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New Mediterranean Biodiversity Records (November, 2016)

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Collective Article A

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New Mediterranean Biodiversity Records (November, 2016)

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Abstract

This Collective Article presents information on 26 taxa belonging to 8 Phyla and extending from the western Mediterranean to the Levantine Sea. The new records were found in 9 countries as follows: **Spain**: first record for the Mediterranean of the crab *Cancer bellianus*; **Algeria**: further records of the alien fish *Lagocephalus sceleratus* in western Algerian waters; **Italy**: first report on the presence and establishment of the ctenophore *Mnemiopsis leidyi* in Lessina and Varano Lagoons (W. Adriatic) and of *Penaeus aztecus* in Corigliano Gulf (Italian Ionian). Moreover, the extension of the distribution range of the polychaete *Branchiomma bairdi* to W. Sicily as well as that of the crab *Ocypode cursor* and the bryozoan *Catenicella paradoxa* to E. Sicily are cited. **Slovenia**: the record of the rare saccoglossan gastropod *Placida cremoniana* from Piran (Gulf of Trieste) is the first for the Adriatic; **Greece**: the native sea slug *Eubranchus farrani* is the first from the Eastern Mediterranean; many sightings of the bamboo corals Isididae distributed along all the E. Ionian Sea and the establishment of *P. aztecus* in all Greek waters are also reported for first time; the westernmost extension of the alien urchin *Diadema setosum* in Cretan waters is cited and new sightings of the alien species *Goniobranchus annulatus* and *Pterois miles* are presented. **Turkey**: the alien fish *Champsodon capensis* is reported for first time from the Aegean Sea and the native acari *Agauopsis microrhyncha* from the Levantine Sea; a new observation of the alien crab *Atergatis roseus* in Güllük Bay-Aegean is also mentioned; **Cyprus**: first records of the alien urchin *D. setosum* and *Lobotes surinamensis* in Cypriot waters; **Lebanon**: several sightings of *Monachus monachus* from Lebanese waters indicate a potential better status for the species in the area; **Egypt**: first records of the alien crab *Dorippe quadridens* and the alien gastropods *Nerita sanguinolenta* and *Conomurex persicus* from the Mediterranean Egyptian waters; extension of the distribution range of *Diodora funiculata* and *Diodora rueppellii* and a second record of the alien *Fulvia fragilis* in the same area.

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Introduction

It has been suggested that the Mediterranean basin is an area of high marine biodiversity (Coll *et al*., 2010). Several studies have revealed a system with diverse geological, physical and biological characteristics that produce a wide variety of different habitats and species. However, it is also an area susceptible to several pressures from activities such as tourism, fisheries, maritime traffic, industry and climate change. As a result, monitoring biodiversity in this changing ecosystem is of high scientific, management and policy interest. The Collective Articles, Series A, on "New Mediterranean Biodiversity Records" included in the Mediterranean Marine Science Journal support this aim by publishing information on the first occurrence/geographic expansion of species in the Mediterranean. Works submitted to the Collective Articles are peer-reviewed by at least one reviewer and the editor. The contributors are cited as co-authors in alphabetic order as well as at the beginning of each subchapter corresponding to their record (s).

In the current article, the new records are arranged from west to east. The location of each record is approximately shown on a map (Fig. 1) and the related information (Phylum, sub-chapter, country, location and location number) in Table 1. In total, 26 taxa belonging to 8 Phyla are presented in this work (Table 1). Important information on the first record of the Atlantic crab *Cancer bellianus* for the entire Mediterranean is included here. In addition, this article includes the first record of the rare saccoglossan gastropod *Placida cremoniana* from the Adriatic; the native sea slug *Eubranchus farrani* from the Eastern Mediterranean; the alien fish *Champsodon capensis* from the Aegean Sea, and the native acari *Agauopsis microrhyncha* from the Levantine Sea. Moreover, new sightings are provided for the alien urchin *Diadema setosum* from Cyprus and Kriti; the native fish *Lobotes surinamensis* from Cyprus; the bryozoan *Catenicella paradoxa, the* annelid *Branchiomma bairdi* and the crab *Ocypode cursor* in Sicilian waters; the alien crab *Atergatis roseus* in Güllük Bay (Aegean), and the lionfish *Pterois miles* in Karpathos (Aegean); the nudibranch *Goniobranchus annulatus* in Kriti. The alien crab *Dorippe quadridens* and the molluscs *Nerita sanguinolenta* and *Conomurex persicus* are reported for the first time from Mediterranean Egyptian waters, while new locations are provided for the molluscs *Anadara natalensis, Fulvia fragilis, Diodora funiculata* and *Diodora rueppellii* in Mediterranean Egypt. The westernmost expansion of the invasive pufferfish *Lagocephalus sceleratus* in Algerian waters is of special interest. The establishment of *Mnemiopsis leidyi* in the western Adriatic and *Penaeus aztecus* in the Greek seas and the Italian Ionian increases our knowledge on the spread and establishment of these species and also their competition with indigenous species. On the other hand, *Monachus monachus* appears to be sighted more regularly in Lebanese waters over the last decade, thus suggesting that the status of this charismatic species is improving. Finally, the case of the bamboo corals Isididae sheds some light on the occurrence of these vulnerable organisms and the potential impact of trawling on them, and reveals the necessity for further investigation of their distribution, based on genetic studies.

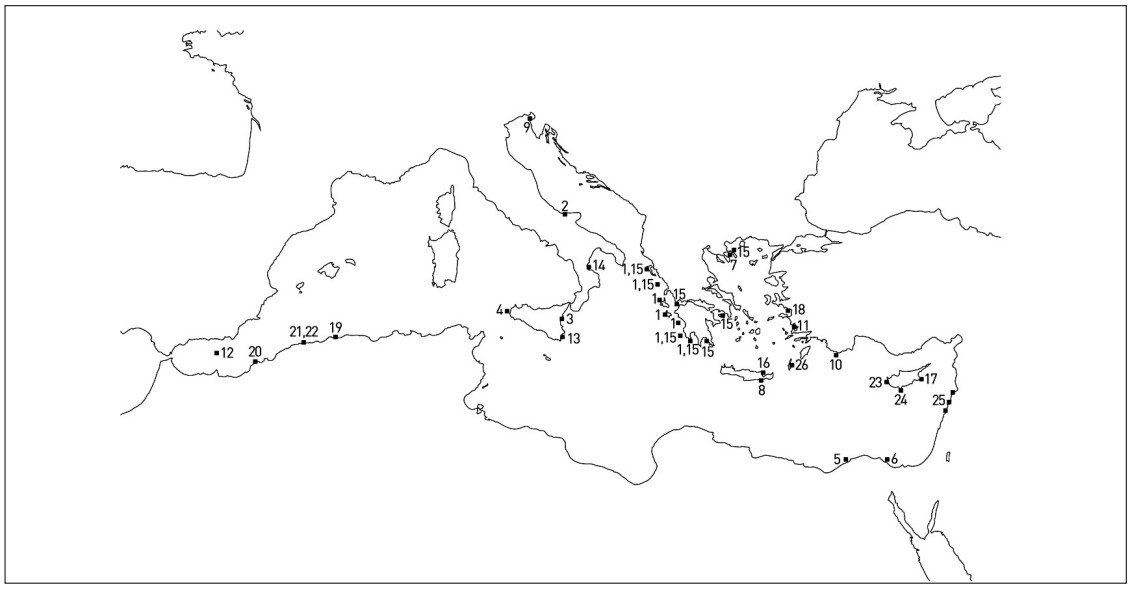


Fig. 1: Locations of records of new species in the Mediterranean Sea presented in "New Mediterranean Biodiversity Records (November 2016)". Numbers of locations are given in Table 1.

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Table 1. List of taxa presented in New Mediterranean Records (November 2016), locality of record and country. SC=sub-chapter; LN=location number *(Fig. 1)*.

Taxon	SC	Location	Country	LN
Phylum CNIDARIA				
Isididae	3.4	Eastern Ionian Sea	Greece	1*
Phylum CTENOPHORA				
Mnemiopsis leidyi	2.2	Lesina, Varano Lagoons (Adriatic)	Italy	2
Phylum BRYOZOA				
Catenicella paradoxa	3.2	Ciclopi Islands (Sicily)	Italy	3
Phylum ANNELIDA				
Branchiomma bairdi	1.3	Favignana Isl. (W. Sicily)	Italy	4
Phylum MOLLUSCA				
Anadara natalensis	4.13	Alexandria, Port Said	Egypt	5, 6
Conomurex persicus	4.13	Alexandria	Egypt	5
Diodora funiculata	4.13	Port Said	Egypt	6
Diodora rueppellii	4.13	Alexandria	Egypt	5
Eubranchus farrani	4.2	Ammouliani Isl. (N. Aegean)	Greece	7
Fulvia fragilis	4.13	Alexandria	Egypt	5
Goniobranchus annulatus	4.3	Ierapetra (Libyan Sea)	Greece	8
Nerita sanguinolenta	4.13	Port Said	Egypt	6
Placida cremoniana	2.1	Gulf of Trieste (Adriatic)	Slovenia	9
Phylum ARTHROPODA				
Agauopsis microrhyncha	4.8	Antalya (Levantine)	Turkey	10
Atergatis roseus	4.7	Güllük Bay (S. Aegean)	Turkey	11
Cancer bellianus	1.1	Alboran Sea	Spain	12
Dorippe quadridens	4.12	Port Said	Egypt	6
Ocypode cursor	3.3	Avola (SE Sicily)	Italy	13
Penaeus aztecus	3.1	Corigliano Gulf (N. Ionian)	Italy	14
	4.1	E. Ionian, Kerkyraikos, Patraikos, Lakonikos, Saronikos, Maliakos Gulfs, Thracian-Limnos, Kyklades-Syros	Greece	15*
Phylum ECHINODERMATA				
Diadema setosum	4.4	Kolokytha Isl. (N.E. Kriti)	Greece	16
	4.9	Cyclop's Bay (SE Cyprus)	Cyprus	17
Phylum CHORDATA				
Champsodon capensis	4.6	Kusadasi Bay (Aegean)	Turkey	18
Lagocephalus sceleratus	1.2	Algiers, Chlef, Ain Temouchent	Algeria Cyprus	19-22
Lobotes surinamensis	4.10	Coral Bay (Paphos),		23
		Akrotiri (Limassol),	Lebanon	24
		Peyia - Coral bay port		23
Monachus monachus	4.11	Beirut, Selaata, North Lebanon, Enfeh, Tripoli, Tabarja, Barbara, Jounieh, Batrum	Greece	25*
Pterois miles	4.5	Karpathos Isl. (Aegean)		26

*All Isididae locations in the E. Ionian are represented by number 1; all *P. aztecus* locations in Greek waters by number 15; all *M. monachus* locations in Lebanon by number 25.

1. WESTERN MEDITERRANEAN

1.1 First record of *Cancer bellianus* Johnson, 1861 (Decapoda, Brachyura, Cancridae) in the Mediterranean Sea

A. Garrido and L. Peña-Rivas

The family Cancridae is represented by only one species in the Mediterranean Sea, *Cancer pagurus* Linnaeus, 1758, although an unconfirmed record of a second species (*Cancer bellianus*) from the Balearic Sea can be traced in WoRMS (Davie *et al.*, 2016). *Cancer bellianus* is found mainly in the central and north eastern Atlantic Ocean. It is a benthic deep-sea species that inhabits several grounds between 37 and 700 m (Zariquiey Ál-

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Fig. 2*: Cancer bellianus* captured in the western Mediterranean (Magnification 4x3).

varez, 1968; González, 1995) with maximum abundance between 200 and 500 m (González, 1995). Ominivore, predator and scavenger, it reaches a maximum length of 130 x 200 mm (Pinho *et al*., 2001).

On 13th July 2012 a specimen of *C. bellianus* was captured by a towing vessel at a depth of 300-400 m on a sandy ground in the Alboran Sea (36.123761° N, 03.547908° W), western Mediterranean. The individual was weighed and photographed while alive just after the capture and before being sold. Since the meristic and morphometric data of the specimen were not available, its size was estimated from the photographs. The specimen (Fig. 2) was female, weighing 1300 g and was 125 x 196 mm in size. Transversely oval wider than long shell. Grainy appearance, with well-marked furrows and regions. Anterior-lateral convex margin covered with thorny lobes that give it a serrated look. Posterior-lateral margin nearly straight; its edge is smooth except for the front end where the last lobe of the anterior-lateral margin is so. Small eyes. Periopods with grainy surface; the first ends in strong, robust clamps and the second to the fifth end in styliform dactyls. Orange brown with light mottled colour. Black far part of the claws.

