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New Mediterranean Biodiversity Records (July 2019)

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Abstract

This is the second collective paper issued in 2019, currently amalgamates new knowledge on the Mediterranean geographic distributions of 17 species from five phyla (six aliens, three cosmopolitans, two east Atlantic records and six natives). The acknowledged species were reported from ten countries, mentioned here from west to east: **Spain**: first report of the east Atlantic grouper *Cephalopholis taeniops* in the western Mediterranean and an inclusion of *Pontarachna punctulum* and *Litarachna communis* to the pontarachnid fauna of Spain; **Morocco**: first record of *Solea senegalensis* from the Moroccan Mediterranean coast; **Algeria**: a valid confirmation for the presence of *Sardinella maderensis*; **Malta**: a first record of the Red Sea stomatopod *Erugosquilla massavensis*; **Italy**: a rare observation of the crab *Paragalene longicrura* from Siciliy and a further integration of the alien brown shrimp *Penaeus aztecus* to the commercial catch in Sicily; **Montenegro**: a first record of the Lessepsian bigfin reef squid *Sepioteuthis lessoniana* from the Adriatic Sea; **Turkey**: northernmost documentation of the Mediterranean flatworm *Prosthecereaeus giesbrechtii* in the Aegean Sea; **Israel**: a solid confirmation for the population establishment of both the alien rock shrimp *Sicyonia lancifer* and two species of angelfish, and a first and deepest record of the crystalline goby *Odondebuenia balearica*; **Lebanon**: first record of the jellyfish *Pelagia noctiluca*; **Syria**: first records of the crown jellyfish *Nausithoe punctate* and the smallscale codlet *Bregmaceros nectabanus*.

Introduction

In the marine environment, natural or anthropogenic stressors can generate major changes in species distribution. In the Mediterranean Sea, changes in local biodiversity are frequent outcomes of the intense maritime traffic, the opening of artificial pathways and the trend of climate change.

In order to improve managements of the Mediterranean ecosystem, it is essential to maximize our knowledge on its species assemblages and distributions. This series of

collective papers present 17 new distribution records for the Mediterranean Sea, comprised of two species of cnidarians, one flatworm, one mollusc, six crustaceans and seven bony fishes (Table 1). All of these records were previously reported in other localities throughout the Mediterranean, constituting three cosmopolitan species, one west Atlantic, two east Atlantic, five Indo-Pacific, and six natives to the Mediterranean (Table 1). Interestingly, eight out of the 17 records (47%) derived from 'citizen science' documentations (CS) of either recreational activity participants or commercial fishers, with the remaining records as by-products of scientific (five reports) and monitoring (two reports) activities. This significant involvement of CS practice in monitoring local biodiversity is gaining remarkable attention at present, in light of the accessible technological in visual recording and the rising popularity of social media networks (Roy *et al.,* 2018).

In this article, the records are separated to four major biogeographical zones of the Mediterranean Sea, from west to east, into relevant subchapters. The exact localities are illustrated in Figure 1 and detailed in a systematical order in Table 1.

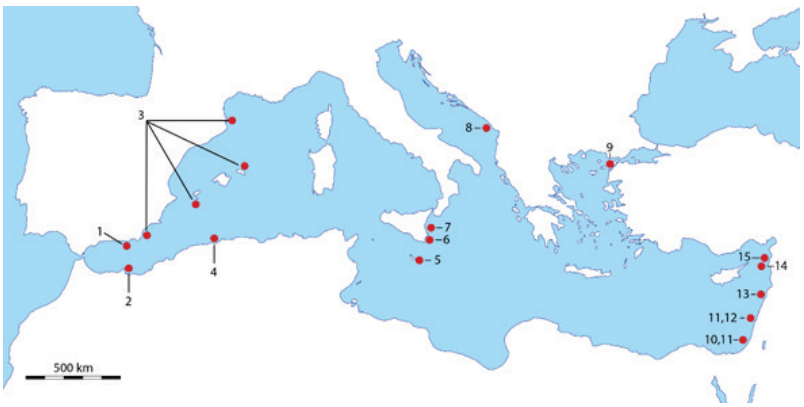

Fig. 1: Locations of the new records presented in "New Mediterranean Biodiversity Records (July 2019)**.** The numbers of locations are given in Table 1.

Table 1. Species included in "New Mediterranean Biodiversity Records (July 2019)", systematically ordered by phyla, detailed in subchapters (SC), with indications on origin of species (COS – Cosmopolitan, M – Mediterranean, IP – Indo-Pacific, RS – Red Sea, WA – West Atlantic, EA – East Atlantic), Basin of the reported incident (EM – East Mediterranean, AS – Adriatic Sea, CM – Central Mediterranean, WM – West Mediterranean), and location number (LN) as in Figure 1.

Species	SC	Origin	Basin	Country	Exact localities	LN
Phylum Cnidaria						
Nausithoe punctata	4.6	COS	EM	Syria	Lattakia	14
Pelagia noctiluca	4.5	COS	EM	Lebanon	Tripoli	13
Phylum Platyhelminthes						
Prostheceraeus giesbrechtii	4.1	M	EM	Turkey	Gallipoli Peninsula	9
Phylum Mollusca						
Sepioteuthis lessoniana	3.1	IP	AS	Montenegro	Budva	8
Phylum Arthropoda						
Erugosquilla massavensis	2.1	RS	CM	Malta	Valletta	5
Litarachna communis	1.3	M	WM	Spain	Cadaqués	3
Paragalene longicrura	2.2	M	CM	Italy	Sicily, Avola	6
Penaeus aztecus	2.3	WA	CM	Italy	Sicily, Augusta	7
Pontarachna punctulum	1.3	M	WM	Spain	Cabo de Gata-Níjar, Formentera, Menorca	3
Sicyonia lancifer	4.2	IP	EM	Israel	Ashdod	10
Phylum Chordata						
Bregmaceros nectabanus	4.7	COS	EM	Syria	Burj Islam	15
Cephalopholis taeniops	1.1	EA	WM	Spain	Almerimar	1
Odendebuenia balearica	4.4	M	EM	Israel	Rosh Carmel	12
Pomacanthus imperator	4.3	IP	EM	Israel	Throughout	11
Pomacanthus maculosus	4.3	IP	EM	Israel	Throughout	11
Sardinella maderensis	1.4	M	WM	Algeria	Tipasa	4
Solea senegalensis	1.2	EA	WM	Morocco	Marchica	2

1. Western Mediterranean

1.1 *Cephalopholis taeniops* (Valenciennes, 1828) (Perciformes: Serranidae): first record in the western Mediterranean Sea

Andres IZQUIERDO-MUÑOZ and Alfonso A. RAMOS-ESPLÁ

Cephalopholis taeniops (Serranidae: Epinephelinae) is an exotic fish from the groupers family. Its reddish orange colour skin with blue dots makes it very characteristic, and quite different from other groupers living in the western Mediterranean basin. It can reach up to 70 cm length, but the most common size is 40 cm (Guidetti *et al*., 2010).

The West African distribution of the species goes from Morocco to Angola including Cape Verde, Principe Island and São Tomé Island (Golani *et al*., 2002). In the Mediterranean, its first observation was made in 2002 in Libya (Ben Abdallah *et al.*, 2007). After this, the fish was recorded in 2008 in Malta (Evans & Schembri, 2017), in 2009 in Italy and Israel: Lampedusa Island (Guidetti *et al*., 2010) and Haifa Bay (Salameh *et al.*, 2009). Last known record was in 2015 in Çandarli Gulf, Aegean Sea (Engin *et al*., 2016).

During an informal conversation about exotic fishes with occasional spearfisher, one of them asked us about the identification of a "strange grouper". The picture of the fish revealed it was a specimen of *Cephalopholis taeniops* (Fig. 2). The size of the fish was approximately 40 cm, weighting 1 kg ("a bit more than a kg", textually), and had an empty stomach. Sadly, the specimen was not stored or conserved.

