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Collective Article A

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New Mediterranean Biodiversity Records (March 2016)

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Abstract

In this Collective Article on "New Mediterranean Biodiversity Records", we present additional records of species found in the Mediterranean Sea. These records refer to eight different countries mainly throughout the northern part of the basin, and include 28 species, belonging to five Phyla. The findings per country include the following species: **Spain**: *Callinectes sapidus* and *Chelidonura fulvipunctata*; **Monaco**: *Aplysia dactylomela*; **Italy**: *Charybdis (Charybdis) feriata*, *Carcharodon carcharias, Seriola fasciata,* and *Siganus rivulatus*; **Malta**: *Pomacanthus asfur*; **Croatia**: *Lagocephalus sceleratus* and *Pomadasys incisus*; **Montenegro**: *Lagocephalus sceleratus*; **Greece**: *Amathia (Zoobotryon) verticillata, Atys macandrewii, Cerithium scabridum, Chama pacifica, Dendostrea* cf. *folium, Ergalatax junionae, Septifer cumingii, Syphonota geographica, Syrnola fasciata, Oxyurichthys petersi, Scarus ghobban, Scorpaena maderensis, Solea aegyptiaca* and *Upeneus pori*; **Turkey**: *Lobotes surinamensis, Ruvettus pretiosus* and *Ophiocten abyssicolum*. In the current article, the presence of *Taractes rubescens* (Jordan & Evermann, 1887) is recorded for the first time in the Mediterranean from **Italy.** The great contribution of citizen scientists in monitoring biodiversity records is reflected herein, as 10% of the authors are citizen scientists, and contributed 37.5% of the new findings.

Introduction

The importance of reporting new records of species, either for the first time in the Mediterranean or in different areas of the basin (distribution expansion range), has been widely acknowledged by the scientific community as a means for detecting and monitoring biodiversity changes, in a tropicalized sea. This is reflected by the increasing submission rate of communications in the Collective Article Series A of the Mediterranean Marine Science Journal, this article being the eleventh in five years, since the launch of the series.

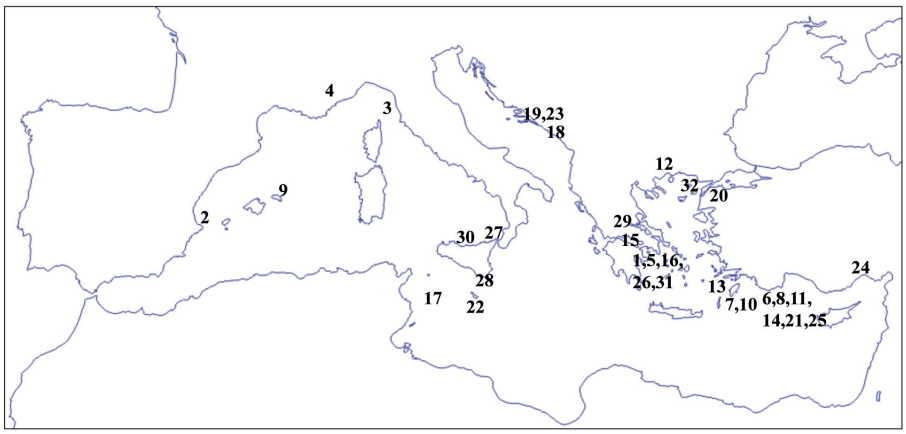

Fig. 1: Locations of records of new species in the Mediterranean Sea presented in "New Mediterranean Biodiversity Records (March -11 2016)". Numbers of locations are given in Table 1.

Table 1. List of species presented in "New Mediterranean Biodiversity Records (March 2016)", including sub-chapter (SC), locality of record and country. LN = location number (Fig. 1).

