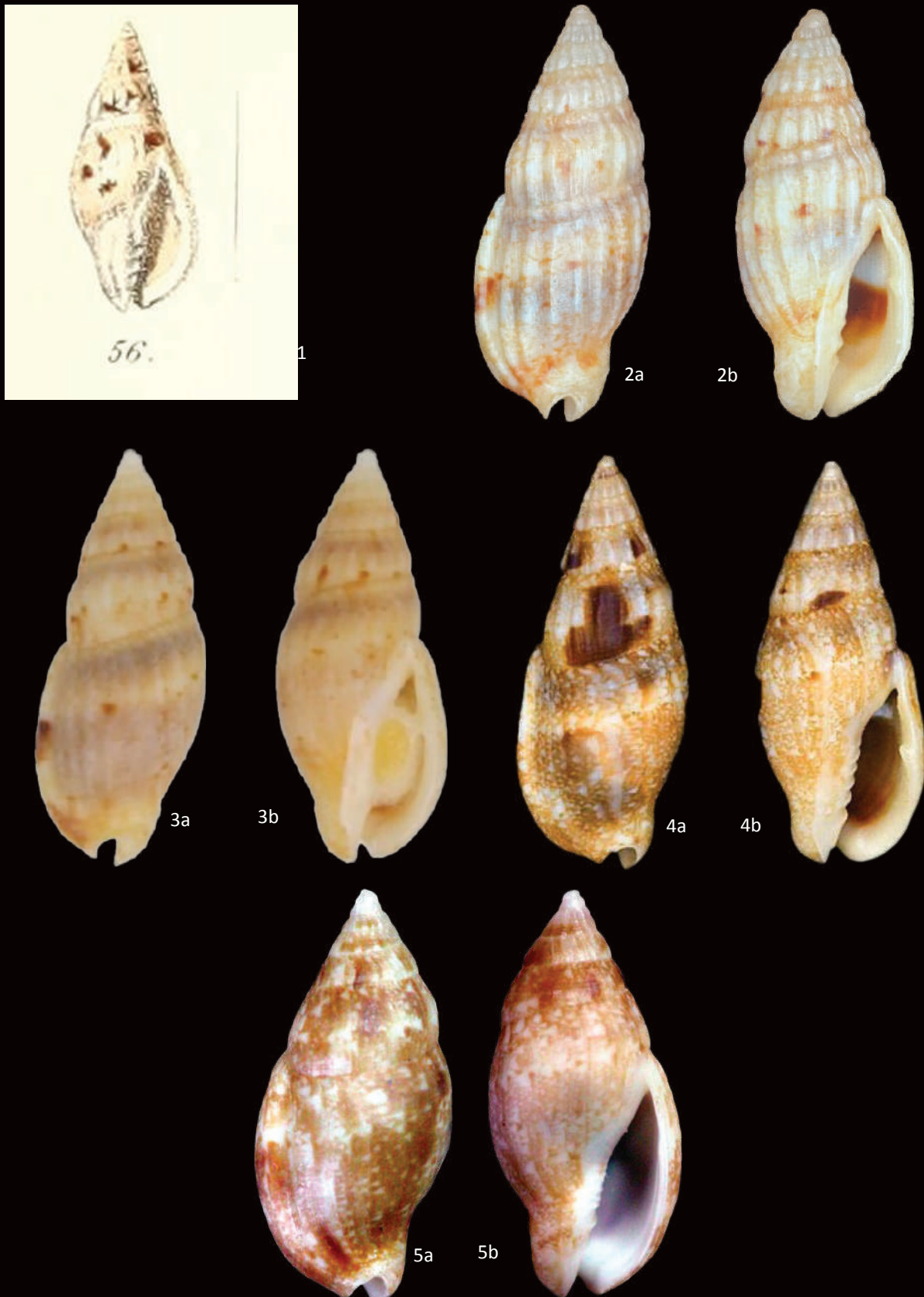