The capture was made near Almeria (Almerimar, South Spain, approximate coordinates: 36.676800° N, 2.780666º W), by free-dive spearfishing in a rocky zone called "la Abierta", at 20 m depth. The specimen was inside a cave where it is common to observe specimens of golden grouper *Epinephelus costae* (Steindachner, 1878). Fish was observed in the same cave one month prior to the capture, that was made in January 2018.

This record is the first sight of the species in the western Mediterranean Sea, and adds an important point to the path of the species on its Mediterranean colonization, being the entrance through the Gibraltar Strait the most plausible way to its entrance. Also, this event demonstrates the importance of the "citizen science" approach, from which we can get more reports on exotic species in our coasts.

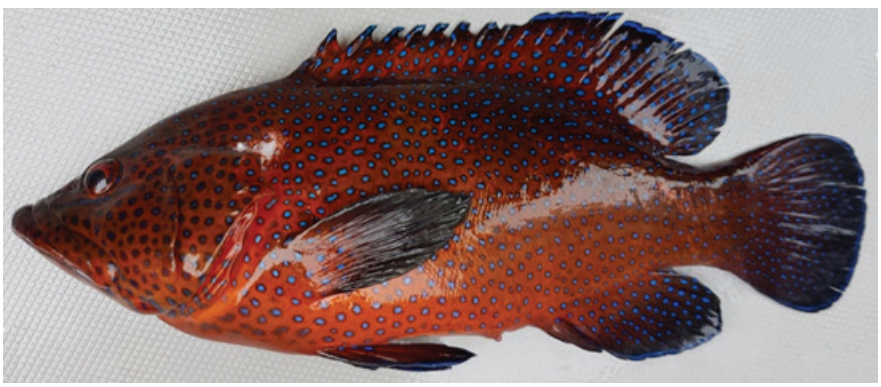

Fig. 2: *Cephalopholis taeniops* from Almerimar, S. Spain.

1.2 First record of the Senegalese sole (*Solea senegalensis,* Kaup 1858) from the Mediterranean coast of Morocco

Mariam OUSSELLAM and Mohamed SELFATI

Common in the eastern Atlantic, from Senegal to the Bay of Biscay, *Solea senegalensis* Kaup, 1858 is a typically subtropical species. In the Mediterranean, *S. senegalensis* is considered as Herculean immigrant, extended its distribution from the eastern Atlantic into the Mediterranean through the strait of Gibraltar (Quignard & Tomasini, 2000; Golani *et al*., 2002). The species was reported in the Mediterranean for the first time in 1920 from the Spanish coast (Catalan Sea) under the name *Solea melanochira* Moreau, 1874 (Borja, 1920; Golani *et al*., 2002). It was then found in Tunisia (Torchio, 1973) and in the Tunisian lagoons of Bizerte and Ichkeul (Goucha & Ktari, 1981). Since then, some specimens have been found in the landings of the French Languedoc coast (Quignard & Raibaut, 1993).

During a fish survey in the Moroccan Marchica lagoon (35.0925° N, 002.5043° W; Fig. 3), carried out during the year 2015, a Soleid specimen with total length (TL) of 370 mm and body fresh weight (BW) of 476.14 g was identified, for the first time in June 27th 2015, as *Solea senegalensis*. Additional specimens were captured for the second time in July 12th 2018 (TL=201.19 mm, BW=66.1

g) and August 12th 2018 (TL= 252 mm, BW=140.52 g), using a fishing gear called Palanza (a form of set net) and trammel nets. The captured specimens were identified using criteria established by Fischer *et al*. (1987): (1) oval body with a supra-temporal branch of the gently curved lateral line, (2) anterior nostril of the non-enlarged blind face in a cupule or rosette and (3) pectoral fin of the ocular side with posterior margins more or less rounded, with yellowish grey rays and a very dark and even blackish membrane (Fig. 4).

The present work provides the first confirmed record of the Senegalese sole *S. senegalensis* in the Mediterranean Morocco (Marchica coastal lagoon). This record significantly extends the range of this species in the Mediterranean Sea.

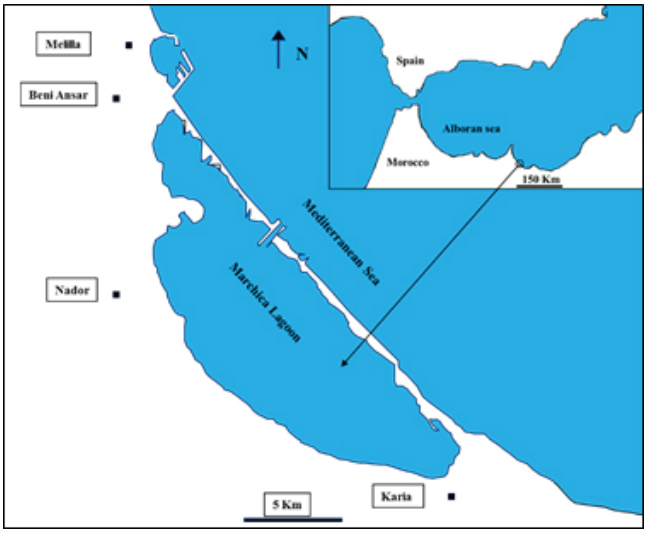

Fig. 3: Location of the sampled *Solea senegalensis* at the Marchica lagoon, Mediterranean coast of Morocco.

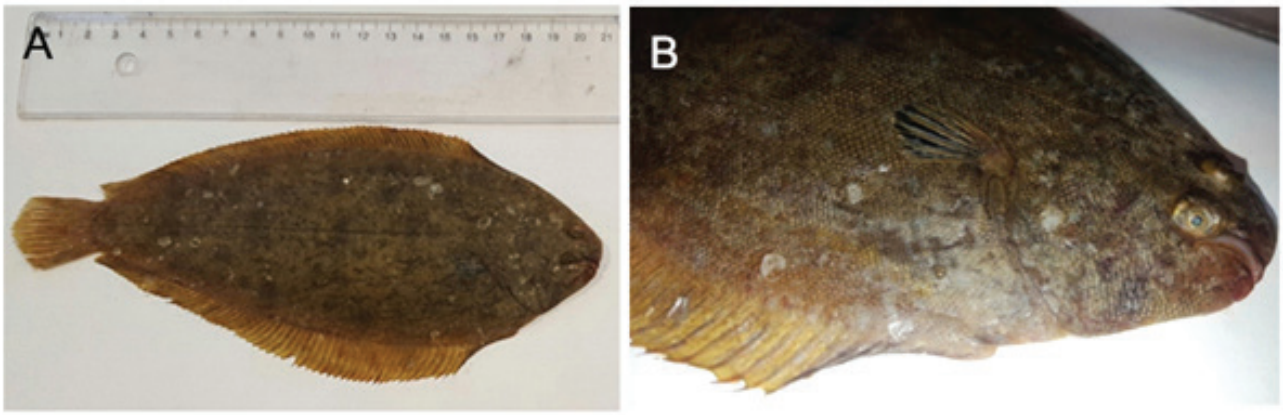

Fig. 4: *Solea senegalensis* collected at the Marchica lagoon, Mediterranean coast of Morocco. (A) dorsal view; (B) details of the pectoral fin.