Taxon	SC	Location/Area	Country	LN
Phylum BRYOZOA Ehrenberg, 1831				
Amathia (Zoobotryon) verticillata	7.1	Aegina Island	Greece	1
Phylum ARTHROPODA von Siebold, 1848				
Callinectes sapidus	1.2	Guardamar del Segura, Pinedo	Spain	2
Charybdis (Charybdis) feriata	3.1	Livorno	Italy	3
Phylum MOLLUSCA Linnaeus, 1758				
Aplysia dactylomela	2.1	Monaco	Monaco	4
Atys macandrewii	7.3	Saronikos Gulf	Greece	5
Cerithium scabridum	7.4	Apella, Kastellorizo Island	Greece	6
Chama pacifica	7.3	Faliraki, Rodos Island	Greece	7
Chama pacifica	7.4	Kastellorizo Island	Greece	8
Chelidonura fulvipunctata	1.1	S'Algar, Menorca	Spain	9
Dendostrea cf. *folium*	7.3	Faliraki, Rodos Island	Greece	10
Dendostrea cf. *folium*	7.4	Kastellorizo Island	Greece	11
Ergalatax junionae	7.4	Kavala	Greece	12
Septifer cumingii	7.4	Chalki Island	Greece	13
Septifer cumingii	7.4	Kastellorizo Island	Greece	14
Syphonota geographica	7.2	Drepano, Korinthiakos Gulf	Greece	15
Syrnola fasciata	7.3	Saronikos Gulf	Greece	16
Phylum CHORDATA Haeckel, 1874				
Carcharodon carcharias	3.2	Lampedusa	Italy	17
Lagocephalus sceleratus	6.1	Rafailovići, near Budva	Montenegro	18
Lagocephalus sceleratus	6.1	Lapad Bay	Croatia	19
Lobotes surinamensis	8.2	Çanakkale Strait	Turkey	20
Oxyurichthys petersi	7.6	Kastellorizo Island	Greece	21
Pomacanthus asfur	4.1	SE coast	Malta	22
Pomadasys incisus	5.1	Pelješac peninsula	Croatia	23
Ruvettus pretiosus	8.3	Mersin Bay	Turkey	24
Scarus ghobban	7.6	Kastellorizo Island	Greece	25
Scorpaena maderensis	7.7	Saronikos Gulf	Greece	26
Seriola fasciata	3.3	Canale Faro	Italy	27
Siganus rivulatus	3.4	Donnalucata, Ragusa, Sicily	Italy	28
Solea aegyptiaca	7.7	Malliakos Gulf	Greece	29
Taractes rubescens	3.5	Southern Tyrrhenian Sea	Italy	30
Upeneus pori	7.5	Saronikos Gulf	Greece	31
Phylum ECHINODERMATA Bruguière, 1791 [ex Klein, 1734]				
Ophiocten abyssicolum	8.1	Gökçeada island	Turkey	32

In this, we present 32 new records of 28 species in the Mediterranean Sea (Table 1; Fig. 1), with the presence of *Taractes rubescens* (Jordan & Evermann, 1887) being recorded for the first time in the Mediterranean (sub-chapter 3.5). These species belong to five Phyla, namely Bryozoa (one species), Arthropoda (two species), Mollusca (10 species), Chordata (14 species) and Echinodermata (one species). The vast majority of the new records are reported from the East Mediterranean, and more specifically Greece (14 new records). The high number of records in this country resulted from those reported by citizen scientists (sub-chapters 7.3, 7.4 and 7.6) that their role in reporting new findings is gradually increasing. Indeed, out of the 40 co-authors of this Collective Article, three are citizen scientists, who contributed 12 additional records (10 Mollusca and 2 Chordata), accounting for 37.5% of the new records presented here. Apart from the contributors of this article, the overall interest of non-scientists in new findings is reflected in the acknowledgements of the authors of this article to people, and especially fishermen, for providing some of the specimens presented here. Hence, the role and contribution of citizen-scientists in biodiversity records is essential for the scientific community, and they should be further encouraged and engaged in reporting new findings, in close collaboration with experts.