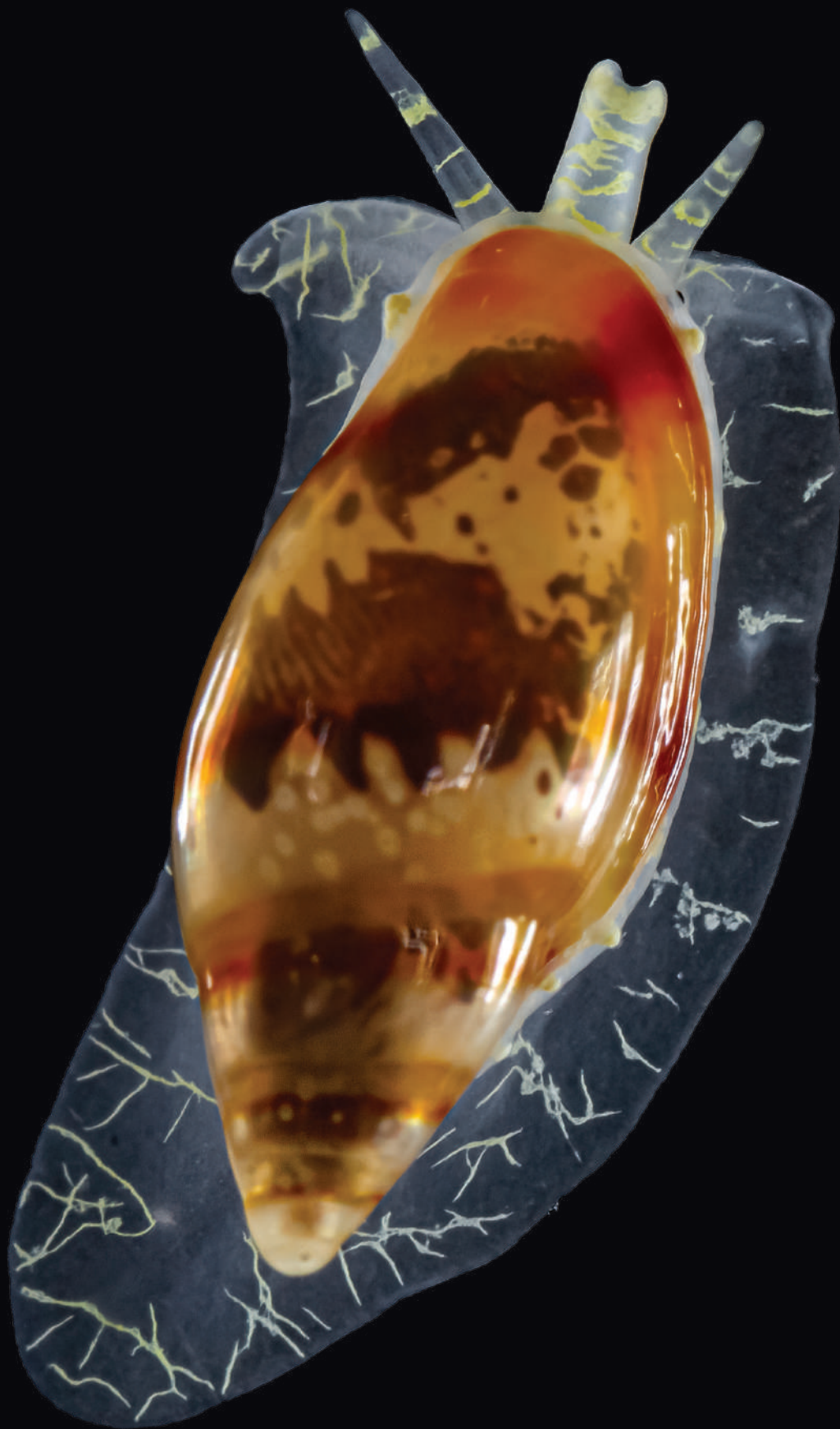