1.3 First records of marine mites (Acari, Hydrachnidia, Pontarachnidae) from the Mediterranean coast of Spain

Vladimir PEŠIĆ and David MASALLES

The family Pontarachnidae Koenike, the only family of the true water mites (Hydrachnidia) occurring in the marine environment, is consisted by two well-defined genera: *Litarachna* Walter, 1925 and *Pontarachna* Philippi, 1840. Most of known pontarachnid species have been reported from the marine littoral zone (Pešić *et al*., 2012) but some species have been sampled from the depth of almost 70 m (Pešić *et al*., 2014). The first pontarachnid species from Mediterranean Sea, *Pontarachna punctulum,* has been described in 1840 by Philippi, from the Gulf of Naples, Tyrrhenian Sea. The last checklist of pontarachnid mites of Mediterranean region given recently by Pešić *et al.* (July 2019) includes ten species, thus representing almost 1/5 of the known pontarachnid species globally.

Up to now, no pontarachnid mites are reported from the Mediterranean coast of Spain. Zawal & Pešić (2015) collected *Litarachna duboscqi* Walter, 1925 from the Atlantic coast of the island of Tenerife (Canary Islands).

Fig. 5*: Pontarachna punctulum* from Menorca, Balearic Islands, Spain.

Table 2. List of collected pontarachnid species and sampling site details.

Taxa	Sampling site	Coordinates	Date	Depth (m)	Habitat
Pontarachna punctulum Philippi, 1840 (1♂)	Spain, Menorca (Balearic Islands), Arenal d'en Castell	40.024381° N 4.177111° E	16.09.1993	2.5	Rizomes of the Mediterranean seagrass *Posidonia oceanica*
Litarachna communis Walter, 1925 (2♂,8♀, 1deutonymph)	Spain, Girona, Cadaqués	42.285871° N 3.276744° E	15.11.2007	0.5	Photophilic algal community dominated by *Halopteris scoparia*
Pontarachna punctulum Philippi, 1840 (1♂)	Spain, Almería Cabo de Gata-Níjar Natural Park, Playa de Piedra Galera	36.795889° N 2.061556° W	10.09.2008	3	Rizomes of the Mediterranean seagrass *Posidonia oceanica*
Pontarachna punctulum Philippi, 1840 (1♀) *Litarachna communis* Walter, 1925 (2♀)	Spain, Formentera (Balearic Islands), Platja Mitjorn	38.684556° N 1.462833° E	07.09.2011	2m	Rizomes of the Mediterranean seagrass *Posidonia oceanica*
Pontarachna punctulum Philippi, 1840 (1♂,1♀, 1deutonymph)	Spain, Formentera (Balearic Islands), Cala Gerdi (Es Pujols)	38.724694° N 1.458722° E	08.09.2011	2m	Rizomes of the Mediterranean seagrass *Posidonia oceanica*

Specimens examined in the present study were collected by snorkeling by the second author from 1993-2011 from five localities along the Mediterranean coast of Spain (Table 2). Two species *Pontarachna punctulum* Philippi, 1840 (Fig. 5) and *Litarachna communis* Walter, 1925 were identified. Both species are hereby reported for the first time for pontarachnid fauna of Spain.

1.4 A documented record of *Sardinella maderensis* from the central coast of Algeria, South Western Mediterranean

Abderrahmane KASSAR

Madeiran sardinella *Sardinella maderensis* (Lowe, 1838) is a coastal pelagic fish belonging to the family of Clupeidae. It prefers waters of 24 °C from surface down to 80 m (Fischer *et al.*, 1987). It has an elongate variable in depth body, strongly compressed in some, less so in others. It has a sharply keeled belly. Its back is blue greenish, and flanks are silvery with a faint golden lateral line, preceded by a faint black spot posterior to gill opening. It has a black spot at dorsal fin origin. The upper pectoral finrays are white on the outer side, the membrane is black between them (Whitehead *et al.*, 1986). The caudal fin is grey with almost black tips (Whitehead, 1985). *S. maderensis* common length is usually 20–25 cm; maximum length 30 cm (Whitehead *et al.*, 1986).

Its natural distribution is north and south of the eastern Mediterranean, south of the western Mediterranean and the eastern Atlantic Ocean, from Gibraltar southward to Angola (Tous *et al.*, 2015). Its presence in Algeria is not well documented, with only few references to assume its existence (Dieuzeide *et al.*, 1953; Whitehead, 1985; Fischer *et al.*, 1987; Djabali *et al.*, 1993). It is thought to be abundant in the eastern part of the Algerian coast and

Fig. 6: *Sardinella maderensis* specimens from Hadjret Ennous, Tipasa, Algeria (HAL.19.001). Scale bar: 10 mm.

Table 3. Morphometric measurements (in mm) and meristic counts of *Sardinella maderensis.*

	Specimen 1	Specimen 2	Specimen 3
Total Length	148	149	150
Fork Length	127	127	128
Standard Length	115	115	116
Body depth	33	33	33
Head length	28	29	30
Eye diameter	8.0	8.1	8.2
Dorsal fin base length	19	20	21
Anal fin base length	18	19	18
Pre-dorsal length	50	50	51
Pelvic fin length	13	12	11
Meristic counts:			
Dorsal fin rays	16	17	17
Anal fin rays	19	18	17
Pectoral fin rays	16	17	16
Pelvic fin rays	9	9	9
Total scutes (ventral keel)	33	33	33

rare elsewhere (Djabali *et al.*, 1993).

On 04.21.2019, we have observed an artisanal commercial catch of *S. madrensis*. The fisherman reported the use of a pelagic gill net over approximately 20 m sandy bottom at 36.579622° N, 2.055881° E inshore form Hadjret Ennous locality in Tipasa, Algeria. Three individuals have been collected and photographed fresh, their morphometric and meristic parameters were recorded. Sex has been identified by visual examination of the gonads after a belly incision. Specimens have been preserved in 10 % formalin and deposited in Fishery lab collection (HAL.19.001) at Ecole Nationale Supérieure des Sciences de la Mer et de l'Aménagement du Littoral in Algiers, Algeria. Sampled specimens were all males. They measured 148 mm, 149 mm and 150 mm of total length and weighted 27 g, 29 g and 30 g, respectively (Fig. 6). Morphometric measurements and meristic counts for each specimen are given in Table 3. All specimens had a double golden lateral line, which was not mentioned in identification keys. This record of *S. maderensis* could indicate an established population in the central Algerian coast. This should be confirmed by a stock assessment study of this species in the region.

2. Central Mediterranean

2.1 The first record of *Erugosquilla massavensis* (Kossman, 1880) from Maltese waters

Alan DEIDUN and Bruno ZAVA

The Red Sea stomatopod *Erugosquilla massavensis* (Kossman, 1880) (Crustacea: Squillidae), native of the Red Sea and the Persian Gulf (Froglia & Manning, 1989), was the first Lessepsian stomatopod to be recorded in the Mediterranean, in 1930s, having colonised extensive swathes of the Levantine, Marmara and Aegean Seas since then (Özcan *et al*., 2008). It is currently also present within the central Mediterranean, being recorded from the coasts of Libya and Tunisia, and, most recently, from coastal waters of Sicily (Corsini-Foka *et al*., 2017). In Sicily, the species has established large populations such that it is regularly sold on fish markets (e.g. the Catania one) along with the native spot-tail mantis shrimp *Squilla mantis* at 5-10 euro/kg (Gianguzza *et al*., 2019).

In May 2019, a single *E. massavensis* individual was landed by anglers fishing from a quay located within the Marsa flank of the Valletta Grand Harbour, situated in the Maltese Islands in the westernmost Ionian Sea (35.885449°N, 14.506327°E), using 'local' shrimp (*Palaemon* spp.) as bait. The approximate sea depth in the area is 12m, with the seabed consisting mainly of fine sands and muddy sediment, consistent with a sheltered, port environment. Sea temperature and salinity on the date of capture were 18^0C and 35.9, respectively.