1. SPAIN

1.1 First occurrence of the tropical Indo-West Pacific head-shield sea slug *Chelidonura fulvipunctata* in the Balearic Islands confirms its range extension into the western Mediterranean Sea

M.A.E. Malaquias, E. Madrenas and M. Ballesteros

The cephalaspidean gastropod Aglajidae sea slug species *Chelidonura fulvipunctata* was first described from Seto in Japan and is widespread across the tropical Indo-West Pacific. In the late 1950s, a single specimen was found for the first time in the eastern Mediterranean Sea, in Turkey, and, at the time, it was described as a new species named *C. mediterranea* (Swennen, 1961), later synonymized with *C. fulvipunctata*. For a long time, the Mediterranean record appeared to be an accidental observation until more than two decades later, when a second specimen was sighted in Israel (Mienis & Gat, 1987) and then three additional specimens in the Maltese islands (see Sammut & Perrone, 1998), while during the current decade, two specimens of this slug were reported in Cyprus (Tsiakkiros & Zenetos, 2011).

Over the years, *C. fulvipunctata* has spread across the eastern and central parts of the Mediterranean Sea, but it was only recently that a specimen was observed in its western part, along the coast of France (Horst, 2015).

This contribution aims to report a new occurrence in the Mediterranean Sea, representing the westernmost observation to date of *C. fulvipunctata* in this realm. A single specimen of approximately 10 mm (Fig. 2) was found on August 21st 2015 at 5 m deep and photographed *in situ* in the locality of S'Algar, Menorca Island, Balearic Islands (39.49772° N, 04.18183° E). The specimen was crawling on coarse sand with small pebbles, shell debris, and scattered patches of green algae probably of the species *Dasycladus vermicularis*.

This new observation confirms the presence of this tropical species in the western Mediterranean and supports the view that the species is expanding across the entire Mediterranean Sea, occurring from Israel to Menorca Island. However, more than half a century after being reported for the first time in the Mediterranean by Swennen (1961), the total number of specimens observed during this period is notably low (only 9), which raises questions about whether this species has in fact established viable populations and is reproducing in the Mediterranean Sea.

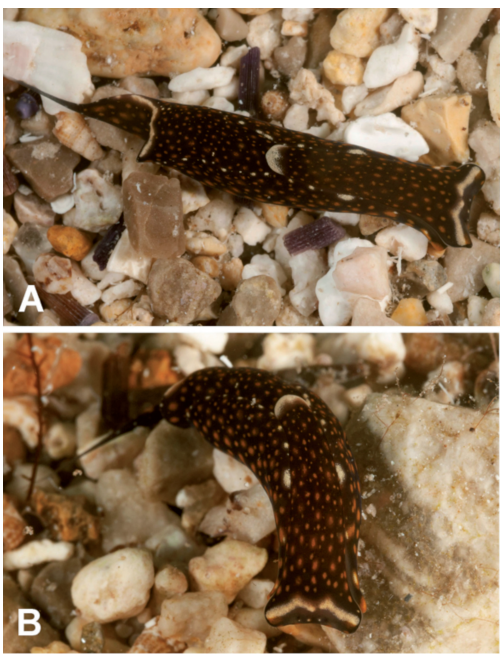

Fig. 2: Live specimen of *Chelidonura fulvipunctata* (length ca. 10 mm) crawling at 5 m deep. Menorca Island, Balearic Is, western Mediterranean Sea. A, dorsal view of whole animal. B, detail of head region.

1.2 Evidence on the establishment of the American blue crab, *Callinectes sapidus* (Rathburn 1896) in the Levantine coast of Spain (Western Mediterranean Sea)

D. Izquierdo-Gómez and A. Izquierdo-Muñoz

The natural range distribution of *Callinectes sapidus* Rathbun, 1986 (Decapoda: Portunidae), spans across the

Atlantic coast of America, from Nova Scotia to Northern Argentina (Williams, 1974). According to Galil *et al*. (2002 and references therein), the first record of the species in the Mediterranean Sea, is from Venice, northern Adriatic Sea, in 1949. However, the species did not disperse as widely as in the Eastern basin, and it is not until the early 2010s that the presence of the species was reported from the Iberian Peninsula (Castejón & Guerao, 2013), although, there is no evidence of a self-maintained population.