Plate 2: 1. *Voluta guttata* Reeve, 1849, renamed *Enaeta reevei* Dall, 1907 (species 56). 2. *E. reevei* 12,1 mm. (compact and very ribbed shell), courtesy Simon Aiken. 3. *E. reevei* 15 mm, Islas de la Bahia, Honduras, courtesy Topseashells. 4. *E. reevei* 15 mm, typical shell from Honduras (Utila Island) live collected, courtesy Femorale. 5. *E. reevei*, Playa Rancho Luna, Cienfuegos, Cuba. Photo R Fernandez Garcés, courtesy Dr José Espinosa.



Cystiscidae & Marginellidae
MNHN La planète revisitée
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NEW RECORDS OF MARINE MOLLUSCA FOR THE EASTERN MEDITERRANEAN AND CYPRUS (BY APRIL 2024)

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KEYWORDS

Cyprus, Mediterranean Sea, Mollusca, New Records

ABSTRACT

The present work is the continuation of the investigation on the marine mollusks of Cyprus by April 2024. It incorporates 36 species out of which 8 are first records, 2 are second records, 12 are first image documented records, and 14 are second image documented records, while 1 is first record for the Eastern Mediterranean Sea. Essential taxonomic characteristics and ecological data, such as distribution, habitat and origin are presented.

INTRODUCTION

Marine molluscs comprise some 25% of the benthic fauna worldwide; therefore, any significant change in the molluscan species composition is anticipated to have a substantial effect on the benthic communities altogether (Gofas & Zenetos, 2003). Nevertheless, the molluscan biodiversity can be influenced by exotic species in marine areas close to gateways of introduction such as the Suez Canal in the East Mediterranean Sea, and the progress of the Mediterranean environment becoming subtropical due to the climate change. As human activities have exposed the Mediterranean molluscan fauna to extensive factors of change in the past few decades (Gofas & Zenetos, 2003), faunistic studies aid in monitoring the changes and apprehending their impacts. Cyprus is situated

close to the Suez Canal in the Levantine Sea and in the way of the sea currents which are considered responsible for the spread of the Lessepsian migrants from the Suez Canal towards the north and up to the NW Aegean Sea (Manousis & Galinou-Mitsoudi, 2014). The existing published records on the marine molluscan species in the Cypriot waters seem to be rather few (e.g. Di Monterosato, 1899; Stavrinos, 1974; Tornaritis, 1987; Barash & Danin, 1988; Cecalupo & Quadri, 1994a, 1994b, 1995; Buzzurro & Greppi, 1997; Orr, 2000; Delongueville & Scaillet, 2008, 2009, 2010a, 2010b; Katsanevakis *et al.*, 2009; Zenetos *et al.*, 2009; Tsiakkios & Zenetos, 2011; Kolokotronis *et al.*, 2023, 2024; Papatheodoulou *et al.*, 2024; Varnava *et al.*, 2024) while at the same time the faunistic status tends to be modified due to natural and anthropogenic impacts. Concurrently, a review of the relevant bibliography reveals the lack of smaller species (i.e. <5 mm) (Kolokotronis *et al.*, 2022) – an indication that the area is undersearched, and a large number of species that have been reported without image documentation. After that, the objective of this work is to continue with the search of the Cypriot seas with emphasis on species of smaller size and give reference information for future studies.

METHODS

Samples were recorded in 10 collection stations (Fig. 1). Sampling, handling and species recognition were conducted according to Manousis & Galinou-Mitsoudi (2014) and Mbazios *et al.* (2020). The scientific names of species are based on WoRMS (April 2024). The representatives of

the collected specimens are depicted in Figs. 2 to 4. All specimens are deposited in the premises of D. Kolokotronis, M. Papatheodoulou and Y. Varnava who give access to the biological material for inspection by appointment.

RESULTS AND DISCUSSION

Abbreviations: Ak – Akrotiti; AT – Agia Thekla; A-T – Akanthou – Tatlisu; Be – beached; C1 – first record for Cyprus; C2 – second record for Cyprus; DC1 – first image documented record for Cyprus; DC2 – second image documented record for Cyprus; EI – Erroneous Identification; EMS1 – first record for the East Mediterranean Sea; JSP – Jubilee Shoals Pissuri; Lim – Limassol; Lio – Liopetri; MB – muddy bottom; Or – Ormidia; Pro – Protaras; PURC – previous undocumented report for Cyprus; RB – rocky bottom; SB – sandy bottom; Xy – Xylophagou; Zy – Zygi

THE RECORDS

BIVALVIA

Batharca pectunculoides (Scacchi, 1835) (Fig. 2a), 1 shell, MB, 80 m, Or 34°57'N-33°46', PURC Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Spondylus spinosus Schreibers, 1793 (Fig. 2b), 1 live individual, RB, 3 m, Lim 34°40'N-33°02'E, DC1 Zenetos *et al.* (2009), DC2, description in Mienis *et al.* (1993).