1.2 The advance of *Lagocephalus sceleratus* (Gremlin, 1789) to Western Algerian waters

N. Babali

Lagocephalus sceleratus is an Indo-Pacific species belonging to the family Tetraodontidae. The confirmed presence in the Mediterranean Sea was reported by Akyol *et al.* (2005). Since then, many other records from the Eastern Mediterranean Sea were reported as well as the expansion of the species to the western Mediterranean Sea (Deidun *et al*., 2015 and references therein).
During the last four years, the occurrence of *Lagocephalus sceleratus* raised the interest of the Algerian authorities, the scientific community and fishermen because of the presence of tetrotoxin in its tissues. Kara *et al.* (2015) reported on the catch of 3 specimens over

Table 2. Records of *Lagocephalus sceleratus* in different regions of Algeria.

N°	Area	Area's Coordinates	Number	Date	Total length (cm)	Weight (g)
1	Algiers (El Bordj el Bahri)	36.811125° N 3.244873° E	1	06-07-2014	58,2	2590
2	Chlef (Tenes)	36.52077° N 1.318908° E	1	13-10-2015	-	2000
3	Ain Temouchent (El Hilal beach)	35.366158° N 1.274811° W	1	9-03-2016	47	1150
4	Ain Temouchent (Malous, Oulhaça)	35.2419° N 1.574909° W	1	27-10-2014	53	2000

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the period 2013-2014 as the first records for Algerian waters. Since then, many specimens have been reported from different regions in Algeria (Table 2) by local fisheries authorities who confirmed species identification. Most fish were caught by small-scale fishermen. The westernmost record was reported in Oulhaça, Wilaya, Ain Temouchent (about 430 km West of Algiers) (Fig. 3, Table 2). With the recent record of the species in Spanish waters (Izquierdo-Muñoz & Izquierdo-Gomez in Katsanevakis *et al.,* 2014), the species appears to have spread and to be established throughout the Mediterranean Sea.



Fig. 3: Specimen of *Lagocephalus sceleratus* from Algiers.

1.3 First record of the tube-building sabellid *Branchiomma bairdi* (Annelida: Polychaeta: Sabellidae) in Favignana Island (western Mediterranean)

G. Servello and P. Balistreri

Branchiomma bairdi (McIntosh, 1885) was originally described from Bermuda and the Caribbean Sea (tropical West Atlantic). As regards the Mediterranean Sea, *B. bairdi* was first sampled in Cyprus in 1998 (Çinar, 2005). However, it is likely that this species was already present both in the western and central Mediterranean, and possibly misidentified as another tropical sabellid, namely *Branchiomma boholense* (Grube, 1878) (Arias *et al*., 2013). Soon after its first finding along the southern coast of Turkey (Çinar, 2009), *B. bairdi* was found in Italy among materials collected in 2004 (Gulf of Naples, Miseno harbour) (Arias *et al*., 2013), in Spain in 2006 (Román *et al.*, 2009) and in Malta in 2012 (Arias *et al*., 2013). Its subsequent Italian findings include Sicily (Faro) in 2007, Ischia (Castello Aragonese in 2011, Lacco Ameno and Casamicciola harbours, Cartaromana Bay in 2012), and Apulia (Brindisi harbour) in 2012 (Arias *et al*., 2013).

On 17 June 2016, the last author (PB) spotted 21 living specimens of *B. bairdi* on two calcarenitic boulders in Cala San Giuseppe (Favignana Island, Trapani) (37.935216° N - 12.333955° E), while monitoring a 16×36 m underwater section. The sampling site is characterized by a bidirectional current flow, a depth of 20 to 50 cm, and calcarenitic sand with a few large boulders. At some points, corresponding to sabellid presence, large patches of the invasive green algae *Caulerpa cylindracea* Sonder were observed (Fig. 4A). The occurrence of the invasive polychaete was estimated by visual census, and two specimens were morphologically identified under a stereomicroscope (Fig. 4B). After two months, one more specimen of *B. bairdi* was also detected by the last author in the nearby Arré Turino area (37.935830° N, 12.317761° E). All the analyzed specimens measured about 25 mm in length, crown excluded, and 4 mm in width; the chaetigers were in groups of 5. One specimen from Cala San Giuseppe is currently preserved in 70% alcohol at Casa Museo Matteo Sercia (Favignana, Italy) (IDA01).

Although this sabellid has already been found in Sicily, the specimens examined represent the first record of *B. bairdi* in the Aegadian Archipelago (Mannino *et al*., 2016), as well as in the Italian part of the Strait of Sicily. The introduction of *B. bairdi* to Favignana Island could be associated with vessels mainly, given that the areas of

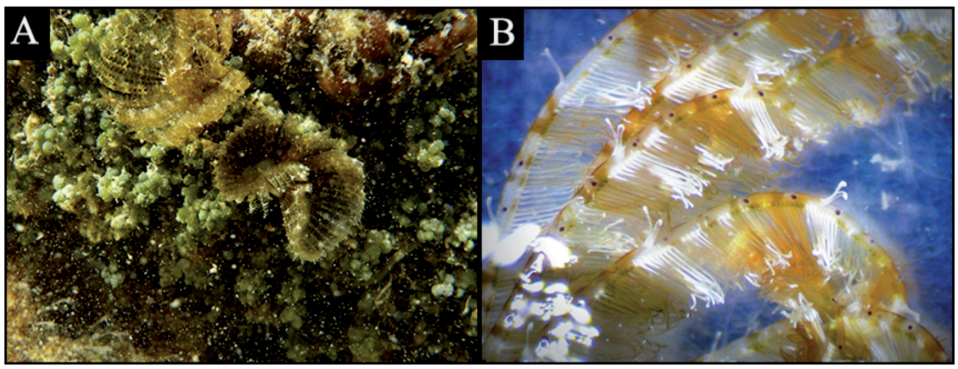


Fig. 4: *Branchiomma bairdi* from Cala San Giuseppe (Favignana, Italy). A. Specimens growing among patches of *Caulerpa cylindracea*. B. Magnification of a crown: radioles with stylodes.

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interest are close to Favignana harbour, which is characterised by intense maritime traffic. Moreover, this biofouler worm clearly takes advantage of the additional debris among the stolons of the invasive *C. cylindracea*, on which it can easily settle. The environmental conditions offered at the latitude described in this and previous reports seem to be optimal for the successful establishment of this species. Nevertheless, future research is needed to confirm whether its distribution in the Mediterranean is linked to subtropical environmental conditions.

2. ADRIATIC SEA

2.1 A record of a less known saccoglossan gastropod *Placida cremoniana* (Trinchese, 1892) in the Gulf of Trieste (Adriatic Sea)

L. Lipej and B. Mavrič

On 3rd November 2015, a specimen of *Placida cremoniana* (Trinchese, 1892) (Fig. 5) was spotted during a regular monitoring survey of mediolitoral fauna at Fornace near Piran, Slovenia (45.5168894° N, 13.5679389° E). It was found on a dense carpet dominated by the algae *Corallina* sp. It was easily recognized due to the typical colour pattern. The rhinophores, head and flanks are more or less black. The back and the basal part of the cerata are vivid yellow-coloured. A white line is present on the outer parts of the rhinophores. Cerata are pointed and spindle-shaped. The diagnostic features fit the description of Schmekel & Portmann (1982). The specimen was photographed under an Olympus SZX16 stereomicroscope and is now housed in the opisthobranch collection of the Marine Biology Station in Piran under collection number MBP 101. On 11 September 2016, another specimen was photographed by a diver at a depth of 8.5 m on rocky bottom at Fiesa (45.5256722° N, 13.5808028° E). The specimen was grazing on green algae (Fig. 5).

This species, which was described by Trinchese (1892) from the Gulf of Naples, is widely distributed and was recorded in the eastern Atlantic, Macaronesia, Mediterranean and the Indo-Pacific from Japan to Australia. Its presence in the Mediterranean has been confirmed mainly in waters along the Spanish (Cervera *et al*., 2004) and French coasts (e.g. Thibaut, 2001), Maltese Islands (Sammut & Perrone, 1998) and in waters off western Italy (Trinchese, 1893; Schmekel & Portmann, 1982), while we were not able to find any reliable records from the eastern Mediterranean. This is the first documented record of this species in the Gulf of Trieste and the Adriatic Sea. The first specimen was found in a low vegetation mediolittoral zone, which we believe to be a neglected and poorly studied habitat. The second specimen was found grazing on filamentous algae, which is supposed to be its preferred food (Trowbridge, 2003).

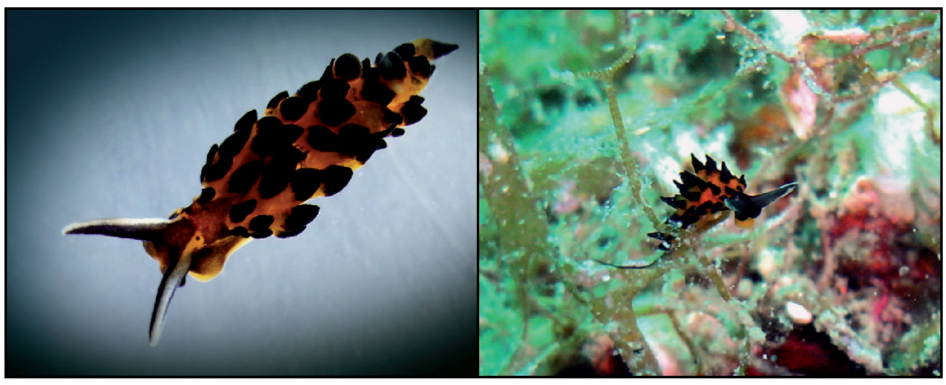


Fig. 5: Specimens of *Placida cremoniana* found in Slovenian watres. Left: a specimen found on a carpet of *Corallina* sp. (Photo: B. Mavrič), Right: specimen grazing on filamentous algae at Fiesa (Photo: G. Zadnik).

2.2 First record of *Mnemiopsis leidyi* (Ctenophora; Lobata; Mnemiidae) in Lesina and Varano lagoons along the northern coast of Apulia (central Adriatic Sea)

L. Cilenti and T. Scirocco

The comb jelly *Mnemiopsis leidyi* A. Agassiz, 1865, is an indigenous ctenophore of the western Atlantic coastal waters. The native habitat of *M. leidyi* includes estuaries and coastal regions along the eastern coast of North and South America (Purcell, 2012). The species is characterized by broad ecological tolerance; it is able to

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withstand temperature changes of between 6 and 31°C, and salinity between 3 and 38$^{o}/_{oo}$ (Javidpour *et al*., 2006). The first record in the Mediterranean Sea was registered in spring 1990, in the western Aegean Sea (Shiganova *et al.*, 2001) while in the Adriatic Sea it was registered in 2005, in the Gulf of Trieste (Shiganova & Malej, 2009). Here we report on the first record of the ctenophore *Mnemiopsis leidyi* in the Lesina (41.88° N, 15.35° E) and Varano (41.51° N, 15.47° E) lagoons located in Gargano National Park (Apulia-Italy) (Fig. 6, 7).

Specimens of *M. leidyi* were observed by local fishermen from August to October 2016 in both lagoons. During this period, the fishermen complained about difficulties in fishing due to the high density of this species in the traps (bertovelli) and in fishing nets. The taxonomy of the species was confirmed at the laboratory. The size (length) of the animals, caught using local traps, ranged from 1 to 6 cm. The temperature and salinity recorded during this period in Lesina lagoon were 20.36±0.47°C and 23.14± 6.81 respectively, while in Varano lagoon the values were 24.35 ±0.34°C and 28.39±0.47, respectively.