The individual, once landed, was measured, photographed (Fig. 7) and deposited at the University of Malta by the anglers, where it was assigned the inventory number of MMS 001/19. The individual had a total length of 135mm, and was unambigiously assigned to *E. massavensis* by virtue of the dark blue uropods and the lack of the paired dark spots on the dorsal side of the telson, a diagnostic attribute for *S. mantis*.

Fig. 7: *Erugosquilla massavensis* individual caught from Maltese waters.

The seabed typology and sea depth at the sampling site recorded in this study are consistent with the preferred ones for *E. massavensis*, which is generally fished through trawling or trammel nets deployed in shallow waters over soft bottoms (Ounifi-Ben Amor *et al*., 2015). As recorded in Galil & Zenetos (2002), in the Levantine area of the Mediterranean, at depths shallower than 45m, the species largely outcompeted the native *S. mantis*, and, by virtue of its high fecundity and predaceous habit, *E. massavenis* is considered as a threat to native biota. Its record from a shipping hub in the Maltese Islands, subject to intense vessel traffic – the Grand Harbour of Valletta – suggests that the spread of the species from adjacent Sicily is linked with vessel traffic.

2.2 The rare crab *Paragalene longicrura* in Eastern Sicily (Ionian Sea)

Francesco TIRALONGO and Fabio CROCETTA

The Mediterranean carcinofauna has been the subject of several studies since early scientific observations. Despite of that, our knowledge on the distribution of several species is still scanty, even in widely explored countries such as Italy (central Mediterranean Sea). This is particularly true not only for minute taxa, but also for megafauna, and especially for rarely encountered species. *Paragalene longicrura* is the only Mediterranean species belonging to the family Progeryonidae Števčić, 2005, characterized by legs longer and thicker than usual. The species is known from the entire Mediterranean, albeit by sporadic records. Records from the entire Ionian Sea, for example, are still lacking (Gönülal *et al.*, 2015; Kampouris *et al.,* 2018).

During the analysis of the trammel net bycatch held in Avola (Siracusa, Italy) in May 2019, one of us (F.T) found a specimen of *P. longicrura* (carapace length×width: 23×29 mm) (Fig. 8). It was found in a coralligenous bottom at 57 m depth, at the following coordinates: 36.90864 N, 15.18501 E. Soon after sampling, the specimen was fixed in 96% alcohol and deposited in the zoological collections of Ente Fauna Marina Mediterranea (Avola, Italy) with the following code: #EFMM-0305191. Additional species found in the same area were: *Calappa granulata*, *Dardanus arrosor*, *Galathea strigosa*, *Scyllarides latus*, and *Palinurus elephas* (Crustacea), *Centrostephanus longispinus*, *Hacelia attenuata*, *Marthasterias glacialis*, *Peltaster placenta*, *Sphaerechinus granularis*, *Stylocidaris affinis* (Echinodermata), and *Halocynthia papillosa* (Tunicata). Absence of previous records from the area may be due to the absence of field researches and taxonomic impediments. However, we cannot rule out here that this species may be only recently expanding its distribution within the Mediterranean Sea.

Fig. 8: *Paragalene longicrura* from Avola (Ionian Sea) (#EFMM-0305191).

2.3 The brown shrimp, *Penaeus aztecus* (Decapoda, Penaeidae) in southeastern Sicily: further expansion of a non-indigenous species with a potential as a fishery resource

Carlo PIPITONE and Andrea LOMBARDO

The brown shrimp, *Penaeus aztecus* Ives, 1891 (Crustacea, Decapoda) is native to the eastern coast of North America. Its first Mediterranean record occurred in December 2009 off the southern Turkish coast (Deval *et al*., 2010). Three years later it seemed to form a stable population in that area (Bilecenoglu *et al*., 2013). Numerous other records came in the following years from the Levant and Aegean areas, then from the Ionian, Adriatic, Tyrrhenian and the Gulf of Lion (Karachle *et al*., 2017). Previous records from Sicily have included four individuals collected in November 2015 off the southern coast (Scannella *et al*., 2017) and records from a fish market on the eastern coast (Zava *et al*., 2018).

Two females of *P. aztecus* were collected the 21.XII.2018 off Augusta, SE Sicily (37.240° N 15.270° E) with a trammel net on a sandy-muddy bottom at about 70 m depth. The two specimens (Fig. 9) had the following dimensions (total length, carapace length, wet weight): 225 mm, 58 mm, 115 g; 220 mm, 55 mm, 94 g.

According to the fisherman who provided the two specimens (Mr. Salvatore Strazzulla), brown shrimps have been caught in autumn every year since 2015 in the same area, with yields of up to 6 kg/night. Figure 10 shows a box ready for sale (Nov. 2018).

What is particularly interesting is the adaptation capability of *P. aztecus* to the Mediterranean coastal environment. While the typical habitat of adults is widely present in the Mediterranean as in the original distribution area, the vegetated estuaries that provide an optimal habitat to post-larvae and juveniles are uncommon along the Mediterranean shores. Among the *ca.* 40 locations of Mediterranean records (Karachle *et al*., 2017), very few provide a typical estuarine/brackish habitat at close distance. The euryhaline and eurythermal character of *P. aztecus* post-larvae and juveniles (Cook & Lindner, 1970) may have played a role in their capacity of adaptation to the Mediterranean coastal habitats.

P. aztecus is not yet the target of dedicated fisheries in the Mediterranean, despite the catches obtained off the Levant coast of Turkey. Another example of steady commercial exploitation of *P. aztecus* is the fry that is abundantly caught in the Nile delta area and successfully used to supply local shrimp farms (Sadek *et al*., 2018).

Fig. 9: *Penaeus aztecus*, females, Augusta, SE Sicily.

Fig. 10: *Penaeus aztecus*, box ready for sale, Augusta, SE Sicily.

New data on the ecology, biology, and population dynamics of *P. aztecus* are necessary in order to rationally exploit this potential new resource and assess its impact on the native biota.

3. Adriatic Sea

3.1 First record of lessepsian migrant *Sepioteuthis lessoniana* (Cephalopoda: Loliginidae) from the Adriatic Sea

Branko DRAGIČEVIĆ, Pero UGARKOVIĆ and Jakov DULČIĆ

The bigfin reef squid *Sepioteuthis lessoniana* Férussac, 1831 is distributed from Japanese to Australian and New Zealand coasts, as well as from Hawaii to the East African coast, north to the Red Sea and south to Madagascar (Jereb & Roper, 2006). It is also found in the Mediterranean where it is considered as a recent lessepsian migrant, a non-indigenous species. Its first occurrence in the Mediterranean Sea was reported by Salman (2002), based on a single individual caught in Iskenderun Bay in Turkey in March 2002. Subsequently, this species was documented by underwater video camera off the coast of Israel (Mienis, 2004). Afterwards, it was recorded near the coasts of Rhodes (SE Aegean Sea) (Lefkaditou *et al*., 2009), Lebanon (Crocetta *et al*., 2014), Libya (Shakman

et al., 2017) and Syria (Ammar & Maaroof, 2019).

One specimen of *S. lessoniana* (Fig. 1) was caught while eging (a special technique for catching squid) near Ploče beach, Budva (Montenegrian coast, southern Adriatic Sea) (42.268888°N, 18.783611°E) on 25 December 2015. The specimen was photographed and its photograph was posted on the Facebook group „Eging Hrvatska“ by the recreational fishers. It was noticed by one of the authors (PU) and identified as *S. lessoniana* on the basis of following features: elongated body, cylindrical in anterior part, conical in posterior part, ending in a rounded tail. The most distinguishing feature was easily observable on the photo: fins running almost the entire mantle length, outlining an oval shape (Fig. 11). Additionally, in the dorsal view of the specimen, large green eyes and bright transverse band shading are visible on the body which is in agreement with fishers observations pointed out by Lefkaditou *et al*. (2009) (Fig. 11) Although no additional data regarding length and weight of the specimen were provided, we estimated length of the mantle at 28 cm based on the length of the shoe (provided by the fisherman) visible in the photo.