Ctena decussata (O. G. Costa, 1829) (Fig. 2c), 1 shell, Be, Lio 34°58'N-33°54'E, DC1 Tornaritis (1987), DC2, description in Gofas *et al.* (2011).

Loripinus fragilis (Philippi, 1836) (Fig. 2d), SB, 1 shell, 22 m, Xy, 34°56'N-33°49'E, DC1 Tornaritis (1987), DC2, description in Gofas *et al.* (2011).

Centrocardita aculeata (Poli, 1795) (Fig. 2e), 1 shell, RB, 20 m, Xy, 34°56'N-33°49'E, DC1 Tornaritis (1987), DC2, description from synonym in Gofas *et al.* (2011).

Moerella distorta (Poli, 1791) (Fig. 2f), 4 shells, SB, 24 m, Zy, 34°43'N-33°20'E, PURC from synonym Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Polititapes lucens (Locard, 1886) (Fig. 2g), 1 shell, SB, 24 m, Xy, 34°56'N-33°49'E, C1, description in Scaperrotta *et al.* (2015).

GASTROPODA

Anatoma aspera (R. A. Philippi, 1844) (Fig. 3a), 1 shell, MB, 80 m, Or 34°57'N-33°46', C1, description in Gofas *et al.* (2011).

Echinolittorina punctata (Gmelin, 1791) (Fig. 3b), 1 live, on rocks during low tide, A-T 35°24'N-33°45', C1 from synonym Öztürk *et al.* (2004), C2, description in Gofas *et al.* (2011).

Cerithium lividulum Risso, 1826 (Fig. 3c), 1 shell, Be, Lio, 34°57'N-33°53'E, PURC Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Cerithium renovatum Monterosato, 1884 (Fig. 3d), 1 shell, SB,

2 m, Xy, 34°56'N-33°49'E, DC1 Kolokotronis *et al.* (2023), DC2, description in Gofas *et al.* (2011).

Janthina pallida W. Thompson, 1840 (Fig. 3e), 1 shell, Be, Ak 34°34'N-32°58', C1, description in Gofas *et al.* (2011).

Melanella boscii (Payraudeau, 1826) (Fig. 3f), 1 shell, Be, Ak 34°34'N-32°58', DC1 Tornaritis (1987) EI as *Leiostraca ephamilla* Watson, DC2, description in Gofas *et al.* (2011).

Alvania aspera (R. A. Philippi, 1844) (Fig. 3g), 1 shell, Be, Ak 34°34'N-32°58', DC1 Tornaritis (1987), DC2, description in Scaperrotta *et al.* (2012).

Alvania discors (T. Brown, 1818) (Fig. 3h), 1 shell, RB, 9 m, Xy, 34°56'N-33°49'E, DC1 Tornaritis (1987), DC2, description in Gofas *et al.* (2011).

Alvania rominae Amati, Trono & Oliverio, 2020 (Fig. 3i), 1 shell, Be, Lio, 34°57'N-33°53'E, C1, description in Amati *et al.* (2020).

Alvania lucinae Oberling, 1970 (Fig. 3j), 4 shells, Be, Ak 34°34'N-32°58', C1, description in Scaperrotta *et al.* (2012).

Pusillina radiata (R. A. Philippi, 1836) (Fig. 3k), 2 shells, SB, 20 m, Xy, 34°56'N-33°49'E, PURC Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Rissoa membranacea (J. Adams, 1800) (Fig. 3l), 1 shell, Be, Ak 34°34'N-32°58', PURC from synonym Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Rissoa scurra (Monterosato, 1917) (Fig. 3m), 1 shell, Be, Ak 34°34'N-32°58', DC1 Papatheodoulou *et al.* (2024), DC2, presentation in Giannuzzi-Savelli *et al.* (2002).