The main factors controlling the population size of *M. leidyi* are temperature and prey availability (Purcell, 2012). *M. leidyi* blooms interfere with fishing operations and can cause significant impacts; ctenophores compete with fish for food, and prey on fish eggs and juveniles, which lead to reduced fish stocks (Purcell, 2012). The species appears to be colonizing large areas of the coastal waters of the Western Adriatic Sea as evidenced by Mizzan (2016), favoured by human proliferation and environmental perturbation (Purcell, 2012).

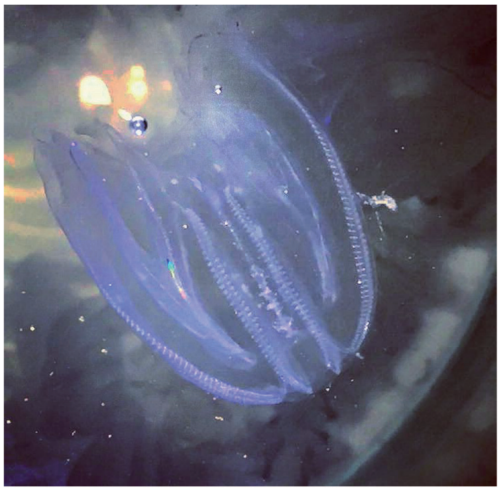


Fig. 6: *Mnemiopsis leidyi* A. Agassiz, 1865 collected in the Lesina and Varano lagoons in October 2016 (photo by P. Augello).

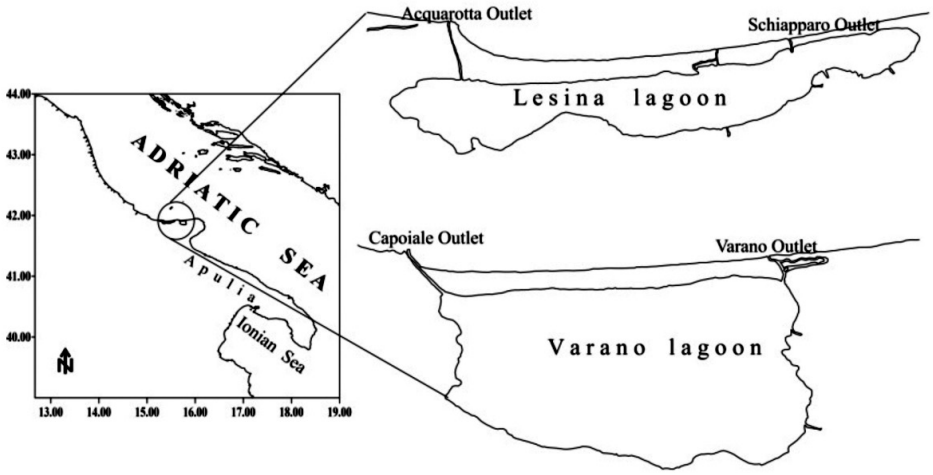


Fig. 7: Localization of the Lesina and Varano lagoon central-Adriatic sea (Italy).

3. CENTRAL MEDITERRANEAN

3.1 The Northern brown shrimp *Penaeus aztecus* Ives, 1891 invades the Italian Ionian Sea

W. Renda and F. Crocetta

The Northern brown shrimp *Penaeus aztecus* Ives, 1891 (Crustacea: Decapoda: Penaeidae) is a Western Atlantic species, widely distributed from Massachusetts through Florida, and into the Gulf of Mexico to lower Belize. It is a commercially important species, with average annual landings of 50,000 tons on the East coast of the USA and the Gulf of Mexico (Palomares & Pauly, 2016). Since 2009, this taxon invaded the Mediterranean

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Sea, as reported from Israel, Turkey, Greece, Montenegro, Italy and France (review in Cruscanti *et al*., 2015). However, whilst its presence in Greece and Turkey has been well-documented, occurrence in the central Mediterranean is only based on scattered findings. In particular, the species is only known from Italy on the basis of 6 specimens: two specimens were first recorded in 2014, off Tuscany (Cruscanti *et al*., 2015) and four were found in 2015 along the south coast of Sicily (Scannella *et al*., 2016).

Here, we report on the spreading of *P. aztecus* to the Italian Ionian Sea, as well as its establishment in Italy and the central Mediterranean. In summer 2015, the first author purchased shrimp from local fishermen operating in the Gulf of Corigliano. According to the sellers, this shrimp was a new occurrence in the area, and had never been seen before. Unfortunately, no specimens were preserved at that stage. During summer 2016, some photos of these specimens (Fig. 8) were taken and they were identified as *P. aztecus*, a species whose presence in the Ionian Sea was known according to records from Greece only (Kapiris & Apostolidis in Kapiris *et al.,* 2014; Zenetos & Giavasi in Crocetta *et al.,* 2015a). Subsequently, two specimens were alcohol-fixed, and stored in the private collections of the authors (one specimen in each collection). According to the authors' observations and information obtained from local fishermen, the Northern brown shrimp is now commonly fished at 90-100 m depth on sandy bottoms of the Gulf of Corigliano (~39.6650° N, 16.5569° E), with average daily landings of about 10 kilograms per trawler. *P. aztecus* seems to be outcompeting native species, and it is also sold in fish markets and local restaurants as "gamberoni", a name commonly used in Italy for other native and frozen shrimp species. A video of living specimens in a polystyrene box is available on the following webpage: https://www.youtube.com/watch?v=Uo5ovundqRQ.



Fig. 8: The Northern brown shrimp *Penaeus aztecus* from the Gulf of Corigliano - ~20 cm total lenght.

Both ballast water and human introduction for aquaculture purposes have been so far suspected as the most likely vectors for the presence of the Northern brown shrimp in the Mediterranean (Cruscanti *et al*., 2015). The Italian Ionian Sea can indeed be considered as a hotspot for both vectors. However, in this case, and particularly given the presence of several records from the Greek Ionian Sea, the presence of the Northern brown shrimp in the Italian Ionian Sea is, most probably, the result of natural range expansion.

3.2 New occurrences of the bryozoan *Catenicella paradoxa* Rosso, 2009: is that the story of a NIS spreading?

A. Rosso and F. Sciuto

Catenicella paradoxa Rosso, 2009, is the only catenicellid species so far known as thriving in the present-day Mediterranean. It grows as erect flexible inconspicuous colonies formed by vitreous and transparent uniserial branches of jointed unizooidal and bizooidal internodes. The latter consist of either two sterile zooids at bifurcations or a sterile zooid distally aligned to an ovicellate one. Diagnostic characters have been described in Rosso (2009) and summarised in Rosso *et al*. (in press a).

This species was first described based on two fertile and three sterile colonies encrusting the corallinales *Jania rubens* (Linnaeus) Lamouroux and the green algae *Flabellia petiolata* (Turra) Nizamudin. Specimens were collected during July 2006 at 11 m depth along the subvertical to overhanging flank of a cliff on the northern coast of Capo Passero Island (36.68918° N, 15.14731° E) in the south-eastern corner of Sicily (Rosso, 2009). A further single colony was found a couple of metres inside Granchi Cave (37.02033° N, 15.32783° E) that, at 20 m depth, opens into the Plemmirio Marine Protected Area (PMPA), just South of Syracuse (Rosso *et al.,* in press b) and nearly 40 km North of the previous locality. This small unfertile colony encrusted a plastic panel deployed on February 2014 within the coralligenous community developing at the cave entrance, and collected eight months later, in October 2014.

The finding of further specimens from the Ciclopi Islands Marine Protected Area, North of Catania, about 70 km further north of the PMPA, and more than 100 km from Capo Passero Island is reported here. *C. paradoxa* was identified in samples collected within the framework of the FIR-CIMPA Biochange project 2015-2017, aimed at characterising and monitoring selected facies within the Infralittoral Algae Biocoenosis, which is extensively established in the area (Rosso *et al*., in press b). The examined samples were collected in June and October 2015 from a total of 6 stations located at three different sites, from 5 to 26 m water depth. Three stations, one from each site, yielded *C. paradoxa* specimens. These stations are: SM.Z.5, collected at 5 m water depth off Santa Maria La Scala (37.618694° N, 15.175323° E), ST.Z.9, collected at 9 m water depth off Santa Tecla (37.645526°

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N, 15.190633° E), and CPA.Z.26, collected at 26 m water depth off Punta Aguzza (37.546499° N, 15.144513° E).

C. paradoxa was detected only after a careful inspection of algal turfs under a stereomicroscope. It was found as disarticulated groups of a few zooids mainly or as small, infrequently bifurcating, branch fragments (Fig. 9). One branch was still attached to a thallum of the geniculate coralline algae *Ellisolandia elongata* (J.Ellis & Solander) K.Hind & G.W.Saunders, loosely adhering through basal rhizoids originating from rounded pores located near the proximal end of zooidal dorsal sides in three subsequent unizooidal internodes. *E. elongata* was also the substratum for the only colony found, in a sample collected in October. This colony, not exceeding 5 mm in height, consisted of branches bifurcating three times and was exclusively composed of unfertile zooids. No ooecia were observed in any specimen, regardless of site and sampling period.

The Ciclopi Islands coastal area, from where this new colony and isolated branch fragments of *C. paradoxa* originate, is highly populated and hosts small harbours and marinas. They are frequented by small fishing and pleasure boats that move all along the eastern coast of Sicily. Large cruise vessels navigate along the coast and stop off in large ports, such as the Catania harbour. All this maritime traffic could be responsible for local accidental transport of *C. paradoxa*. Indeed, its presence on artificial panels reveals its ability to be transported as fouling, one of the vectors believed to be the main one for non indigenous bryozoan species (Zenetos *et al.*, 2012; Harmelin, 2014; Harmelin *et al.*, 2016, and references therein).

Based on current knowledge, it is difficult to confirm that the specimens of *C. paradoxa* collected in the CIMPA area belong to self-sustained local populations, or that they belong to pseudo-populations continuously fuelled by larvae of external origin. Indeed, the only fertile colonies so far known are those originating from off Capo Passero Island. These colonies included fertile zooids at their very early stages and suggesting that the species was precociously fertile, as an adaptation, in order to colonise ephemeral (possibly seasonal) organic substrata such as those offered by algae (Rosso, 2009). In this respect, the absence of fertile zooids even in the relatively large colony found is puzzling. Further investigation is needed in order to: 1) elucidate the reproductive strategies of the species, and 2) assess whether the new findings actually represent self-sustaining populations and, consequently, trace the real spreading of the species northwards.

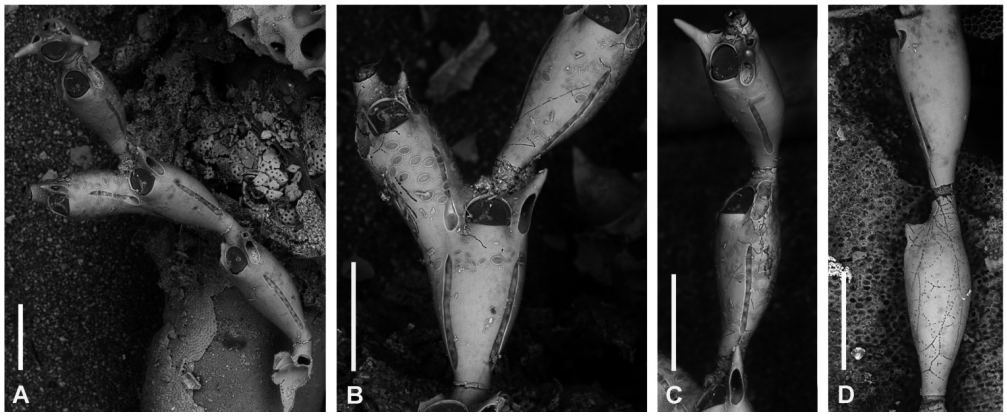


Fig. 9: *Catenicella paradoxa* Rosso, 2009 from sample CPA.1.Z26 in the Ciclopi Island Marine Protected area. A: a bifurcating fragment slightly attached to an internode of the corallinacean Ellisolandia elongata (Ellis & Solander) Hind & Saunders; B: detail of a bizooidal internode at bifurcation; C: lateral view of unizooidal internodes; D: dorsal-lateral view of unizooidal internodes. Note that specimens are invariably fouled by diatoms and locally bioeroded, as the bals zooid visible in D. Scale bars: 0.200 mm for all figures.