This observation represents the first record from the Adriatic Sea (Montenegrin coast), but also the northernmost record of this species for the Mediterranean Sea up to date.

Fig. 11: Photo of the specimen of *Sepioteuthis lessoniana* caught near Ploče beach, Montenegro in December 2015. Left side: dorsal view; right side: ventral view. Red arrow indicates fins running the entire mantle length.

4. Eastern Mediterranean

4.1 First and northernmost sighting of *Prostheceraeus giesbrechtii* in the Aegean Sea

Sercan YAPICI and Ali TÜRKER

The phylum Platyhelminthes are represented by approximately 1000 species in the Mediterranean Sea including free-living and parasitic flatworms (Coll *et al.,* 2010; Çınar, 2014). The euryleptid flatworms are native to the Mediterranean Sea and the Eastern Atlantic (Wood, 2015). To date, four euryleptid flatworms have been reported in the Turkish coast: *Prostheceraeus roseus*, *P. giesbrechtii*, *P. vittatus* and *Stylostomum ellipse* (Gözcelioğlu, 2011, Çınar, 2014). Members of the genus Prostheceraeus are only reported from the Levantine coasts while *Stylostomum ellipse* from the Levantine and the Sea of Marmara (Gözcelioğlu, 2011; Çınar, 2014).

Prostheceraeus giesbrechtii is the most commonly seen flatworm in the Mediterranean Sea. It has a pink colour with thin white longitudinal stripes on the body. *P. giesbrechtii* could reach up to 2 cm in body length and resides in many different areas, such as caves and rocky or sandy habitats without light (Wood, 2015).

On the 5th of September 2018, a single specimen of *P. giesbrechtii* was observed and photographed by a diver using a Nikon D300 camera at a depth of 16 m near the

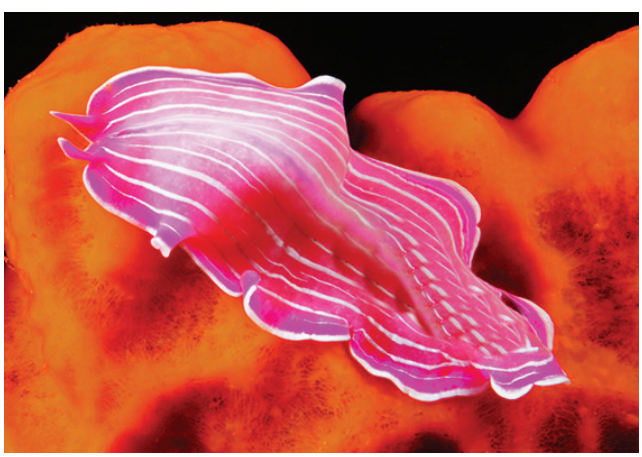

Fig. 12: *Prostheceraeus giesbrechtii* from the North Aegean Sea (Photograph courtesy of Bedri Sincar).

Lundy Wreck in Gallipoli Peninsula, north Aegean Sea (40.1133° N, 26.2177° E, Fig. 12). This present observation constitutes its first and northernmost record in the Aegean Sea.

4.2 So soon? - An established population of the Indo-West Pacific rock shrimp *Sicyonia lancifer* (Crustacea, Decapoda, Sicyoniidae) off the Israeli Mediterranean Sea

Bella S. GALIL and Hadas LUBINEVSKY

Sicyonia H. Milne Edwards 1830, the only genus in the family Sicyoniidae Ortmann, 1898, occurs in tropical, subtropical, and temperate waters. In 2014-2015 near simultaneous records of the Indo-West Pacific rock shrimp, *Sicyonia lancifer* (Olivier, 1811), were reported off the Turkish and Israeli coasts. Two specimens were collected in Antalya Bay, in October 2014 and February 2015 respectively (Patania & Mutlu, 2016), two specimens in the Gulf of Iskenderun in March 2015, four specimens near Mersin, in April 2015, a single specimen off Samandag, south of the Gulf of Iskenderun, in June 2015, and a single specimen off Ashdod, Israel (Gönülal *et al*., 2016).

Within the framework of the Israeli national monitoring project, additional samples of *S. lancifer* were recently collected off Ashdod, Israel, using the bottom trawler F.V. *Moti*. On May 27, 2019, 92 specimens were collected at 60 m, 25 specimens at 80 m depth, and again on June 3, 2019, 29 specimens were collected at 20 m and 195 specimens at 40 m, the great majority at nighttime (Table 4). A subsample was deposited at the Steinhardt Museum of Natural History, Tel Aviv University, Israel under the vouchers SMNHTAU AR. 29947 and AR. 29948.

Remarks – Sicyonia lancifer is readily distinguished from its Atlantic-Mediterranean congener, *S. carinata*, in possessing distinctly grooved abdominal carinae, deeply sculpted pleura with spinose margins, and five unequal teeth on the postrostral carina (Fig. 13). It is evident that within four years of its first record, the species has established a flourishing population across the Israeli shelf. Congeners are generalized carnivores feeding on bivalves and crustaceans (Hendrickx 1984), and in the Indo-West Pacific *S. lancifer* is known to occur from the intertidal to 250 m (Crosnier, 2003). In the Mediterranean Sea, the specimens were collected at depths from 20 to 110 m (Gönülal *et al*., 2016; Patania & Mutlu, 2016, present records). It would be of interest to survey the Levantine populations on the deeper continental shelf and find whether they inhabit the shelf/slope ecotone, where their carnivorous habits may impact the mesophotic indigenous biota (Galil *et al*., 2018).

Fig. 13: *Sicyonia lancifer* (Olivier, 1811), collected off Ashdod, Israel, female.

Table 4. Sampling details of *Sicyonia lancifer* specimens collected off Ashdod, Israel.

Date	Time	Depth (m)	*n*	Coordinates start	Coordinates end
27.05.19	Night	60	42	31.827 °N, 34.501 °E	31.762 °N, 34.457 °E
			50	31.760 °N, 34.454 °E	31.823 °N, 34.501 °E
		80	4	31.818 °N, 34.464 °E	31.748 °N, 34.413 °E
			21	31.832 °N, 34.413 °E	31.811 °N, 34.460 °E
03.06.2019	Day	20	7	31.744 °N, 34.576 °E	31.834 °N, 34.618 °E
			6	31.814 °N, 34.617 °E	31.748 °N, 34.578 °E
		40	1	31.865 °N, 34.571 °E	31.796 °N, 34.531 °E
03.06.2019	Night	20	15	31.812 °N, 34.616 °E	31.746 °N, 34.576 °E
			1	31.752 °N, 34.581 °E	31.817 °N, 34.619 °E
		40	80	31.853 °N, 34.568 °E	31.787 °N, 34.521 °E
			114	31.793 °N, 34.527 °E	31.859 °N, 34.570 °E

4.3 Confirmed evidences of established populations of angelfishes (Pomacanthidae) in the Levantine Basin

Shevy B.S. ROTHMAN and Nir STERN

Anglefishes (Pomacanthidae) are widely recognized as coral reef-associated fishes in tropical and subtropical regions in the Atlantic and Indo-Pacific Oceans. Mature individuals have spectacular distinctive color patterns and some species are highly valued in the ornamental aquarium fish trade. Seven pomacanthids are known from the Red Sea (Golani & Fricke, 2018), two of them, *Pomacanthus maculosus* (Forsskål in Niebuhr, 1775) and *P. imperator* (Bloch, 1787) were recorded in the Levant Basin.