On the 2nd and the 15th of October 2015, for the first time in the specific region, four ovigerous females and one male specimens were captured by trammel netters at two different locations 150 km apart (Fig. 3), in Guardamar del Segura (38.110669° N, 0.643989° W; Alicante, Spain) and in Pinedo (39.410889° N, 0.333394° W; Valencia, Spain), both near fresh water outputs (Segura and Turia rivers). The carapace length (mean ± SE) of the female and male specimens (Fig. 4; A and B) measured 13.46 ± 0.49 cm (range: 13.01-13.98 cm) and 19.8 cm respectively. Additionally, a number of reports in local newspapers evidenced the extensive presence of the species in the region.

This is the first evidence of potential self-maintaining populations of *C. sapidus* in the western Mediterranean Sea, which have been already described in other areas of the Eastern Mediterranean (e.g. Dulčić *et al*., 2011). Additionally, other invasive species of either crustaceans or fishes, have recently been detected along the Levantine coast of Spain (*i.e. Percnon gibbesi*, *Fistularia commensonii* and *Lagocephalus sceleratus*), all being among the 100 "worst invasive" species in the Mediterranean (Streftaris & Zenetos, 2006).

To conclude, an extensive monitoring project in the Levantine area of Spain should be set up for early detection of potential establishment of populations of alien species to help the understanding and prevention of potential effects, especially those on local fisheries and protected Natura 2000 areas.

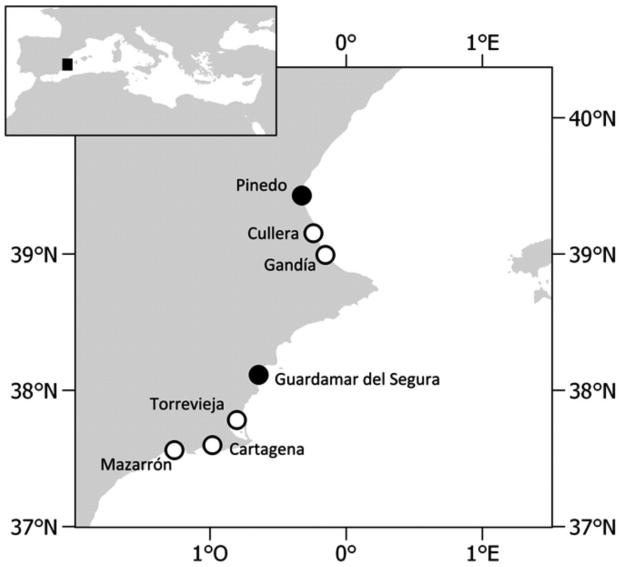

Fig. 3: Locations where *Callinectes sapidus* was captured across the Levantine coast of Spain in 2015. *Black marks*: capture locations of ovigerous females; *white marks*: capture locations that have been reported in local newspapers.

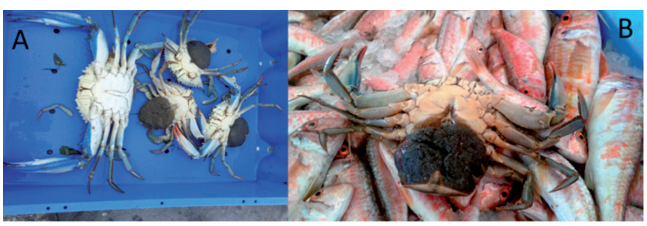

Fig. 4: Ovigerous females of *Callinectes sapidus* captured by local fishermen: A) Three ovigerous females captured together with a male on the October 2nd 2015 in Guardamar Del Segura (38.110669° N, 0.643989° W; Alicante, Spain). B) A single female captured in Pinedo (39.410889° N, 0.333394° W; Valencia, Spain) on the October 15th 2015.