3.3 *Ocypode cursor* in Sicily: first record from the Ionian coast of Italy

F. Tiralongo

The family Ocypodidae is distinguished from the family Grapsidae by the following characters: narrow front, long eyestalks and smooth (or ridged) dactyls in walking legs. They are terrestrial species (see the well-known *Uca* genus in mangrove areas), common on sandy beaches and mudflats. *Ocypode cursor* (Linnaeus, 1758) is the only Mediterranean member of the family Ocypodidae and the only Mediterranean marine decapod listed in Appendix 2 of the Bern Convention. It can be distinguished from the other species of the genus *Ocypode* of the Eastern Central Atlantic, *Ocypode africana*, by having a tuft of setae at the tips of the eyestalks. In Italian seas, it was recorded

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only in the Pelagie Archipelago (Froglia, unpublished data) and on the south coast of Sicily, from Torre Salsa to Sampieri (Fig. 10) (Relini, 2009; Froglia, 2010). In the necessary to better understand the distribution and the ecology of *O. cursor* in the Mediterranean Sea and adopt protection plans if necessary.

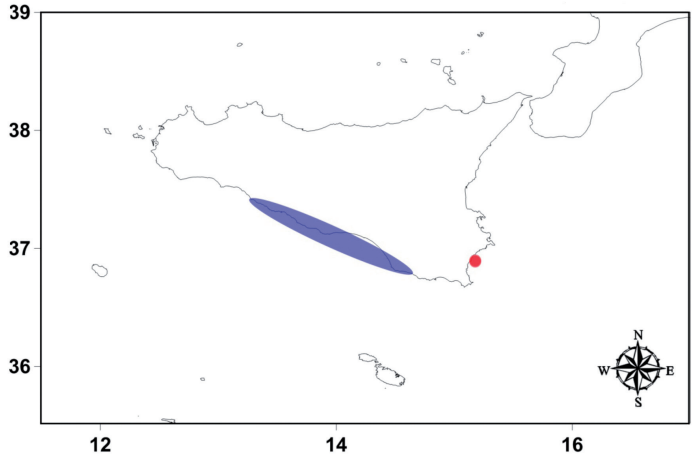


Fig.10: The semi-transparent blue zone indicates area of the past record of *O. cursors* in Sicily; the red dot indicates the first and new records of the species in the Ionian Sea (Avola).

Mediterranean Sea, amateurs and researchers recorded the species in the eastern part: Israel, Turkey, Greece and Cyprus (Strachan *et al.*, 1999). Recently, the species was recorded in Malta (Times of Malta, 2016). *O. cursor* has also been reported from the Atlantic Ocean (eastern part, such as Namibia). In this area, *O. cursor* and *O. africana* occur on the same beaches. On 30th August 2016, several specimens, both males and females, of *O. cursor* were observed at night (Fig. 11A) along the coast of Avola (South-eastern Sicily, Ionian Sea) (Fig. 10). They were observed on two beaches: "Cicirata" beach (near a river; 36.87867° N, 15.13672° E) and "Molo" beach (near an inactive harbour area; 36.89725° N, 15.143912° E). The former is known as a site where *Caretta caretta* lays its eggs (eggs and hatchlings are preys of the crab). This terrestrial crab is nocturnal; it is active from dusk to dawn. During daylight hours, it shelters in burrows on the beach (Fig. 11B). Burrows are a few centimetres wide (in relation to the body size of the specimens) and about 1 m deep; they were found just a few meters from the water's edge, where the sand is always wet. During the night, the species was more commonly observed close to the water's edge. These records increase knowledge on the distribution of the species in Sicily. In conclusion, *O. cursor* occurs on several beaches of Sicily, many of which are frequented by swimmers during the day. However, the presence of humans could cause disturbance since bathing structures and beach cleaning by mechanical means can affect the habitat of the species. For Sicily at least, habitat continuity for the species could be assumed; it is probably more common and widespread in the Mediterranean Sea than had been thought. Targeted studies are



Fig. 11: A) A specimen of *Ocypode cursor* in Avola, during night; B) entrance of the burrow of *Ocypode cursor* in Avola, during morning.

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3.4 New occurrences of the family Isididae (Cnidaria: Octocorallia) in the Eastern Ionian Sea (Central Mediterranean)

Ch. Mytilineou

The octocoral family Isididae Lamouroux, 1812, commonly known as bamboo corals, includes corals that are easily recognised by their articulated skeleton composed by calcareous internodes and proteinaceous black or brown nodes. The most common genera are *Acanella* Grey, 1870, *Isidella* Gray 1857, *Keratoisis* Wright 1869 and *Lepidisis* Verrill, 1883 (France, 2007). There has been large debate over these genera (France, 2007 and references therein), which is still ongoing. *Isidella elongata* has been considered a typical native species in the Mediterranean Sea (Watling *et al*., 2011). However, colonies from the western and eastern Mediterranean, considered primarily as *I. elongata,* were recently re-identified (Heestand Saucier & France, 2016) by molecular techniques as *Acanella arbuscula* and/or *Acanella furcata*. As a result, the current study reports on new records of Isididae corals (without attributing a species name) caught as bycatch during experimental trawl fishing in the deep waters of the Eastern Ionian Sea (Central Mediterranean).

In total, 204 hauls were carried out from April to September 2000 within the framework of two research projects aiming to explore the pristine deep-water resources of the E. Ionian Sea at depths ranging between 280 and 1200 m. Since red shrimps were the target, unfortunately, no specimens were preserved during the surveys. Data originates from onboard recordings and georeferenced photographic material.

Entire colonies or fragments (col-frag) (Fig. 12) of Isididae (199 in number) were found in 55 of the hauls (27%) reaching a catch per unit effort of 18.4 col-frag/km^2; the latter indicating the abundance of the species in the area swept by the trawl as well as the impact of this gear on pristine unexploited bottoms in the region. All col-frag were found in hauls characterized by muddy bottoms at depths ranging between 356 and 1082 m. The spatial distribution of these corals seemed to be more or less continuous in the deep waters of the E. Ionian Sea (Fig. 13), although deeper bottoms showed higher abundances (300-500 m: 12.2 col-frag/km^2; 500-700 m: 15.9



Fig. 12: Fragments of colonies of Isididae corals caught during experimental trawl fishing in the E. Ionian Sea in 2000.

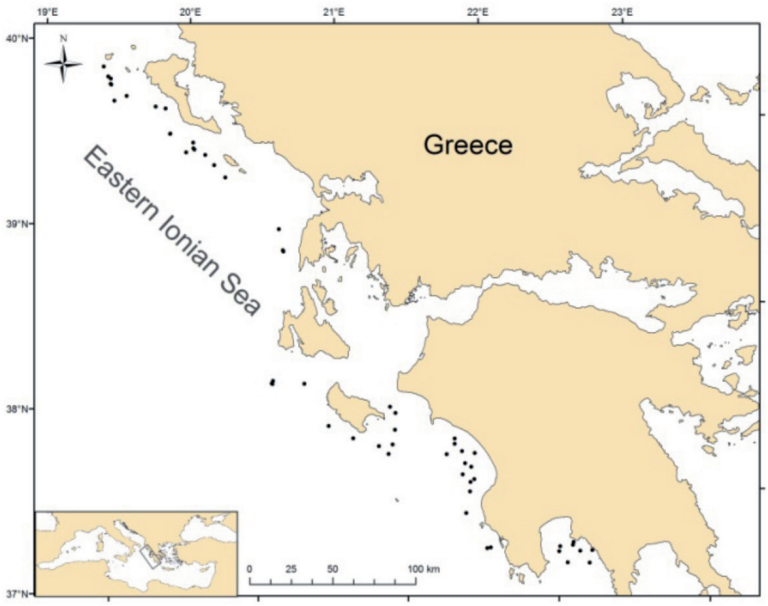


Fig. 13: Map of new findings of Isididae corals in the E. Ionian Sea from experimental fishing surveys carried out in 2000.

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col-frag/km^2; 700-900 m depth range: 25.9 col-frag/km^2; 900-1200 m: 22.5 col-frag/km^2).

The presence of *Isidella elongata* has been mentioned in the Mediterranean Sea by several researchers (e.g. Watling *et al*., 2011 and references therein; Bo *et al*., 2015 and references therein), and is considered as very limited nowadays presumably due to trawling (Bo *et al*., 2015). No records of *Acanella spp* have been reported in the area to date. Our findings, combined with the recent studies of Heestand Saucier & France (2016), call for re-evaluation of the distribution of Isididae species in the Mediterranean Sea through detailed systematic and genetic studies.

4. EASTERN MEDITERRANEAN

4.1 Establishment of *Penaeus aztecus* in the Greek seas

K. Kapiris and I. Maina

The northern brown shrimp, *Penaeus aztecus* (Ives, 1891) (Decapoda: Penaeidae) is a very abundant and commercial decapod native in the western Atlantic. It prefers shallow waters, from the coastline to depths of about 110 m (occasionally in deeper waters, to 165 m). Its presence in the E. Mediterranean basin was first reported from Antalya Bay and since then it has expanded its distribution as far west as France, as far north as Montenegro and Northern Greece and as far east as Israel (for details see Scannella *et al*., 2016).

Penaeus aztecus has been reported in Greek waters from the N. Aegean (details in Minos *et al.*, 2015), the Ionian Sea (Zenetos & Giavasi in Crocetta *et al.*, 2015a; Kapiris *et al.,* 2014) and the Dodekanese Islands (Kondylatos & Corsini-Foka in Zenetos *et al*., 2015). Recently, additional records of the species have been reported within the framework of the Fisheries Data Collection National Project (DCF), mainly in the Ionian Sea, as well as in Lakonikos Gulf, Maliakos Gulf and the Kyklades area (Table 3, Fig. 14). All the DCF data were registered in the period 2013-2016 and the individuals were caught by common trawlers on mud bottoms. In the above mentioned areas, the depth range of this peneid ranged from 18 to 82 m and its abundance was between 1-30 ind/haul. The study of the invading species is of crucial importance for the Mediterranean since it influences biodiversity. A detailed study is needed to evaluate population dynamics and potential commercial exploitation of this species.

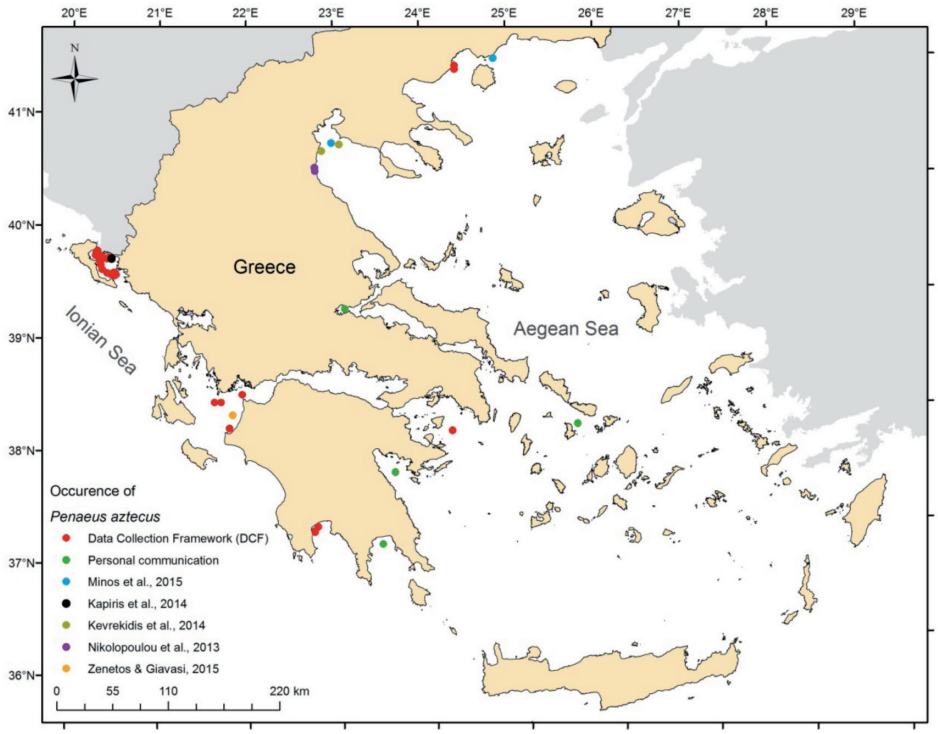


Fig. 14: Occurrence of *P. aztecus* in the Greek seas.