P. imperator has been documented once from Israel and twice from the Syrian coast (Golani *et al.*, 2010**;** Capapé *et al.,* 2018; Saad *et al.,* 2018, respectively). Nonetheless, with only three records hitherto, *P. imperator* was considered unestablished, possibly an outcome of an aquarium release (Golani *et al.,* 2010; Zenetos *et al.,* 2016; Capapé *et al.,* 2018; Saad *et al.,* 2018).

P. maculosus has been documented from the Lebanese and Israeli coasts (Bariche, 2010; Salameh *et al.,* 2012, respectively). However, based on several formal and informal observations, Salameh *et al.* (2012) suggested that it is an established Lessepsian immigrant in the eastern Levant.

In an effort to gather observations of alien species along the Israeli coast, a call has been made through social media and personal contact with local fishers. Being colorful eye-catching species and relatively easy to identify, several additional documentations of both *P. imperator* and *P. maculosus* were obtained: in regards to *P. imperator*, a single specimen measured 26 cm in total length (TL) was speared in December 12th 2015 by a commercial fisher at a depth of 10 m off the coast of Nahariya, northern Israel (Approx. 33.01º N, 35.08º E; Fig. 14A). The specimen was kept frozen and later deposited in the fish collection of the Steinhardt Museum of Natural History at Tel Aviv University under the catalogue voucher SMNHTAU P.15837. In addition, muscle tissue was taken for genetic barcoding (mtDNA *COI*), and yielded 648bp sequence that was consequently registered in BOLD platform under the voucher BIM500-16. Genetic results showed a shared haplotype between the Mediterranean specimen and individuals that were previously sampled from the Red Sea and the Indian Ocean (Madagascar, South Africa and Sri Lanka).

In regards to *P. maculosus,* a team of technical divers have photographed a large individual, approx. 40 cm in TL, in August 8th 2015 at the "Electrodag" ship wreck, 45 m deep and 8.5 km off Tel Aviv coast (32.151º N, 34.703º E; Fig. 14B).

An additional individual of *P. maculosus* was sighted and speared on August 18th 2018 by a recreational fisher at a depth of four meters off Ashqelon, at the southern end of Israel (Approx. 31.68º N, 34.55º E; Fig. 14C). The specimen was approximately 30 cm in total length (TL). Unfortunately, the fish was consumed and could not be further examined.

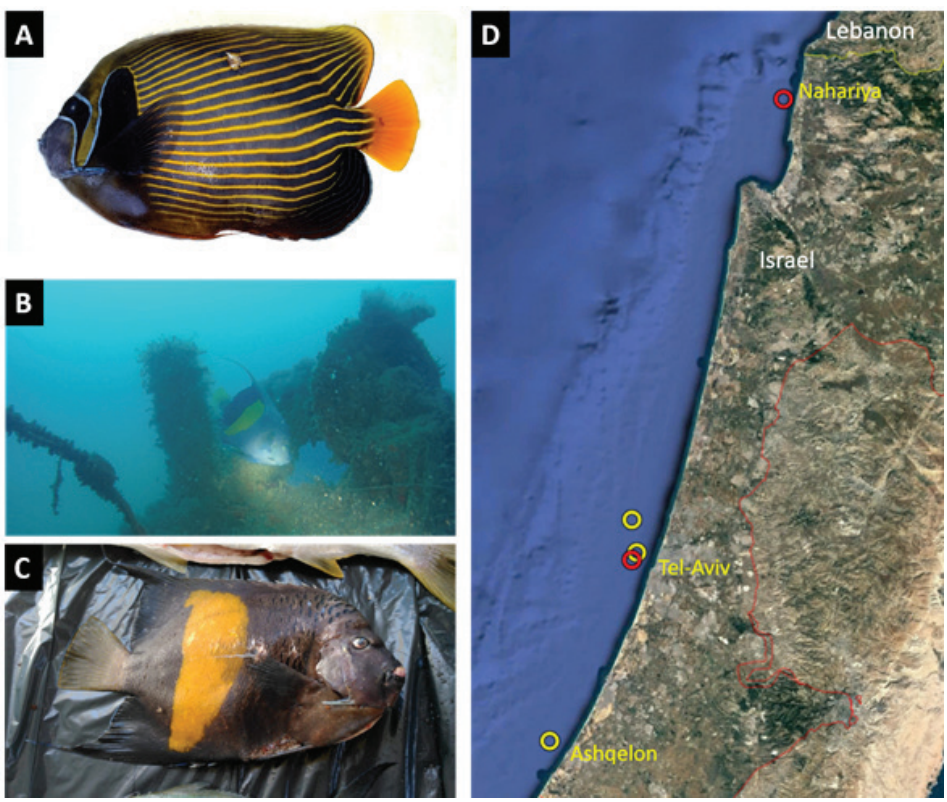

Fig. 14: (A) *P. imperator* captured off Nahariya; (B) *P. maculosus* at the "Electrodag" ship wreck off Tel Aviv, 45 m deep. Photographed by P. Frenkel (C) *P. maculosus* captured off Ashqelon. Photographed by T. Nissan (D); Records localities along the Israeli coastline of *P. maculosus* (yellow) and *P. imperator* (red).

Last, an unusual observation occurred on July 2017, 600 meters off the coast of Tel Aviv, 8 meters deep, where both *P. imperator* and *P. maculosus* were documented swimming together by a recreational spear-fisher Mr. Tomer Shani (Approx. location 32.07º N, 34.75º E). The video footage is available at: https://youtu.be/TzyTBbDtgKQ.

This work updates the status of both pomacanthid species along the Israeli coast, and confirms their establishment throughout the Israeli Levantine Basin (Fig. 14D). The genetic comparisons of the sampled *P. imperator* revealed its origin as Red Sea or Indian Ocean, thus support the hypothesis of introduction via the Suez Canal. Moreover, considering the restricted home range of angelfishes (Thresher, 1982), the current finding of *P. maculosus* 8.5 km off shore suggests a potential larval supply to deeper artificial or natural reefs, which was also shown in the invasive lionfish *Pterois miles* (Bennett, 1828)(Stern & Rothman, 2019). Last, the observation of both species swimming together may be explained by their similar behavioral traits and ecological requirements, so long as the chances to find a conspecific are still relatively low.

4.4 First and deepest record of the coralline goby *Odondebuenia balearica* from the Mediterranean coast of Israel

Nir STERN and Gil RILOV

The gobies (Gobiidae, Perciformes) are known as the most speciose family of fishes within the Mediterranean Sea**,** comprising 69 species (Consoli *et al.*, 2019), among which six are Indo-Pacific alien species (Rothman & Goren, 2015). However, our knowledge on their distribution is relatively insufficient, particularly within the cryptobenthic taxa that inhabit hard to reach microhabitats (Kovačić *et al.*, 2012; Consoli *et al.*, 2019). A recent study has stated 25 indigenous species of gobiids for the Israeli Mediterranean coast, most of which inhabit shallow bottoms (Stern *et al.*, 2018). This report documents the first sighting of yet another cryptobenthic gobiid, the coralline goby *Odondebuenia balearica* from the Israeli Mediterranean, indicating larger geographical and depth ranges for this species from what was previously known.

During a deep hard-bottom survey, conducted by the Israeli Oceanographical and Limnological Research institute (IOLR) on board R/V 'Bat Galim', a single individual of *O. balearica* was collected using a standard rock grabber. The sample was taken from a deep rocky reef at 103 m in the western edge of the 'Rosh Carmel' plateau of the northern coast of Israel (Fig. 15). The fish was then photographed in fresh condition before it was preserved in ethanol. In the lab, a muscle tissue was taken to extract its DNA and amplify the 'barcoding gene' *COI* mtDNA. The *COI* sequence was then uploaded to the online depository BOLD and granted the accession BIM569-19. Last, the specimen was deposited in the Steinhardt Museum of Natural History in Tel Aviv University under the voucher catalogue SMNHTAU P.15960. The species identification diagnosis, distinguishing it from its similar con-familiar *Vanneaugobius dollfusi*, has followed previous descriptions (Whitehead *et al.*, 1984; Consoli *et al.*, 2019).