Setia amabilis (Locard, 1886) (Fig. 3n), 1 shell, Be, Ak 34°34'N-32°58', C1, description in Gofas *et al.* (2011).

Marsenia perspicua (Linnaeus, 1758) (Fig. 3o), 1 shell, SB, 8 m, Lio, 34°57'N-33°53'E, DC1 from synonym Tornaritis (1987), DC2, description in Gofas *et al.* (2011).

Euspira guilleminii (Payraudeau, 1826) (Fig. 3p), 1 shell, SB, 22 m, Zy, 34°43'N-33°20'E, PURC Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Bela plicatilis (Risso, 1826) (Fig. 4a), 1 shell, Be, Ak 34°35'N-32°55'E, C1 Bogi *et al.* (2021), C2, description in Spada (2016) and Giannuzzi-Savelli *et al.* (2023).

Mangelia striolata Risso, 1826 (Fig. 4b), 1 shell, Be, Pro 35°01'N-34°03', DC1 from synonym Tornaritis (1987), DC2, description in Spada & Della Bella (2010).

Pseudomangelia sicula (Reeve, 1846) (Fig. 4c), 1 shell, RB, 22 m, Xy, 34°56'N-33°49'E, PURC from synonym Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Pseudomangelia vauquelini (Payraudeau, 1826) (Fig. 4d), 1 shell, Be, Lio, 34°57'N-33°53'E, DC1 from synonym Tornaritis (1987), DC2, description in Spada *et al.* (2023).

Mitromorpha olivoidea (Cantraine, 1835) (Fig. 4e), 1 shell, RB, 18 m, Pro 35°01'N -34°03', PURC from synonym Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

Auristomia barashi (Bogi & Galil, 2000) (Fig. 4f), 1 shell, Be, Akr 34°34'N -32°58', C1, description in Giannuzzi-Savelli *et al.* (2014).

Euparthenia bulinea (R. T. Lowe, 1841) (Fig. 4g), 1 shell, Be, Akr 34°34'N -32°58', DC1 from synonym Tornaritis (1987), DC2, description in Giannuzzi-Savelli *et al.* (2014).

Euparthenia humboldti (Risso, 1826) (Fig. 4h), 1 shell, Be, Lio, 34°57'N - 33°53'E, PURC Öztürk *et al.* (2004), DC1, description in Giannuzzi-Savelli *et al.* (2014).

Ebala pointeli (de Folin, 1868) (Fig. 4i), 1 shell, Be, Lio, 34°57'N - 33°53'E, DC1 Papatheodoulou *et al.* (2024), DC2, description in Giannuzzi-Savelli *et al.* (2014).

Graphis albida (Kanmacher, 1798) (Fig. 4j), 1 shell, Be, Akr 34°34'N -32°58', PURC Di Franco *et al.* (2021), DC1, description in Gofas *et al.* (2011).

Bulla arabica Malaquias & D. Reid, 2008 (Fig. 4k), 1 shell, SB, 9 m, Pro 35°01'N -34°03', PURC MSFD, DC1, description in Malaquias & Reid (2008).

Heliconoides inflatus (d'Orbigny, 1835) (Fig. 4l), 1 shell, MB, 30 m, JSP 34°38'N -32°43', PURC from synonym Öztürk *et al.* (2004), DC1, description in Gofas *et al.* (2011).

DENTALIIDAE

Antalis novemcostata (Lamarck, 1818) (Fig. 4m), 1 shell, SB, 20 m, Zy, 34°43'N -33°20'E, C1, EMS1, description in Gofas *et al.* (2011).