2. MONACO

2.1 Occurrence of the tropical Atlantic sea hare *Aplysia dactylomela* (Mollusca: Opisthobranchia) in the Ligurian Sea (Monaco, NW Mediterranean)

J.G. Harmelin and J.M. Cottalorda

A single individual of the spotted sea hare *Aplysia dactylomela* Rang, 1828 was discovered during a diving survey at Monaco (Principality of Monaco, NW Mediterranean) on October 19th 2015 at 3m depth outside the Hercules harbour breakwater (43.73306° N, 7.42878° E). This individual was 20-22 cm long, beige to yellowish in colour with typical large black rings and mottling (Fig. 5). It was crawling on the upper side of an artificial block, which was covered with a thin multi-species red algal turf.

The taxonomic status and range of *A. dactylomela* were recently revised on the basis of molecular data (Valdés *et al*., 2013). It is now established that Indo-Pacific specimens ascribed to *A. dactylomela* belong to a sister species, *A. argus* (Rüppell & Leuckart, 1828) and that the actual range of *A. dactylomela* includes tropical to warm-temperate areas from both sides of the Atlantic, and also the recently colonized Mediterranean.

The first indication of colonization of the Mediterranean by *A. dactylomela* was provided by its record at Lampedusa Is. (Sicily Channel) in 2002 (Trainito, 2003), followed by numerous further records (references in Valdés *et al*., 2013). However, until 2012, these records concerned only the central and eastern Mediterranean and the east coast of the Adriatic, with a northward expansion into the southern Tyrrhenian Sea during the most recent period (2009-2012: distribution maps in Valdés *et al*., 2013).

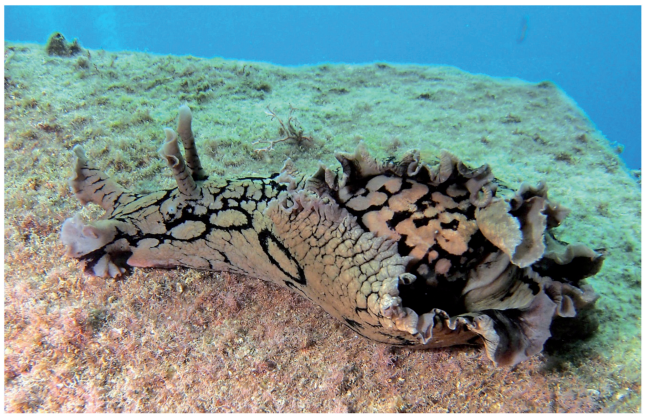

Fig. 5: *Aplysia dactylomela*, Monaco, 3 m, October 19th 2015. Photo by J.G. Harmelin.

This finding is the first record of *A. dactylomela* in the northern part of the western Mediterranean. The occurrence of the observed individual in this area is most likely the result of a natural larval supply and settlement. This raises certain issues: (i) Was this individual alone, or part of a local population? (ii) In the case of the presence of several individuals, was this 'population' potentially functional in terms of reproduction, or solely composed of scattered immigrants unable to meet for reproduction (pseudo-population)? (iii) In the case of successful reproduction and hatching, what are the chances of survival of larvae considering the east-west Ligurian-Provençal circulation pattern and the climatic conditions in potential settlement areas, colder than in southern Mediterranean areas? (iv)Where was the source population of the observed individual located?

As adults cannot move over long distances, the range expansion of *Aplysia* spp. is directly dependent on the dispersal of pelagic larvae, i.e. on the larval cycle duration and the circulation of water bodies. The life cycle of the planctotrophic veliger larvae of *Aplysia* before metamorphosis can well exceed one month, and can thus be transported over long distances by currents (Carefoot, 1987). Among recorded occurrences of *A. dactylomela*, the nearest to Monaco are those located in the southern Tyrrhenian Sea. This basin is subject to very active mesoscale circulation with gyres and the Tyrrhenian current flowing northward (Verrano *et al*., 2010). This current is a vector of seasonal supply of larvae produced by southern populations of thermophilic species (Astraldi *et al*., 1995). This scenario most probably applies to the case of the spotted sea hare found at Monaco. As stressed by Astraldi *et al*. (1995), warm-water species settled in the Ligurian Sea are subject to cold winter conditions and normally form sterile populations only (pseudo-populations), but the current climatic trend tends to allow these southern species to form self-reproducing populations. Thus, this conspicuous sea hare offers an interesting model for testing the combined effects of the colonization dynamics of a new thermophilic species and climate warming in a region where oceanographic circulation and zooplankton distribution are thoroughly studied, and where there are numerous underwater observers.