Odondebuenia balearica (Pellegrin & Fage, 1907)
(Fig. 15)

Material examined

17.6 + 3.9 mm (Standard + caudal fin length), SMNHTAU P.15906, Rosh Carmel, Israel, depth 103 m (32°

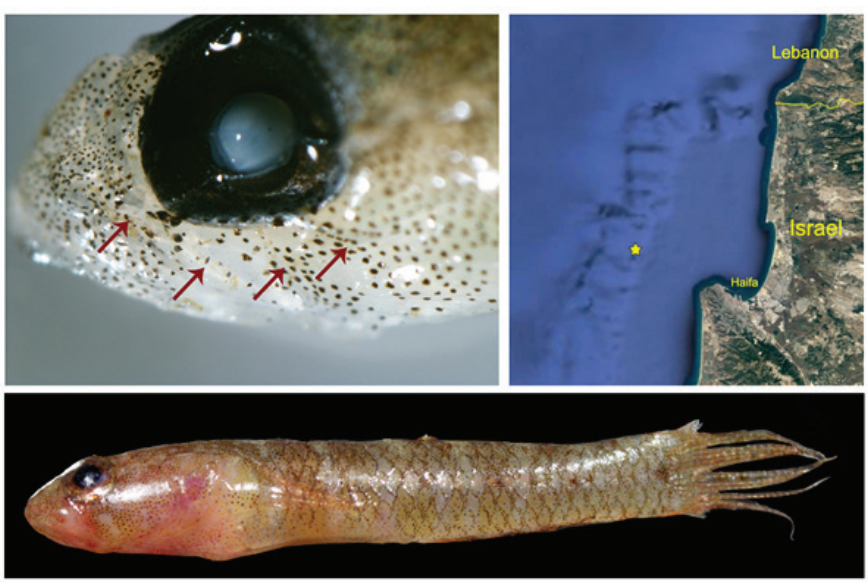

Fig. 15*:* Top right - exact site of *Odondebuenia balearica* in Israeli waters, indicated by yellow star; Top left - head close-up, after ethanol preservation, arrows indicate the suborbital transverse papillae; Bottom - whole fish, fresh condition.

52.61463N, 34° 51.70332E), 19.02.2019.

Diagnosis

(1) Elongated body with vivid red to pinkish coloration with dense brown pigmentations; (2) pelvic fins almost entirely separated; (3) first ray of first dorsal fin elongate; (4) enlarged lateral ctenii on caudal fin scales; (5) absence of dark blotch at the base of first dorsal fin; (6) four transverse suborbital rows of papillae in front of row *b*.

Genetic description

The only *COI* sequence available of *O. balearica* was taken from an individual sampled from the Levantine coast in Kaş, Turkey (NCBI accession KY176712 by B. Yokeş) and differed by 1.9% from this present specimen. This relatively large intra-specific divergence between proximate localities (i.e., both within the Levant Basin) coincide with the cryptobenthic characteristics of this species and its likely weak dispersal capabilities.

Remarks

This report extends our knowledge on the species' distribution, by documenting its easternmost occurrence, in the Israeli coast. Moreover, this is the deepest record for this species, now found at 103m deep, while the majority of previous Mediterranean individuals have been observed around 50m, with no report beyond 70m (Whitehead *et al.*, 1986). This finding may be related to previous debated hypothesis regarding deepening migration mechanism in order to avoid inadequate warm water temperatures among temperate Atlantic species at the Levantine Basin (Stern *et al.*, 2018). Last, this finding further demonstrates the need to deepen our knowledge on the diversity and biogeography of cryptobenthic species through further exploration within this elusive habitat.

4.5 First record of *Pelagia noctiluca* Forsskål, 1775 (Cnidaria, Scyphozoa) from the Lebanese waters in the eastern Mediterranean

Ali BADREDDINE and Ghazi BITAR

In this note, we present the first record of the jellyfish *Pelagia noctiluca* (Forsskål, 1775), commonly called as "mauve stinger jellyfish" from Lebanese waters.

In the Mediterranean Sea, two species of the family *Pelagiidae* (Gegenbaur, 1856) are recorded: *Mawia benovici* (Piraino, Aglieri, Scorrano & Boero, 2014) and *Pelagia noctiluca* (Forsskål, 1775). In particular, *Pelagia noctiluca* is distributed in the Atlantic and Indo - Pacific Oceans (Mariottini & Pane, 2010 and references therein). It was also reported in the whole Mediterranean Sea, including the Adriatic (Mariottini & Pane, 2010; Ghermandi *et al.*, 2014; Durgham *et al.*, 2016; Oztürk *et al.*, 2018 and references therein).

One specimen of *Pelagia noctiluca* was reported in the waters of the Palm Island Nature Reserve off Tripoli (34°29'28.38"N, 35°46'5.41"E), while around twelve individuals (Fig. 16) were reported by one of us (B.G), in Enfeh (34°20'57.68"N, 35°43'29.16"E).

From a morphological point of view, the mauve stinger *Pelagia noctiluca* from the Lebanese waters, is characterized by pink, mauve or light brown-colored, with a phosphorescent bell, whose edge is provided with lappets and tentacles (Mariottini & Pane, 2010; Oztürk *et al.*, 2018).

The presence of *P. noctiluca* in the Lebanese waters may be related to a ship-mediated transport. It can be also related to the bloom of the invader ctenophora *Mnemiopsis leidyi* (Agassiz, 1865) reported in this time period from many areas of the Lebanese coast. Recently, it has been demonstrated that *P. noctiluca* is an important predator of *M. leidyi* (Tilves *et al.*, 2013 and references therein).

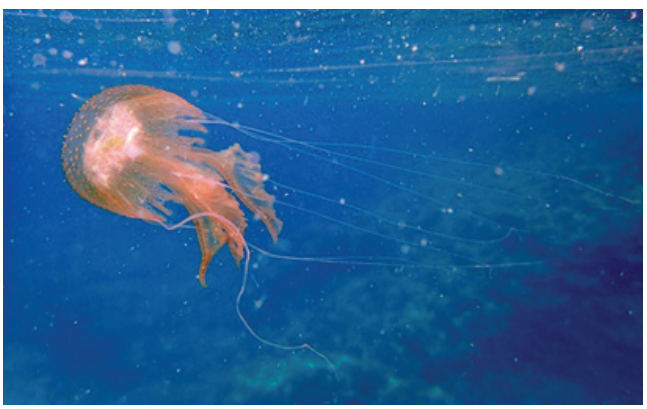

Fig. 16: *Pelagia noctiluca* observed in Enfeh, Lebanon (photo credit: Ghazi Bitar).

From a monitoring point of view, it is recommended to conduct a long term survey of the mauve stinger along the Lebanese coast to take some precaution as the awareness of bathers to the presence of this jellyfish and the potential risk of stings.

4.6 New record of *Nausithoe punctata* Kölliker, 1853 (Cnidaria) from the coast of Lattakia-Syria

Hani DURGHAM and Samar IKHTIYAR

There are estimated 50 species belonging to the crown jellyfishes order of Coronatae (Scyphozoa). One of these is the small sized *Nausithoe punctata* with a maximum bell diameter of 2 cm. This species was previously recorded in the Mediterranean Sea from the Adriatic Sea, the Egyptian waters off the coast of Alexandria and the Aegean Sea (Çinar *et al*., 2014).