DISCUSSION

The present work is a continuation of our investigation on the marine molluscs of Cyprus. Like before (Kolokotronis *et al.*, 2024), we consider the Island as comprising a single geographical entity and we handle zoogeographical issues accordingly by using place names of both Greek-Cypriot and Turkish-Cypriot communities. It incorporates 36 species out of which 8 are first and 2 is second record, 12 are first image documented and 14 are second image documented records, while *Antalis novemcostata* (Lamarck, 1818) is first record for the Eastern Mediterranean Sea. Almost half of the presented species are of a size <5 mm. As observed in the results section of this work, a large proportion of the first reports for the Island refer to species described mainly from the West and Central Mediterranean Sea (e.g. Cachia *et al.*, 1996, 2001; Cicalupo *et al.*, 2008; Cossignani & Ardovini, 2011; Gofas *et al.*, 2011), and the Levantine Sea (e.g. Barash & Danin, 1992), an indication that the local biodiversity is in need of farther and thorough revision hence the necessity of cooperation between the two ethnic communities. In essence, the Cypriot molluscan biodiversity is not explored adequately yet, and more species are waiting to see the light of publicity. The clean oligotrophic waters of the East Mediterranean Sea, the variety of substrates,

depths and costal length and diversity, the climate change as well as the human activities (e.g. navigation, expansion of the Suez Canal) seem to be in support of our anticipations. The climate change transformation of the Mediterranean Sea, in particular, from temperate to subtropical environment (a rise temperature anomaly for the period 1993-2022 is ~ 2°C, based on www.marine.copernicus.eu/) and the human activities that induce an increase in the alien biodiversity by means of species introduction from tropical and subtropical seas make ever more crucial for the scientists to turn and focus their attention on those effects on the mollusks' diversity of the Island. Moreover, any new alien record comprises an alert signal for its expansion, distribution and future effects on the whole Mediterranean Sea environment. In cases that the records refer to live alien individuals, we shall have to re-consider their establishment status and the contribution of the climate change in their distributional one. The work continues on all molluscan families and expands in more areas and depths of the Cypriot Seas.

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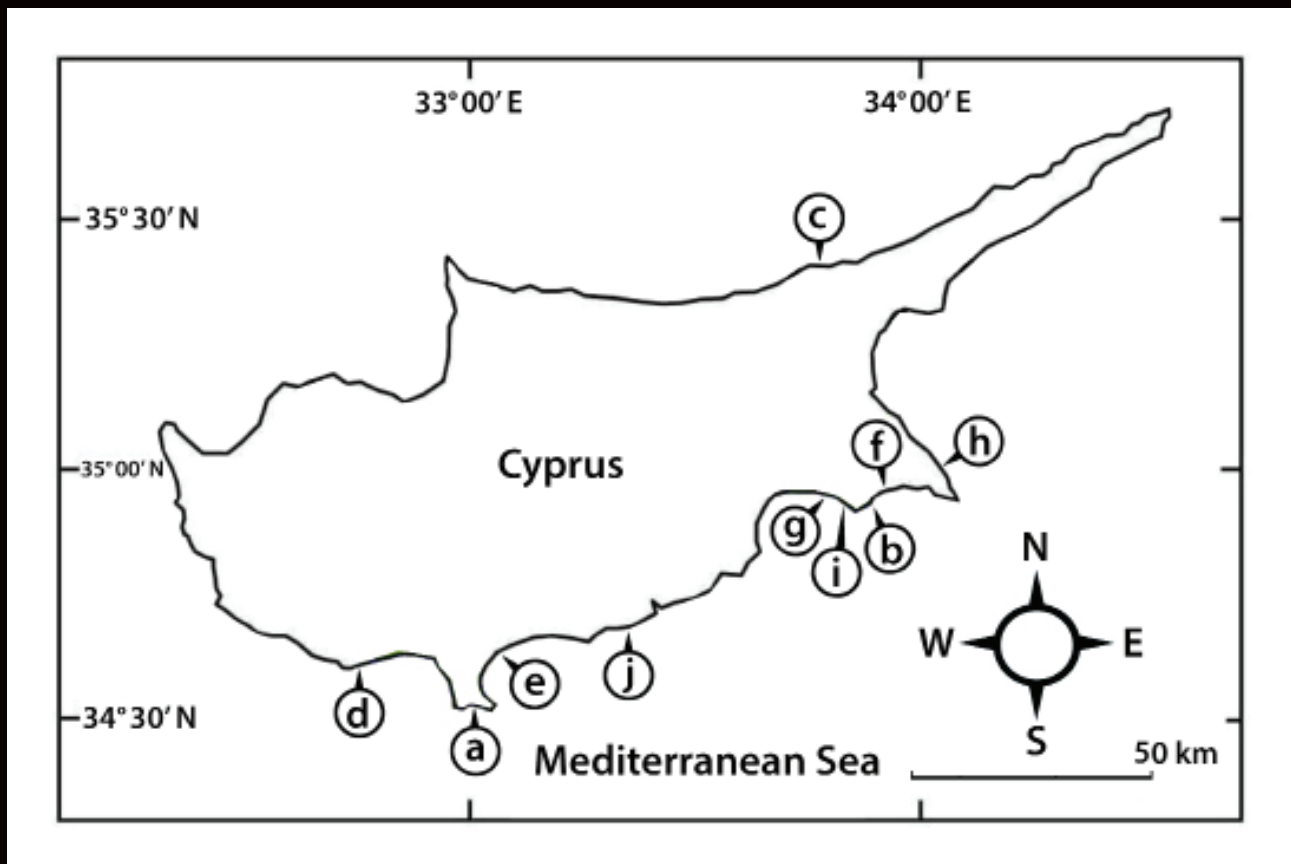