3. ITALY

3.1 First Italian record of *Charybdis* (*Charybdis*) *feriata* (Linnaeus, 1758)

F. Tiralongo

Charybdis (*Charybdis*) *feriata* (Linnaeus, 1758) is a native species of the Indo-West Pacific, from South and East Africa to China and Japan. In its natural distribution area, it is common on sandy and muddy bottoms but can also be found on rocky bottoms, between 5 and 80 m in depth. It is a high commercial value species caught by trawl nets, fixed nets and traps. On December 13th 2015, an adult specimen was caught near the harbour of Livorno, in the Ligurian Sea (43.57191° N, 10.29239° E). It was caught by trammel net at a depth of about 5 m, on muddy bottom. The specimen had a carapace width of about 9 cm. The typical colour pattern of this portunid crab was clearly visible on the carapace: dorsally the background colour was dark brownish with two lateral and irregular pale brownish-whitish bands and a central cross-shaped pattern of the same pale colour (Fig. 6). After the first Mediterranean record in Spain (Abello & Hispano, 2006), in December 2004, where a single adult female specimen of *C. feriata* was caught with gillnets off the coast of Barcelona, the current record is the second for the Mediterranean Sea and the first in Italian waters.

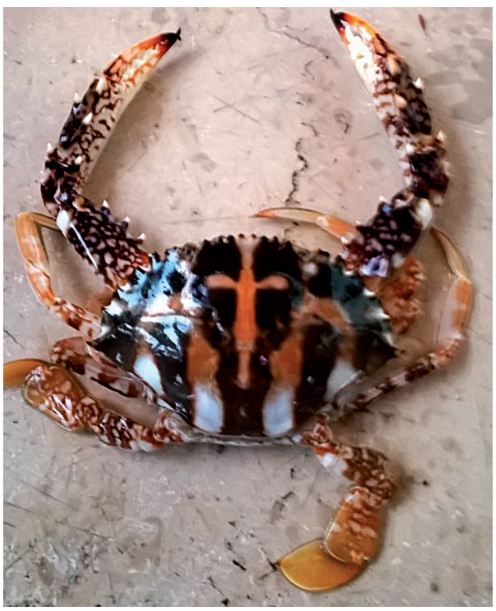

Fig. 6: Adult specimen of *Charybdis* (*Charybdis*) *feriata* from Livorno.

Considering the proximity between the area in which the species was recorded and the harbour of Livorno (one of the largest in Italy), the species was probably introduced by ballast water, as was assumed in the case of the other Indo-Pacific species of the genus recorded in Italian waters: *C.* (*Charybdis*) *lucifera* (Mizzan & Vianello, 2009; Froglia, 2010) (Adriatic Sea, first Mediterranean record). Furthermore, a juvenile specimen of *C. feriata* was found in the sediment of ballast water tanks of a ship docking in Germany (Gollasch, 2002). Although *C. feriata* actually seem to be rare in the Mediterranean Sea, we cannot exclude the possibility of a future spread in the Basin, as in the case of the invasive Atlantic species *Callinectes sapidus* (Stasolla & Innocenti, 2014).