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Table 3. New records of *P. aztecus* in Greek waters. The data were collected within the framework of the DCF and KRHPIS projects.

Area	Collection date	Latitude	Longitude	Depth m	Num. of ind.
	23/11/2013	39.0544° N	19.5716° E	71	2
	23/11/2013	39.3929° N	19.5847° E	67	5
	15/12/2013	39.3687° N	19.5805° E	64	2
	24/11/2013	39.2903° N	20.0658° E	66	2
	28/11/2014	39.2952° N	20.0645° E	66.4	5
	30/11/2014	39.3469° N	19.5794° E	57.8	5
	30/11/2014	39.3822° N	20.0401° E	62	20
	29/11/2014	39.3731° N	19.5759° E	65.5	2
	29/11/2014	39.3822° N	20.0401° E	62	1
	17/12/2014	39.4281° N	19.5699° E	51	1
	17/12/2014	39.4050° N	19.5520° E	51	1
	3/11/2014	39.2923° N	20.0726° E	58.24	1
	3/11/2014	39.3935° N	19.5927° E	62	3
	17/12/2014	39.3972° N	19.5898° E	58.2	2
	26/11/2014	39.3893° N	19.5845° E	58	6
	26/11/2014	39.2918° N	20.0377° E	57.33	10
	27/11/2014	39.3867° N	19.5839° E	58.6	4
	18/12/2014	39.9751° N	19.5800° E	63.7	1
Kerkyraikos Gulf	26/11/2014	39.3613° N	19.5763° E	66	6
	17/12/2015	39.3920° N	19.5870° E	60.79	2
	14/12/2015	39.2935° N	20.0690° E	63.7	2
	16/12/2015	39.3940° N	19.5942° E	60.06	3
	14/12/2015	39.2857° N	20.0765° E	63.7	2
	14/12/2015	39.3934° N	19.5875° E	60.6	5
	14/12/2015	39.2955° N	20.0473°E	61.88	13
	16/12/2015	39.2873° N	20.0689° E	65.52	2
	16/12/2015	39.3917° N	19.5871° E	60.79	3
	23/11/2015	39.3225° N	19.5847° E	60.42	1
	23/11/2015	39.2830° N	20.0624° E	64.25	1
	16/12/2015	39.2940° N	20.0342° E	60.97	2
	15/12/2015	39.3821° N	19.5840° E	61.52	1
	23/11/2015	39.2920° N	20.0527° E	65.5	3
	25/11/2015	39.3965° N	19.5886° E	58.24	9
	25/11/2015	39.3766° N	20.0260° E	68.61	2
	25/11/2015	39.2915° N	20.0421° E	60.06	2
	25/11/2015	39.3921° N	19.5871° E	60.6	1
	24/11/2015	39.3606° N	19.5775° E	58.6	3
Maliakos Gulf	26/11/2014	38.5213° N	22.3897° E	25	1
North Ionian Sea	9/12/2014	37.5840° N	21.1075° E	45.5	3
	12/12/2014	38.1332° N	21.0306° E	80	1
Patraikos Gulf	26/12/2015	38.1273° N	21.0744° E	71	2
	25/12/2015	38.1522° N	21.2219° E	67.34	2
Saronikos Gulf	06/12/2015	37.8302° N	23.5599° E	18	1
	16/11/2014	36.5700° N	21.5800° E	78.3	1
South Ionian	18/12/2014	36.5903° N	22.0037° E	81.7	3
	18/12/2014	36.5639° N	21.5808° E	77.4	3
	18/12/2014	36.5626° N	21.5802° E	73.8	29
Thracian-Limnos	21/12/2015	40.5009° N	24.2049° E	34	4
	22/12/2015	40.4805° N	24.2008° E	40	1
Lakonikos Gulf	2015	36.7135° N	22.798759° E	70	1
Kyklades (Syros Island)	2016	36.7135° N	22.798759° E	40	1

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4.2 New record of the rarely reported sea slug *Eubranchus farrani* (Alder & Hancock, 1844) (Mollusca, Gastropoda) from the eastern Mediterranean Sea

V. Gerovasileiou and D. Poursanidis

The genus *Eubranchus* (Mollusca, Gastropoda) includes 43 species distributed worldwide with 8 of them in the Mediterranean Sea (Coll *et al.*, 2010, S14 file). *Eubranchus farrani* (Alder & Hancock, 1844) is a small aeolidid, with a maximum length of 20 mm, presenting 4 different colour forms (Ballesteros *et al*., 2012-2016). Its distribution spans from the north-western coasts of Europe and the Macaronesian Islands in the Atlantic Ocean to the Mediterranean Sea (Ballesteros *et al*., 2012-2016). Most Mediterranean records of this species are from the north-western basin as well as from the Adriatic Sea (Ballesteros *et al.*, 2012-2016; Zenetos *et al*., 2016). It has been reported only three times from the south-eastern sectors of the eastern Mediterranean, along the Turkish coasts in the Levantine Sea (Yokeş, 2009) and the coasts of Kriti in Greece (Crocetta *et al*., 2015b).

This study reports on the recent finding of *E. farrani* in the North Aegean Sea, thus expanding the known distribution of this species northwards in the eastern Mediterranean. The sea slug was photographed on 8th September 2015 by a SCUBA diver along the coasts of Ammouliani Island, Chalkidiki Peninsula, North Aegean Sea (40.3413379° N, 23.9145743° E) within the framework of an ongoing citizen science initiative. The length of the observed specimen was ca. 10 mm. The yellow ringed tips of the bulbous cerata, the oral tentacle and the rhinophores as well as the orange spots along the dorsal ridge and metapodium (Ballesteros *et al*., 2012-2016) enabled identification of the species. The photographed specimen was found on a dead *Axinella cannabina* at a depth of 28 m (Fig. 15A). The sponge was largely covered by epibiotic hydrozoans, possibly constituting prey for the sea slug. The seabed at the site where the sea slug was spotted was characterized by boulders of coralline algae, found scattered on the sandy bed (Fig. 15B). The hard substrate was covered by sciaphilic invertebrates such as the sponges *A. cannabina*, *Agelas oroides* and the tunicates *Clavelina sp*. and *Halocynthia papillosa*.



Fig. 15: Photograph of *Eubranchus farrani* in Ammouliani Island (North Aegean Sea) (A). Photograph of the seabed at the site where the sea slug was recorded (B). Photographs by Yiannis Iliopoulos.

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4.3 Using the web to track further expansion – The case of *Goniobranchus annulatus* (Eliot, 1904).

D. Poursanidis

The ringed chromodoris *Goniobranchus annulatus* (Eliot, 1904) is a nudibranch that inhabits the Indian Ocean, the East African coast and the Red Sea. It has been found in several Eastern Mediterranean countries, with the westernmost being Greece and in particular Salamina, Kastellorizo and Rodos (Daskos & Zenetos, 2007; Zenetos *et al*., 2011; Kondylatos and Corsini-Foka, 2015 in Tsiamis *et al*., 2015). While tracking the web, two photographs of the ringed chromodoris, which is easily identifiable from the images (Fig. 16), were found published in the electronic version of the local newspaper of Kriti, *Nea Kriti*, (http://www.neakriti.gr/?page=newsdetail&DocID=1344943&srv=127). The specimen was found in South East Crete, Ierapetra, Kato Paralia, (35.005129° N, 25.733311° E), by local swimmers and, as it was unknown to the local community, an artisanal fisherman delivered it to the Port Authorities. This is the first time that the species is reported from the island of Kriti, thus providing evidence of further expansion. Once more, the use of the web, even by simply looking at the local news, can provide information on species that appear strange and peculiar to the local community; in our case, the ringed chromodoris.



Fig. 16: The ringed chromodoris, *Goniobranchus annulatus* (Eliot, 1904) as it has been found in Ierapetra region.

4.4 First record of *Diadema setosum* (Leske, 1778) from Kriti

C. Dounas and A. Krystalas

The exotic needle-spined urchin *Diadema setosum* (Leske, 1778) is reported for the first time from Kriti. During a visual-census survey, conducted on the 26th of September 2016, in a coastal marine area south of Kolokytha Island (35.2568° N, 25.7420° E, Mirabello Bay, north-eastern coasts of Kriti), we observed a large-sized specimen of this species at a depth of 5 m (Fig. 17). The specimen was hiding during daytime in a horizontally shaped rocky crevice with only the distal parts of its long black needles being visible from the surface. The specimen was carefully removed from its cover and transported to the research premises of HCMR-IMBBC at Thalassokosmos (Gournes, Heraklion, Kriti) where it is being kept in the experimental aquaria of IMBBC. Morphology-based characteristics, depth and substrate type agree with the findings of Katsanevakis *et al.* (2014) and Tsiamis *et al.* (2015). The first record

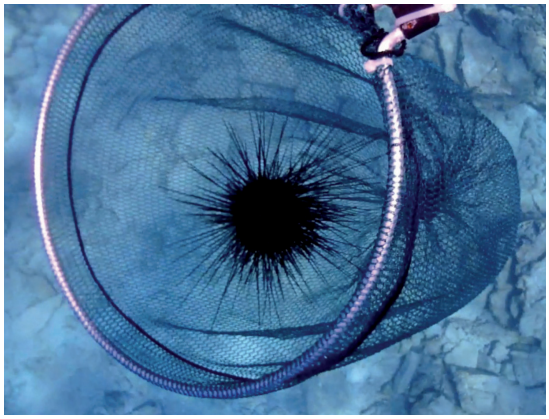


Fig. 17: The specimen of *Diadema setosum* caught in Mirabello Bay (north-eastern coasts of Kriti) (photo by D. Androulakis).

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of *Diadema setosum* in the Mediterranean Sea was reported in 2006 from the south-western coast of Turkey (Yokes & Galil, 2006). Since then, the species has been reported from Lebanon (2009), the Turkish coasts (2010, 2014), Kastellorizo (2014) and Rodos Islands (2015) (Kondylatos & Corsini-Foka in Crocetta *et al.*, 2015a and references therein). The arrival of this large echinoid in the Cretan Sea, until now the most western limit of its distribution in the Mediterranean, may possibly be related to the extended length of its pelagic larval period and, as a consequence, its long-distance dispersal ability.

4.5 Range expansion of the lionfish in Karpathos Island

D. Poursanidis and P. Marakis

The lionfish *Pterois miles* (Bennett, 1828) has been observed in the Mediterranean since 1992 and until 2013 it had expanded slowly to the eastern part (Golani & Sonin, 1992; Bariche *et al.*, 2013). During the last 3 years, a rapid population increase and an eastward expansion have been observed (Kleitou *et al.*, 2016; Crocetta *et al.,* 2015a; Dailianis *et al.*, 2016). Here we present new records from Karpathos Island, based on observations of citizen scientists who visited the island for SCUBA Diving activities. Three individuals (Fig. 17), at 3 different locations, in the west part of the island were in August 2016 at depths ranging from 10 to 30 metres at the following locations: Achata (Fig. 18_1, 35.558324° N, 27.205599° E, collection date: 2016-08-18), one individual measuring 10 cm at 17m depth; Agios Petros (Fig. 18_2, 35.509998° N, 27.225550° E, collection date: 2016-08-20) one individual measuring 20 cm at 16m and Kastellia (Fig. 18_3, 35.472554° N, 27.194489° E, collection date: 2016-08-20) one individual measuring 10 cm at 9 m depth. These records fill the geographical gap that exists between the records of Rodos and Kriti while they come from a group of citizens that can monitor the expansion of the marine alien species in the Mediterranean (Zenetos *et al.*, 2013). The lionfish is an emblematic invasive species that attracts the attention of divers; it is thus an excellent target species for monitoring.



Fig. 18: The lionfish individuals from Karpathos.