Figure 1: Map of Cyprus with locations mentioned in the text: a. Akr – Akrotiti; b. AT - Agia Thekla; c. A-T - Akanthou - Tatlisu; d. JSP - Jubilee Shoals Pissuri; e. Lim - Limassol; f. Lio - Liopetri; g. Or – Ormidia; h. Pro - Protaras; i. Xy – Xylophagou; j. Zy - Zygi



Figure 2: a. *Bathyarca pectunculoides* (Scacchi, 1835); b. *Spondylus spinosus* Schreibers, 1793; c. *Ctena decussata* (O. G. Costa, 1829); d. *Loripinus fragilis* (Philippi, 1836); e. *Centrocardita aculeata* (Poli, 1795); f. *Moerella distorta* (Poli, 1791); g. *Polititapes lucens* (Locard, 1886). Barr = 1 mm unless otherwise indicated.



Figure 3: a. *Anatoma aspera* (R. A. Philippi, 1844); b. *Echinolittorina punctata* (Gmelin, 1791); c. *Cerithium lividulum* Risso, 1826; d. *Cerithium renovatum* Monterosato, 1884; e. *Janthina pallida* W. Thompson, 1840; f. *Melanella boscai* (Payraudeau, 1826); g. *Alvania aspera* (R. A. Philippi, 1844); h. *Alvania discors* (T. Brown, 1818); i. *Alvania rominae* Amati, Trono & Oliverio, 2020; j. *Alvania lucinae* Oberling, 1970; k. *Pusillina radiata* (R. A. Philippi, 1836); l. *Rissoa membranacea* (J. Adams, 1800); m. *Rissoa scurra* (Monterosato, 1917); n. *Setia amabilis* (Locard, 1886); o. *Marsenia perspicua* (Linnaeus, 1758); p. *Euspira guilleminii* (Payraudeau, 1826). Barr = 1 mm unless otherwise indicated