During the past few years, several gelatinous species such as *Geryonia proboscidalis, Aequorea forskalea, Phyllorhiza punctata, Aequorea globosa, Cassiopea andromeda, Pelagia noctiluca, Marivagia stellata, Salpa maxima, Porpita porpita, Discomedusa lobata* have been recorded for the first time in Syrian coastal waters, most of them detected in the vicinity of Lattakia Port (Durgham & Ikhtiyar in Bilecenoglu *et al*., 2013, Durgham *et al*., 2016, Durgham & Ikhtiyar, 2019).

Seasonal samples were collected from May 2018 to March 2019 at a fixed station (35.581133°N; 35.697176° E) ~350-m deep; about 3km in front of Ras Ibn Hani. Zooplankton samples were collected with a closing 200-µm net, towed vertically at 300-200m, 200-100m and 100-0m depths. The samples were preserved with 4% buffered formalin diluted in seawater.

Three individual of *Nausithoe punctata* were collected from the depth 200-300m, on March 13th 2019. Sea water temperature and salinity at the sampling sites, at a depth of 250 meters, were 16°C and 37‰ respectively. The specimens were fixed in 4% formaldehyde, transported to the laboratory for further investigation, photographed and stored at the zooplankton laboratory, High Institute of Marine Research, Lattakia-Syria (Fig. 17).

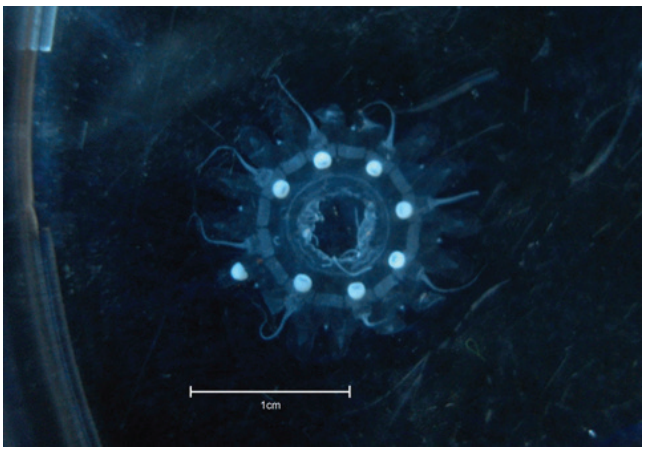

Fig. 17: Preserved specimen of *Nausithoe punctata* Kölliker, 1853.

Sponges known to host *Nausithoe punctata* are, among others, Cacospongia, Dysidea, Reniera, Suberites, Esperia, Myxilla, Spongelia (Jarms *et al*., 2002). One of these sponges "*Myxilla incrustans*" is common in the area of Ras-Ibn-Hani and adjacent areas.

The zooplankton species recently reported for the first time along the Syrian coast, were found in areas near the port of Lattakia, which may indicate the role of ballast water in the introduction of these species to the Syrian coast.

4.7 The appearance of Smallscale Codlet, *Bregmaceros nectabanus* Whitley, 1941 (Bregmacerotidae) in Syrian marine waters

Ranim M. OTHMAN and M. GALIYA

In the last years, the Mediterranean marine ecosystem has been subjected to major environmental changes, which in turn have affected fish biodiversity, for example in the Syrian marine waters such as the emergence of new species and the disappearance and reduction of others (Galiya, 2003). During a study on the diet composition of the Atlantic horse mackerel *Trachurus trachurus* in the Syrian marine waters, caught with purse seine nets at depths of 100 m from two stations (Burj Islam: 35.684436 ºN, 35.783768 ºE and Ras Albasit: 35.850647 ºN, 35.839896 ºE) from 16/8/2018 to 31/12/2018, a number of Smallscale codlets *Bregmaceros nectabanus* were found in their stomachs (Fig. 18).

The specimens were measured to the nearest mm and weighted to the nearest gram. Subsequently they were preserved in 4% formaldehyde and deposited at the Laboratory of Hydrobiology in the faculty of science of Tishreen University, Lattakia, Syria.

Their morphometric and meristic characteristics are shown in (Table 5). Our results correspond with those of

Fig. 18: *Bregmaceros nectabanus* specimens obtained from a *Trachurus trachurus* stomachs.

Table 5. Morphometric measurements carried out on 12 individuals *B. nectabanus* found in the stomach content of *Trachurus trachurus* caught in Syrian waters.

Morphometric measurements	Mean ± S.D (mm)	Median [range]
Total weight (g)	0.40 ± 0.22	0.36 [0.10 – 0.79]
Total length	38.42 ± 9.83	39 [19 - 53]
Standard length	34.17 ± 9.14	34.5 [15 - 48]
Maximum body height	5.5 ± 1.44	5.5 [3 - 8]
Head length	6.17 ± 1.94	5.5 [4 - 9]
Snout length	1.75 ± 0.64	2 [1 - 3]
Eye diameter	1.71 ± 0.57	1.75 [1 – 3]
Ventral fin length	17.17 ± 6.17	16.5 [9 - 28]

B. nectabanus reported from Iskenderun Bay (south Turkey) (Turan *et al.*, 2011, as *B. atlanticus)* and also with those of Whitehead *et al.* (1986).

Previously, Filiz *et al.* (2007) also reported specimens of *B. nectabanus* in the stomachs of *Trachurus trachurus* from the Kusadasi Bay, Aegean Sea, while Yilmaz *et al*. (2004) have reported two specimens of *B. nectabanus* in the stomach content of *Saurida lessepsianus* (reported as *S. undosquamis)* from Antalya Bay, Turkey.

This is the first occurrence of *B. nectabanus* from Syrian marine waters. Taking into account that this species is already recorded in other Mediterranean areas (Golani *et al.,* 2002), the absence of this species from the recent Syrian fish checklist (Ali, 2018) is believed to be a result of the difficulty in catching the individuals because of the diameters of the hole in the nets used for commercial fishing in Syria.

Acknowledgements

Badreddin A. and Bitar G. wish to thank Prof. Stefano Piraino for his help on the identification of the species. Also, we are grateful for Rachid Zock from the freedive center, Lebanon for sharing the information and photos of *P. noctiluca* reported from the Palm Island Nature Reserve, Tripoli; Tiralongo F. and Crocetta F. wish to thank Andrea and Fabio Marino (Avola, Italy) who kindly provided the *P. longicrura* specimens; Deidun A. and Zava B. are indebted to James Cassar for alerting them to the capture reported in their study; Dragičević B., Ugarković P. and Dulčić J. thank Mato Klimović for providing the photo and info on the specimen and Dino Džananović for checking the authenticity of the location where the photograph was taken. Their work has been in fully supported by Croatian Science Foundation under the project IP-2016-06-5251; Galil B.S. and Lubinevsky H. are indebted to N. Stern for help in collecting the material, and to G. Paz and Y. Levitt Barmats for transporting the specimens to the Steinhardt Museum of Natural History, Tel Aviv University; Othman R. and Galiya M. would like to thank Tishreen University, Lattakia who provided the financial and logistic supports to their work; Izquierdo-Muñoz, A. and Ramos-Esplá, A.A. are grateful to A.R.P. for the useful information and contacts, to the spearfishers for the given information and to an anonymous reviewer, whose suggestions improved the manuscript; Rothman S.B.S and Stern N. wish to thank Mr. Dekel Klein for capturing *P. imperator*, the technical divers Pavel Frenkel, Fluvia Varga and Udi Hakim, and the recreational fishers Tomer Shani and Tamir Nissan for their valuable documentations; Stern N. and Rilov G. thank the crew of IOLR's R/V 'Bat Galim', M. Schonwald and D. Golomb for their assistance on board, A. Morov for conducting molecular analyses, and M. Kovačić for assisting with the taxonomic guidelines of the species; Yapıcı S. and Türker A. would like to thank Bedri Sincar for providing the photo and Bella S. Galil for confirming their identification.

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