3.2 New record of the great white shark *Carcharodon carcharias* from Lampedusa

P. Micarelli and E. Sperone

The great white shark *Carcharodon carcharias* (Linnaeus, 1758) is widely distributed throughout most oceans in temperate and subtropical regions, and it is relatively abundant in some areas such as Australia, California and South Africa (Sperone *et al*., 2010, 2012a). Records of this species in the Mediterranean are well documented. Regarding the Italian seas, a high frequency of records is reported, in particular along the coasts of Sicily, with 56 records from 1666 to 2009, but also along the coasts of Calabria, Tuscany and Sardinia (Micarelli *et al*., 2011; Sperone *et al*., 2012b). However, with the exception of the Medlem program, no specific research on white sharks in the Italian seas is actually carried out. This note reports a new record of the white shark from the Central Mediterranean Sea. On December 23rd 2015, the specimen was incidentally caught by a professional fishing boat using fishing nets deployed for bottom fishing, off Lampedusa Island (Sicily), 500 m from the coast. A colleague at the Shark Study Centre of Massa Marittima managed to collect some biometric data. The white shark measured approximately 200 cm in total length and

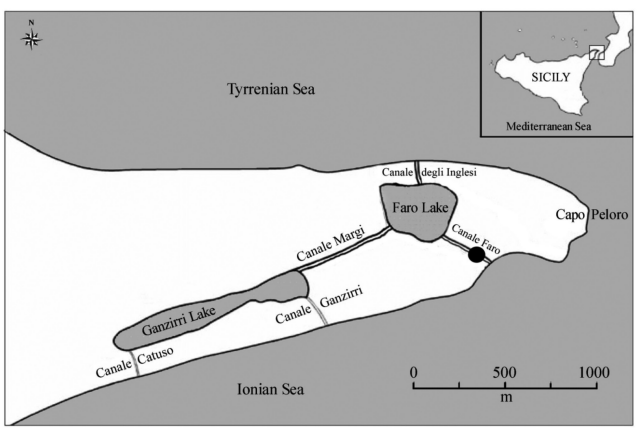

Fig. 8: SCI of Capo Peloro - Laghi di Ganzirri, the black dot indicates the record site.

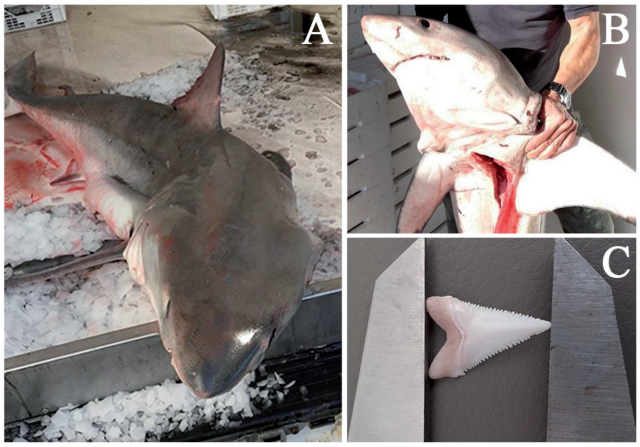

Fig. 7: Specimen of the young white shark in the cold room of the boat (A, B) and details of a tooth from the upper jaw (C).

weighed 35 kg. It was an immature female (Fig. 7A, B). The teeth of the upper jaw (Fig. 7C) were of typical juvenile shape, not being perfectly triangular, with lateral serrations; the crown was high (17 mm). The lower teeth presented lateral cuspids and no serrations. The specimen had been discarded by the fishermen, so it was not possible to preserve any tissues.

This new record confirms that the Central Mediterranean, and Sicilian coasts in particular, still represent a key area for the population of Mediterranean white sharks, but also for other shark species (Bilecenoglu *et al*., 2013); in fact, 43% of all white shark sightings in the Italian seas (Micarelli *et al*., 2011) are from this area. Moreover, the fact that the female was an immature specimen confirms previous observations showing that 90% of white shark sub-adults observed in the Italian seas originated from Sicily. These data support the hypothesis suggested by Fergusson (1996) that the waters around Sicily could represent a potential reproductive site for this species in the Mediterranean Sea.

3.3 First record of *Seriola fasciata* (Carangidae) in the SCI of Capo Peloro - Laghi di Ganzirri, Sicily

L. Castriota and A. Spinelli

The lesser amberjack *Seriola fasciata* (Bloch, 1793) is a subtropical Atlantic carangid, which has extended its natural geographical range by entering the Mediterranean Sea through the Strait of Gibraltar. Since its first record in 1989, in the Balearic Islands (Massutí & Stefanescu, 1993), *S. fasciata* has been reported from several different locations within the Mediterranean, both in the western and in the eastern Basin, mostly in its epipelagic juvenile stage.