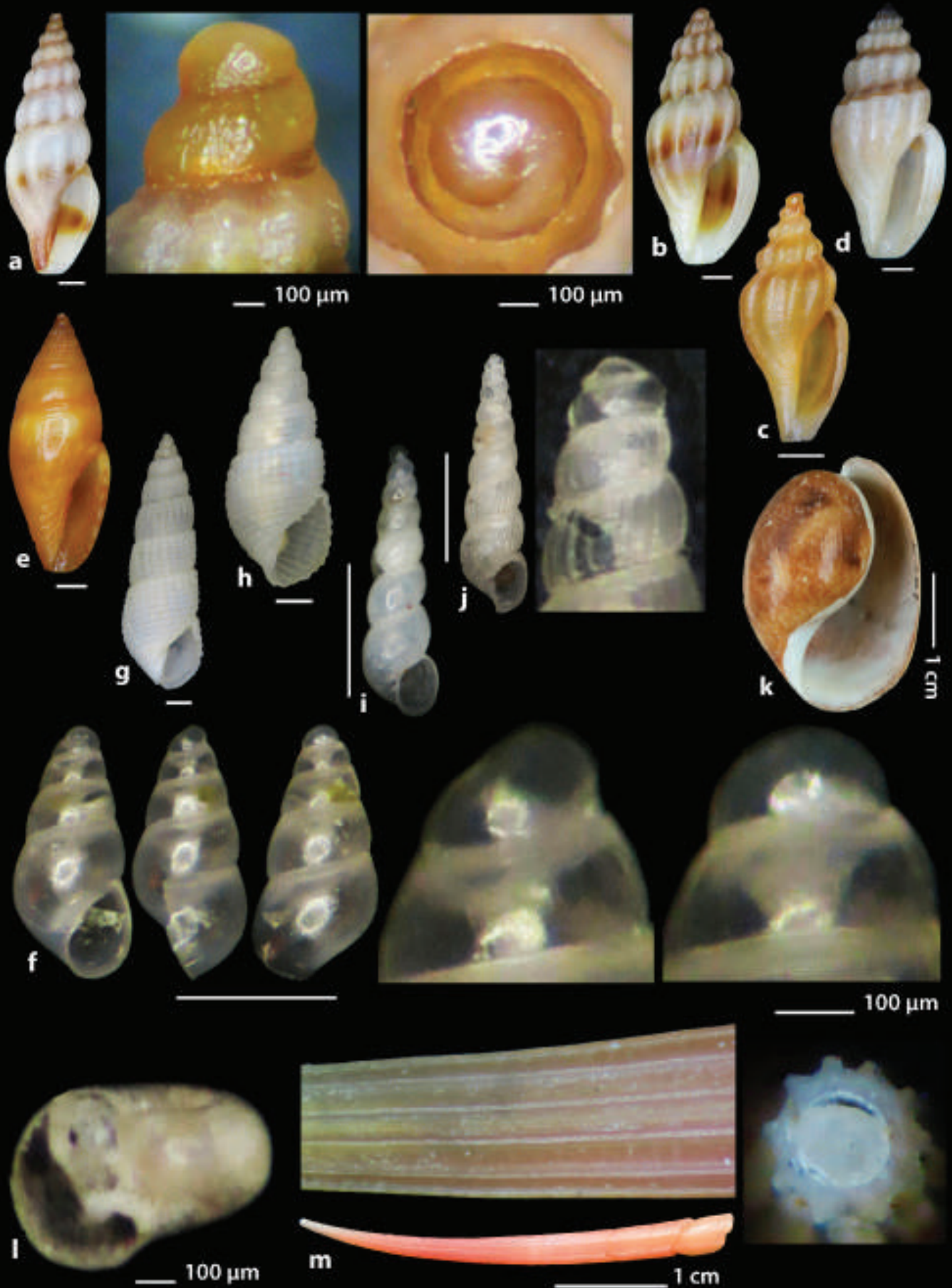


Figure 4: a. *Bela plicatilis* (Risso, 1826); b. *Mangelia striolata* Risso, 1826; c. *Pseudomangelia sicula* (Reeve, 1846); d. *Pseudomangelia vauquelini* (Payraudeau, 1826); e. *Mitromorpha olivoidea* (Cantraine, 1835); f. *Auristomia barashi* (Bogi & Galil, 2000); g. *Euparthenia bulinea* (R. T. Lowe, 1841); h. *Euparthenia humboldti* (Risso, 1826); i. *Ebalia pointeli* (de Folin, 1868); j. *Graphis albida* (Kanmacher, 1798); k. *Bulla arabica* Malaquias & D. Reid, 2008; l. *Heliconoides inflatus* (d'Orbigny, 1835); m. *Antalis novemcostata* (Lamarck, 1818). Barr = 1 mm unless otherwise indicated.

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