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4.6 First record of gaper (*Champsodon capensis* Regan, 1908) in the Aegean Sea

T. Kebapcioglu and H. Dereli

The family Champsodontidae is native to the Indo-Pacific region and consists of thirteen species, which are known as gapers (Nemeth, 1994; Nelson, 2006). Three of these species have been reported from the Turkish Coasts. The first record of this family from Turkey was provided by Çicek & Bilecenoglu (2009); they reported *Champsodon nudivittis* (Ogilby, 1895) from Iskenderun Bay. Dalyan *et al*. (2012) also reported *Champsodon capensis* Regan, 1908 from Iskenderun Bay. *Champsodon vorax* Günther 1867 and *C. capensis* have been reported from the Gulf of Antalya (Gökoğlu & Özvarol, 2013). In this study, *Champsodon capensis* is reported for the first time from the Aegean Sea.

A total of 6 specimens of *C. capensis* were collected by a commercial bottom trawl vessel in Kusadasi Bay in April 2015. The sampling depths ranged from 66 to 140 m on trawl routes between 37.8650º N, 27.2039º E and 37.9684º N, 27.0785º E. The individuals were preserved in 4% formaldehyde solution. At the laboratory, morphometric measurements were taken using a digital calliper to the nearest 0.1 mm, and the fin rays were counted under a binocular microscope. The specimens are deposited at the Faculty of Fisheries Laboratory, Izmir Katip Celebi University.

Some features of the species appear in Figure 19; large head and mouth, body elongated and compressed laterally, chin with small melanophores but no scales, scaled triangular part between pectoral and pelvic fins, a fully scaled breast. Descriptive characteristics of *C. capensis* from the Aegean Sea are given in Table 4. Total lengths of the specimens caught in this study ranged from 83 to 126 mm. The values reported for total length from Iskenderun Bay (Dalyan *et al.* 2012) and the Gulf of Antalya (Gökoğlu & Özvarol, 2013) were 65-143 mm and 100-120 mm, respectively. The morphometric proportions of specimens obtained in this study are similar to those of Dalyan *et al.* (2012).

Table 4. Morphometric and meristic parameters of *Champsodon capensis* specimens from the Aegean Sea (Kusadasi Bay, Turkey).

Parameters	**min-max *(mean)***
Total length (mm)	83-126 *(101)*
Standard length (mm)	69.5-106 *(84.9)*
Body depth (mm)	12-22.5 *(16.3)*
Body width (mm)	7.5-14 *(9.7)*
Head length (mm)	21.2-31.2 *(25.1)*
Snout length (mm)	5.2-8.2 *(6.4)*
Standard length/Head length	*3.27-3.50 (3.38)*
Standard length/Body depth	*4.71-5.79 (5.29)*
Head length/Snout length	*3.46-4.43 (3.94)*
Head length/Eye diameter	*4.01-5.28 (4.88)*
Eye diameter (mm)	4.5-6.1 *(5.2)*
Spines of first dorsal fin	5
Rays of second dorsal fin	21
Rays of anal fin	18
Rays of pectoral fin	12

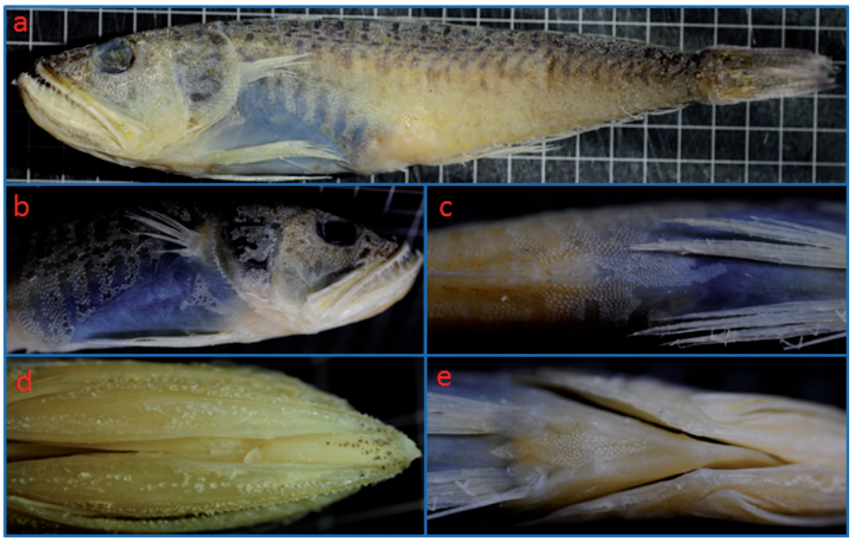


Fig. 19: *Champsodon capensis*, caught from Kusadası Bay, Aegean Sea (a; general view, b; scaled triangular part between pectoral and pelvic fins, c; scale pattern at anal region, d; chin with small melanophores but no scales, e; fully scaled breast).

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4.7 On the occurrence of the alien stone crab *Atergatis roseus* (Rüppell, 1830) (Malacostraca: Decapoda: Xanthidae) along the Aegean coasts of Turkey

S. Yapici and M. Çelik

The alien brachyuran *Atergatis roseus* (Rüppell, 1830) is naturally distributed in the Western Indian Ocean and Red Sea, from Hong Kong and India, to Sri Lanka, Pakistan and also South Africa (Corsini-Foka & Pancucci-Papadopoulou, 2010). The first record of *A. roseus* in the Mediterranean was reported from Israel and thereafter the species expanded to Lebanon, Syria, Turkey, Greece, Egypt and Cyprus (for details see Crocetta *et al.*, 2015a). In the southern Aegean Sea, the species was first reported from the coasts of Datça Peninsula, Turkey (Yokes *et al*., 2007) then Rodos Island, Greece (Corsini-Foka & Pancucci-Papadopoulou, 2010) where it is common (ELNAIS: Zenetos *et al*., 2015), and recently Gökova Bay, Turkey (Ateş *et al.,* 2016).

On 9 July 2016, a male specimen of *A. roseus* (Fig. 20) was caught by gillnet with 28 mm mesh size, at a depth of 15-20 m on a sandy-muddy bottom in Güllük Bay (37.258611^0 N, 27.501111^0 E), north of Gökova Bay. The measurements of the specimen (in mm) are: carapace length 57.9, carapace width: 37.7; frontal border: 11.8; orbit diameter: 1.5; front orbital width: 17.1; posterior border: 11.6; left chela: length 28.9, height 16.6; right chela: length 25.3, height 16.4. Chelipeds length (maximum opening): left 39.5, right 38.8. The sample was preserved in 4% formaldehyde solution and deposited at Muğla Sıtkı Koçman University Faculty of Fisheries Museum (MUSUM/CRU/2016-1).

Unlike some zoobenthic species, such as fishes, most crustacean taxa can overcome necessary biotic and/or abiotic conditions (e.g. global warming, temperature regime, substrate, currents, food availability and competition with indigenous species) for range enlargement. Also, marine/estuarine decapods are more capable, using all human-mediated pathways/vectors (e.g. shipping, other maritime activities, movement of living organisms, contaminated maritime equipment and marsh restoration, floating marine debris and canals) of invading and spreading compared to other crustacean taxa.

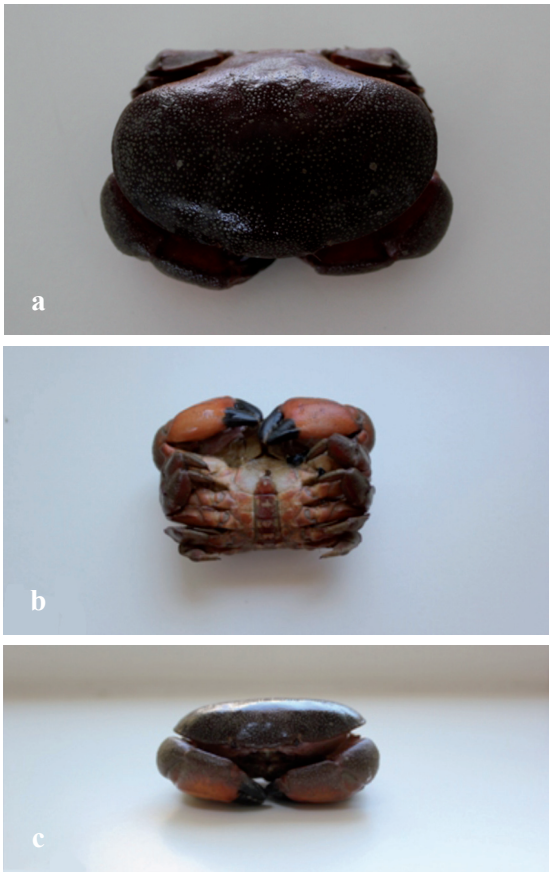


Fig. 20: The male specimen of *Atergatis roseus* from Güllük Bay (Turkey): a) dorsal view; b) ventral view; c) frontal view. *microrhyncha* (Trouessart, 1889) male. 1. Idiosoma dorsal; 2. Idiosoma ventral; 3. Leg I, lateral; 4. Gnathosoma, ventral. Scale Bars: 100 µm.

4.8 First record of *Agauopsis microrhyncha* (Trouessart, 1889) (Acari: Halacaridae) from the Levantine Sea, Antalya

F. Durucan and Y.Ö. Boyacı

Agauopsis is a cosmopolitan genus. It is represented with 89 species from all over the world. Most of them are inhabitants of warm and temperate waters. Up to now, only eight *Agauopsis* species have been described from the Mediterranean Sea (Bartsch, 2006).

Three specimens (one male-Fig. 21, one deutonymph and one protonymph) of *A. microrhyncha* were collected from soft sandy bottom, at a depth of 22 m (October 2015) close to Kaş (Antalya, Turkey) (36.157583° N, 29.630333° E). The samples were collected by SCUBA diving and then sorted at the laboratory with the aid of a stereomicroscope. The halacarids were cleared in lactic acid and mounted in glycerine jelly. Idiosoma Length/Width = 435/300 µm. Body content colour is brownish.

The characteristic features of *Agauopsis microhyncha* are a ventral and two anterior spines on telofemur I, a ventral and three anterior spines on tibia I, two of which are adjacent (Pepato & Tiago, 2003).

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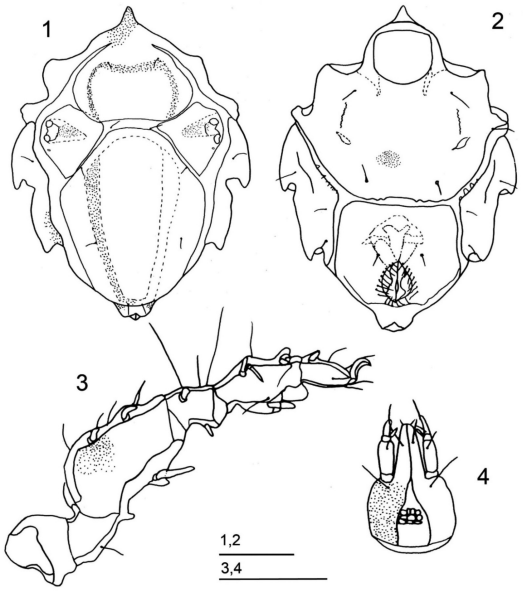


Fig. 21: *Agauopsis microrhyncha* (Trouessart, 1889) male. 1. Idiosoma dorsal; 2. Idiosoma ventral; 3. Leg I, lateral; 4. Gnathosoma, ventral. Scale Bars: 100 µm

4.9 *Diadema setosum*: a new alien urchin in Cypriot waters

K. Kapiris and C. Constantinou

Sea urchins of the genus *Diadema* are some of the most widespread, abundant and ecologically important echinoids in tropical regions (Muthiga & McClanahan, 2013). Species of *Diadema* are conspicuous members of benthic communities and are often regarded as keystone species in coral-reef environments (Sammarco, 1982). *Diadema setosum* (Leske 1778) is a long-spined sea urchin, which differs from other *Diadema* in that it bears five characteristic white spots on its body and some blue iridophores. *D. setosum* is noticeably venomous and should be handled with great caution. When the spines penetrate a body, the venom is injected and causes pain.

D. setosum has a widespread Indo-West Pacific distribution; it occurs in temperate to subtropical estuaries along the northern Red Sea and extends from east Africa to Japan and eastwards to Australia (Lessios *et al*., 2001). According to Yokes & Galil (2006), *D. setosum* is very abundant in the northern part of the Gulf of Suez. It was reported in the Mediterranean Sea from the Kas Peninsula (Yokes & Galil, 2006). In 2009, the species was recorded along the Lebanese coastline (Nader & Indary, 2011), later in 2010 at Antakya, south-eastern coast of Turkey (Turan *et al*., 2011), in 2014 and 2015 in Kastellorizo, Greece (Latsoudis in Tsiamis *et al*., 2015), in Kriti (Dounas & Krystalas, 2016, present article), in Rodos Island (Kondylatos & Corsini-Foka in Crocetta *et al*., 2015) and in Gökova Bay (Yapici *et al*. in Katsanevakis *et al*., 2014). According to Turan *et al*. (2011), *D. setosum* may have been transported to Antalya Bay by vessels arriving from the Suez Canal or possibly by sea currents flowing from the northern part of the Gulf of Suez.

During scuba diving surveys in the Bay of Cyclops (Protaras, SE Cyprus: (34.98571° N, 34.07942° E), one specimen of *D. setosum* was observed on a rocky habitat, at 13 m depth, on 27/7/2016. The water temperature was 26°C. The specimen was photographed under the sea (Fig. 22). Unpublished records of the species date back to 2013 (Dor, pers. comm.), while its constant observation attests a long-established population. The role of this species in the coastal benthic ecosystems of Cyprus and its effect on local populations deserves further study.

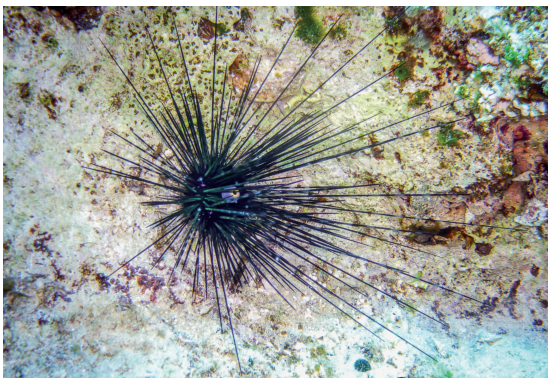


Fig. 22: *Diadema setosum* from Cyprus (E. Mediterranean) (Photo: C. Constantinou).

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4.10 First record of the rare native fish *Lobotes surinamensis* (Bloch, 1790) in Cyprus

P. Kleitou and F. Crocetta

The Atlantic tripletail *Lobotes surinamensis* (Bloch, 1790) (Chordata: Actinopteri: Lobotidae) is a cosmopolitan species found in tropical and subtropical waters of all oceans. Adults are bentho-pelagic and feed on small fishes and benthic crustaceans. Juveniles are often found swimming on their side at the surface, probably mimicking floating debris in order to attract unsuspicious prey, avoid predators and probably benefit from drifting long distances (Akyol & Kara, 2012). It is the only species of the Lobotidae Gill, 1861 that occurs in the Mediterranean Sea, where it is mostly reported as a localised catch in several parts of the basin. So far, it has been reported from Algeria, Croatia, Egypt, Greece, Israel, Italy, Lebanon, Malta, Spain, Turkey and Tunisia (Akyol & Kara, 2012; Akel & Philips, 2014; Dulčić *et al.*, 2014; Kavadas & Bekas in Katsanevakis *et al.*, 2014; Tiralongo in Dailanis *et al.*, 2016); therefore, records from Cyprus are lacking.

This is the first report on this species from Cypriot territorial waters, based on old and recent evidence. *L. surinamensis* was first sighted and photographed in Cyprus on 3 October 2008, swimming at the surface of Coral Bay (Paphos) (34.85240° N, 32.36783° E) at 7 m depth near a floating buoy (Fig. 23A). An additional individual was caught on the 7th of November 2015 by a spear fisherman at the southernmost point of the island, in Akrotiri (Limassol) (34.56615° N, 33.01809° E) (Fig. 23B). This individual was found swimming at the surface, at 4 m depth, and was initially confused with a moribund specimen because it was swimming on its side. The specimen weighted 780 g and had a total length of around 35 cm, which correlates it to a juvenile according to previous gonad examination of a similar sized specimen (Dulčić *et al.*, 2014). Finally, a third specimen was caught with a fishing landing net in Peyia - Coral bay port (34.85611° N, 32.361546° E), at 1 m depth on the 28th of September 2016 (Fig. 23C).

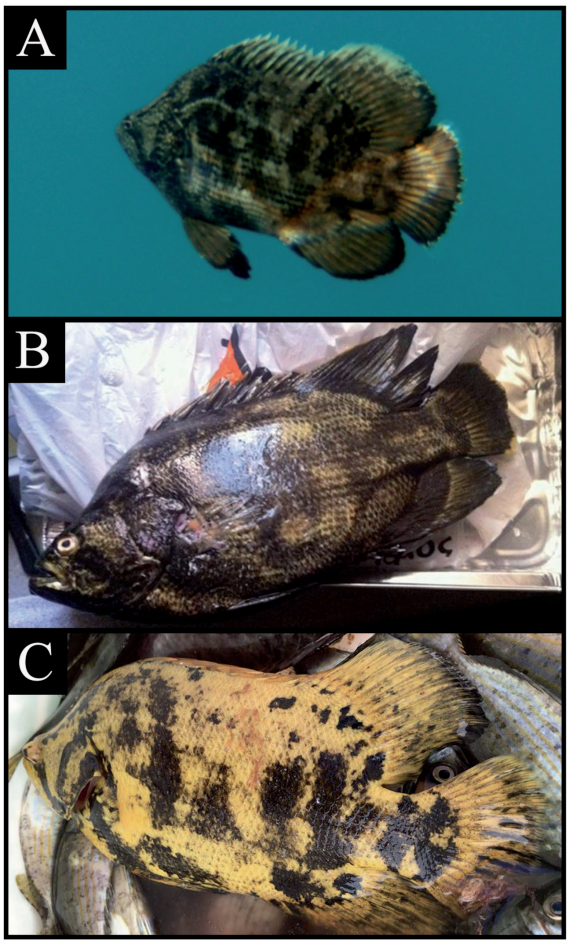


Fig. 23: The Atlantic tripletail *Lobotes surinamensis* from Coral Bay (A), Akrotiri (B) and Peyia - Coral bay port (C) in Cyprus.

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4.11 Status of the Mediterranean monk seal *Monachus monachus* in Lebanon: from extinct (1968) to regular sightings (2003–2016)

M. Bariche and F. Crocetta

The Mediterranean monk seal *Monachus monachus* (Hermann, 1779) is a marine mammal with a wide Atlantic-Mediterranean distribution. Originally common throughout its entire living range, it has been decimated by hunting pressure, persecution, and deterioration of habitat during the past centuries (Johnson, 2005; Bariche, 2012). It is now regarded as one of the most endangered pinniped species in the world (Karamanlidis & Dendrinos, 2015). The worldwide population is estimated to be 600–700 individuals, of which 300–400 live in Greece, followed by Cyprus and Turkey (Karamanlidis & Dendrinos, 2015). On the other hand, it has long been considered as locally extinct in the easternmost Mediterranean countries, from Palestine to Syria, where its populations have been decimated. Only a few years ago, it was reported again from the Levant, thus suggesting an attempt by the species to recolonize the Levantine coasts (Scheinin *et al.*, 2011). In Lebanon, the last couples were observed in 1968 at Raoucheh and on the cliffs at Amshit (Khouzami *et al*., 1996), and, therefore, it is still considered as extinct. Several sightings (n = 25, from 2003 to 2016), corroborated by photos and videos, have been reported recently from the Lebanese coastline (Table 5; Fig. 24) and has lead us to re-evaluate the status of *Monachus monachus* in the country and support the hypothesis of Scheinin *et al.* (2011).

The records reported here are only based on opportunistic sightings by divers, fishermen or sea lovers. It seems that a few individuals exist nowadays in the Beirut area and 2–4 others somewhere between Tabarja and the Palm Islands, in the northern part of the country. The coastal area of Lebanon is subjected to very high human pressure, and a wide range of activities contribute directly or indirectly to its degradation. Unregulated fishing practices, overfishing and boating certainly have a negative impact on this species. The recorded acciden-

Table 5. Lebanese records of the Mediterranean monk seal with year, date, number of specimens (n), coordinates and notes. Facebook refers to "Sea Lebanon (www.facebook.com/groups/109615625861815/)" and NGO website to www.spnl.org/ and www.facebook.com/dalieh.org, respectively.

Year	Date	n	Location	GPS - N	GPS - E	Proofs	Observer	Notes
2003	Sep, 13	1	Beirut (Raoucheh)	33.892983°	35.463750°	visual	scientist	swimming
2003	Sep, 27	1	Beirut	--	--	visual	scientist	swimming
2007	May, 13	1	Selaata (Shakk el Hatab)	34.294583°	35.670517°	visual	fisherman	swimming
2007	May, 25	4	Selaata (Shakk el Hatab)	34.294583°	35.670517°	visual	fisherman	2 large and 2 small, on rocks
2009	Dec, 28	1	Beirut (AUB beach)	33.903750°	35.483000°	video	Scientist	swimming
2010	May, 15	1	Beirut (Raoucheh)	33.888633°	35.467800°	photos	NGO member	swimming
2010	Aug, 15	1	North of Lebanon	--	--	video	scuba diver	swimming
2010	Sep, 4	1	North of Lebanon	--	--	video	scuba diver	swimming
2010	Sep, 25	1	Enfeh	34.360750°	35.723217°	visual	angler	swimming
2010	Nov, 20	1	Tripoli (Ramkine Island)	34.496800°	35.761833°	visual	ranger	On rocks
2011	Mar, 12	1	Tabarja	34.294583°	35.670517°	visual	scuba diver	swimming
2011	June, 14	1	Tabarja	34.017067°	35.621683°	visual	scientist	swimming
2011	Oct, 9	1	Barbara	34.195411°	35.626537°	visual	scuba diver	swimming
2013	Mar, 14	1	Beirut (AUB beach)	33.903750°	35.483000°	visual	scientist	swimming
2013	Apr, 7	1	Tripoli (El Bellan Island)	34.465150°	35.801417°	visual	fisherman	cadaver
2014	Apr, 12	1	Beirut (Sporting)	33.893750°	35.465733°	photos	fisherman	NGO website
2015	Mar, 31	1	Beirut (Raoucheh)	33.889222°	35.469615°	photos	NGO member	dead female, with pup
2015	Apr, 10	1	Enfeh	34.360750°	35.723217°	photos	scuba diver	swimming
2015	Apr, 22	1	Beirut (Dalieh)	33.888633°	35.467800°	photos	NGO	NGO website
2015	May, 8	1	Beirut (AUB beach)	33.903750°	35.483000°	photos	scuba diver	Facebook, swimming
2015	Jul, 25	1	Tabarja	34.030100°	35.621217°	photos	scuba diver	Facebook, swimming
2015	Oct, 12	1	Jounieh	--	--	video	scuba diver	Facebook, swimming
2016	Apr, 19	1	Batrun	34.254722°	35.655170°	photos	fisherman	Facebook, swimming

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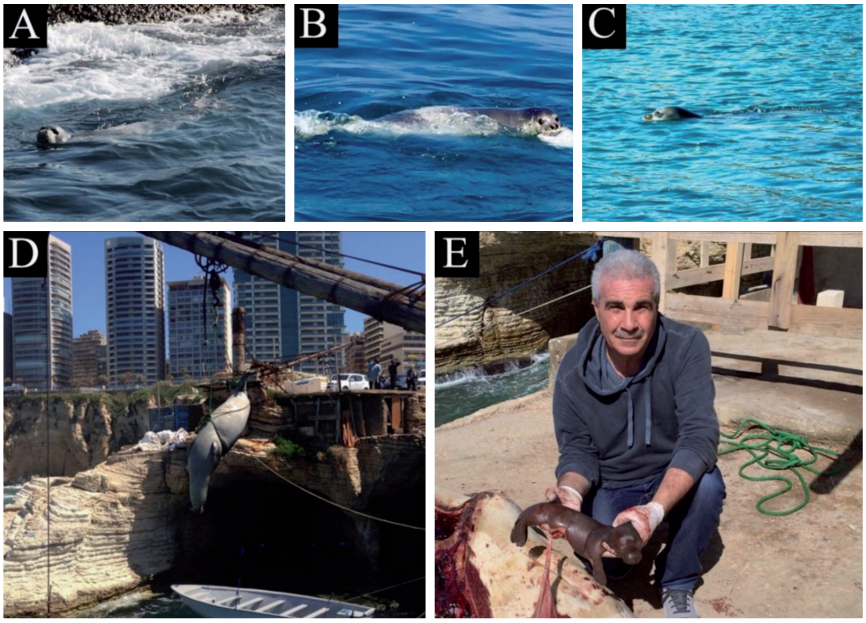


Fig. 24: Recent sighting of the Mediterranean monk seal *Monachus monachus* (Hermann, 1779) in Lebanon. A. Dalieh - April 2015 (©Dalieh Facebook page). B. Tabarja - July 2015 (©Michel Haddad). C - Beirut - May 2015 (©Nasser Saidi). D–E. Raouche - March 2015. A pregnant female of ~2.5 m, carrying a pup of ~60 cm. The blood on the mouth, nostrils and eyes of the seal suggest that it died from a trauma to the head, and was presumably killed after being caught in a fishing net (©Nazih el Rayess).

tal or deliberate killing by fishermen and the sightings of scuba divers visiting underwater caves where seals have been spotted should be taken into consideration. Besides conservation purposes, the presence of live marine mammals along the coast of Lebanon could be very interesting from a tourism point of view and, therefore, the presence of this unique animal could be considered a natural heritage that must be monitored and protected.

4.12 New record of *Dorippe quadridens* (Fabricius, 1793) (Crustacea, Decapoda, Dorippidae) in Mediterranean Egyptian waters

E.H.Kh. Akel and S.I. Rizkalla

The biodiversity of the Eastern Mediterranean has been considerably altered since the opening of the Suez Canal in 1869. Bodenheimer (1935) witnessed the early "penetration of Red Sea forms through the Suez Canal" and noticed that "Quite a number of fishes have not only reached our [SE Levant] shores, but some of them have even increased in such numbers, that they appear regularly in the fish market". New Indo-Pacific biota continues to enter the Levantine Basin environment at relatively high rates, mainly in recent decades, with significant ecological and economic impacts in the easternmost region of the Mediterranean. The latest alien decapod record in Mediterranean Egypt is that of *Halimede ochtodes* (Herbst, 1783) (Moussa *et al*., 2016).

A single specimen of male *Dorippe quadridens* (Fabricius, 1793) was collected by bottom trawl net off Port Said (Egypt) (31.3725 º N, 32.2599 º E) on 23 August 2016, at a depth of 10 - 20 m. The specimen (Fig. 25) fits the description of Holthuis & Manning (1990): carapace strongly sculptured, granulated, bearing pubescence and grooves evident. Tubercles usually well indicated and rather high. Merus covered all over with dense short pubescence. Abdomen with 3 distinct teeth on second somite. Lower orbital margin with 5-6 spines. Propodus and dactylus naked, dactylus longer than propodus. The fourth and fifth legs are covered with dense short pubescence and end with hooks. *Measurements*: carapace length 2.9 cm; carapace width 2.8 cm; length of cheliped 3.3 cm; front region width 1.9 cm; body depth 1.6 cm; dactylus of P2 1.7 cm; dactylus of P3 2.1 cm; length of the fourth leg 3.1 cm and length of the fifth leg 3.4 cm. *Colour*: carapace brownish-grey. Fingers of chelas yellowish brown. Dactylus and propodus are rosy. The fourth and fifth legs are grey in colour. *Weight*: 15 g (without the right 4th leg).

Dorippe quadridens has a wide distribution within the Indo-West Pacific region, extending from the Suez Canal, the Red Sea and south-eastern Africa to Hong

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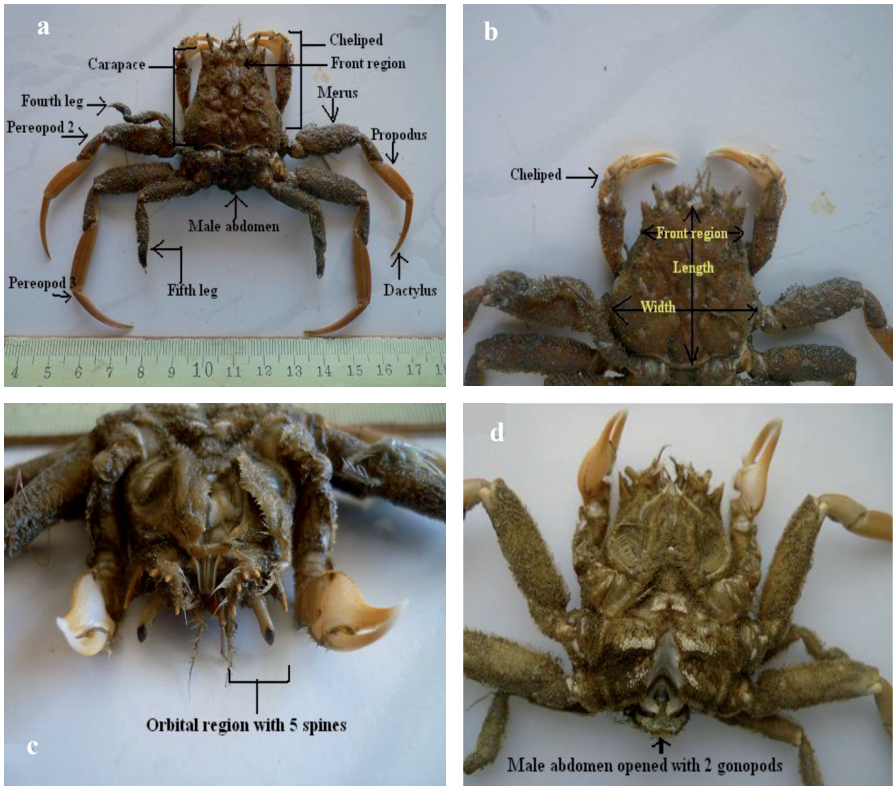


Fig. 25: *Dorippe quadridens* from Port Said (Egypt) (23/8/2016). A, dorsal view of the specimen: cheliped, carapace, front region, pereopods P2 and P3, fourth and fifth leg, male abdomen. B, dorsal view of the carapace: front region length, carapace length and carapace width. C, ventral view showing the orbital region with 5 spines. D, ventral view showing the male abdomen.

Kong, the Philippines, Indonesia and Australia. It is one of the most widely distributed species of Dorippinae. Moreover, it is probably the most common species of the genus (Holthuis & Manning, 1990). This species was already collected in the Suez Canal in 1929 (Monod, 1937, as *D. dorsipes*). It was first recorded in the Mediterranean, along the coasts of Israel, by Galil (2005). The finding of *D. quadridens* reported here from Egyptian Mediterranean waters is the second record of the species for the whole basin.

4.13 Contribution to the alien Mollusca of Mediterranean Egypt

R. Moussa and A. Zenetos

The molluscan fauna of Mediterranean Egypt, and particularly the species introduced via the Suez Canal, has a long history of studies starting from Tillier & Bavay (1905). Barash & Danin (1992) provided an extensive list of Mollusca from Israel and Sinai, while Hoffman *et al.* (2006) have added a few more molluscan species collected from the Nile Delta and northern Sinai. Later studies are mostly found in the grey literature (PhD and national reports). Within the framework of a recent study on the biodiversity of the Mediterranean Egyptian coast, carried out in the period 2012-2014, we report on the findings of 6 alien species, two of which (*Nerita sanguinolenta*, *Conomurex persicus*) are new records for the area (Table 6). Specimens of all species are kept in the collection of the National Institute of Oceanography and Fisheries (NIOF), Egypt.

Anadara natalensis (Fig. 26) was first found on 13 April 2013 in Alexandria (31.504722° N, 30.131389° E) and Port Said (31.47972° N, 32.407778° E). Its first record in the Mediterranean was from Port Said and Port Fouad (Moazzo, 1939). It has also been reported from Bardawill lagoon (Barash & Danin, 1973). The species is widely distributed and seems to be well-established. During 2013-14, it was collected by trawlers in most trawling fields along the coast of Alexandria, in high numbers on muddy and sandy bottom at 10-25m depth.

Fulvia fragilis (Fig. 27). Its first record in Egypt dates back to 1934-35 from Port Said and Port Fouad (Moazzo, 1939) as *Papyridea papyracea*. No further records. Live specimens were found on 17 October 2012 in Alexandria (31.504722° N, 30.131389° E). They were

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Table 6. Species collected along the Mediterranean Egyptian coast. * First Mediterranean Record as in Gofas & Zenetos (2003).

Species	Origin	1st Med Record*	Previous record in Med Egypt	Current record
Anadara natalensis (Krauss, 1848)	Indopacific/Red Sea	1934/5-Egypt	Moazzo (1939) Barash & Danin (1972)	Live specimens established
Fulvia fragilis (Forsskål in Niebuhr, 1775)	Indian Ocean/ Red Sea	1934/5-Egypt	Moazzo (1939)	Live specimens
Conomurex persicus (Swainson, 1821)	Persian Gulf	1978-Turkey	NO	Live specimens established
Nerita sanguinolenta Menke, 1829	Red Sea	1969-Greece	NO	Empty shells
Diodora funiculata (Reeve, 1850)	Indopacific	1998-Israel	Hoffman *et al.* (2006)	Empty shells
Diodora ruppellii (G. B. Sowerby I, 1835),	Indopacific	1939- Israel	Barash & Danin (1977)	Empty shells

collected by trawlers at three stations, at a depth of 5-10 m, on sandy mud.

Conomurex persicus (Fig. 28). This is an invasive species widely distributed in the Levantine basin, absent so far from the Egyptian list. It was first found on 6 December 2012 in Alexandria (31.344722° N, 30.09222° E). The species appears to be well-established as it was collected at all sampling sites over three years (2012-14) by trawling at depths of 5-15 m, from several areas along the coast of Alexandria, in high numbers on sandy bottoms.

Nerita sanguinolenta (Fig. 29). Two dead shells were collected from a sandy beach, in Port Said (31.222197° N, 32.377396° E), on 9 June 2013. Records of the species in the Mediterranean are limited. This is the first record from Egyptian Mediterranean Waters.

Diodora funiculata (Fig. 30). Many dead shells were collected from a sandy beach at Port Said (31.222197°



Fig. 27: *Fulvia fragilis* collected in Alexandria. Specimen height = 44.60 mm, Length= 44.99 mm, Inflation = 30.74 mm.



Fig. 26: *Anadara natalensis* collected in Alexandria. Specimen height = 54.19 mm, Length= 63.72 mm, Inflation = 43.40 mm.



Fig. 28: *Conomurex persicus* collected in Alexandria. Specimen Length= 51.83 mm, Width = 29.34 mm, Body whorl = 38.40 mm.



Fig. 29: *Nerita sanguinolenta* collected in Port Said. Specimen length= 23.24 mm, Width= 29.03 mm, Body whorl= 21.58 mm.

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N, 32.377396° E) on 25 June 2013. *D. funiculata* was reported from Great Bitter Lake, Egypt by Hoffman *et al*. (2006).

Diodora rueppellii (Fig. 31). Recorded in Egypt from Bardawill lagoon in 1975 (Barash & Danin, 1977). Five dead shells collected from a sandy beach in Alexandria (31.260357° N, 29.977226° E), on 8th January 2013.

All six species are established in the eastern Mediterranean while two, namely *F. fragilis* and *C. persicus*, are classified as invasive in the eastern Mediterranean. Most have an Indo-Pacific origin, except for *N. sanguinolenta,* which is a Red Sea species and *C. persicus,* which originates from the Persian Gulf. *Nerita sanguinolenta* is poorly known in the Mediterranean; it has not been reported by Hoffman *et al.* (2006) in their extensive study covering the Great Bitter Lake (Suez Canal) and Nile Delta, Egypt. This is the first record for *C. persicus*, a relatively recent Mediterranean invader, absent from the Red Sea, whose mode of introduction is suspected to be shipping (Gofas & Zenetos, 2003).



Fig. 30: *Diodora funiculata* collected in Port Said. Specimen length = 23.47 mm; Width = 15.30 mm.



Fig. 31: *Diodora rueppellii* collected in in Alexandria. Specimen length=21.71mm, Width=14.24mm.

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