On November 28th 2014, at 11:30 a.m., one specimen of *S. fasciata* was observed by the authors (A. Spinelli) during a SCUBA dive, under a wooden floating object in the Canale Faro (38.265333° N, 15.642626° E; Fig. 8), a

Fig. 9: Specimen of *Seriola fasciata* observed in Canale Faro (Sicily) on November 28th 2014.

420-m long open canal, which connects the coastal pond of Lake Faro to the waters of the Strait of Messina in a south-east direction, within the SCI of Capo Peloro - Laghi di Ganzirri (site code ITA030008). Lake Faro is also connected to the north with the Tyrrhenian Sea by another open canal, the Canale degli Inglesi (about 180 m long), and to the south-west with the Lake of Ganzirri by Canale Margi, about 900 m long. At the time of observation, the main physicochemical parameters measured using a multiparameter probe were: surface water temperature 18°C, salinity 38.21%, dissolved oxygen 1.98 ml/l, pH 7.41.

The observed specimen (Fig. 9) had an approximate total length of 13 cm; it was at a distance of about 100 m from the canal mouth, swimming towards the sea in the direction of the main current. The narrow supramaxilla, the typical well-defined colour pattern and the estimated length agree with the description of *S. fasciata* at the juvenile stage (Fischer *et al*., 1981). Around Sicily, *S. fasciata* at this stage has been reported previously in the period from October to December beneath fish aggregating devices (FADs), which are placed offshore by fishermen, usually in August, for the dolphinfish *Coryphaena hippurus* fishery (Andaloro *et al*., 2005, 2007). The lesser amberjack has been reported previously from both the Ionian and the southern Tyrrhenian waters (see distribution map in Andaloro *et al*., 2005), as well as in the Strait of Messina (Cavallaro & Navarra, 1999), which connects the two water bodies, but never in the coastal lakes of Faro and Ganzirri or in their canals. Although Lake Faro and its canals are monitored at least twice a month since June 2011, during this period, *S. fasciata* has only been observed once (present record); thus, the observed specimen can be considered as a stray in this area.

3.4 First record of the Marbled spinefoot *Siganus rivulatus* Forsskål & Niebuhr, 1775 (Osteichthyes, Siganidae) in Italy

G. Insacco and B. Zava

The native distribution of the Marbled spinefoot *Siganus rivulatus* Forsskål & Niebuhr, 1775 ranges from South Africa to the Red Sea, including Madagascar, the Comoros and the Seychelles. It also recently entered the Mediterranean via the Suez Canal and spread northward and westward. After its first report in 1924, off Israel, *S. rivulatus* gradually colonized the Levantine Basin up to the Aegean Sea and then the central Mediterranean, from where it was first reported from Libya in 1970 and then from Tunisia in 1974 (Golani *et al.*, 2002). In 2004, it colonized the southern Adriatic (Dulčić & Pallaoro, 2004). This species has also been reported from Malta but, recently, Schembri *et al*. (2012) suggested that "*Siganus rivulatus* has never been recorded from the Maltese Islands".

This note actually documents the first record of *Siganus rivulatus* in Italy. On October 27th 2015, a specimen of *S. rivulatus* was caught, at night, by a local professional fisherman, using a traditional trammel net (called "impardata" by Sicilian fishermen) in the waters off Donnalucata (Ragusa, Sicily, Italy: approximate coordinates 36.452250° N, 14.38405° E; Fig. 10A), on a rocky and *Posidonia oceanica* meadow bottom, at about 15-18 m depth. The specimen was caught together with the following species: *Mullus barbatus*, *Lithognathus mormyrus*, *Diplodus annularis*, *Seriola dumerili*, and *Sepia officinalis*. The fisherman reported that during fishing operations he was severely injured by the fish spine. It

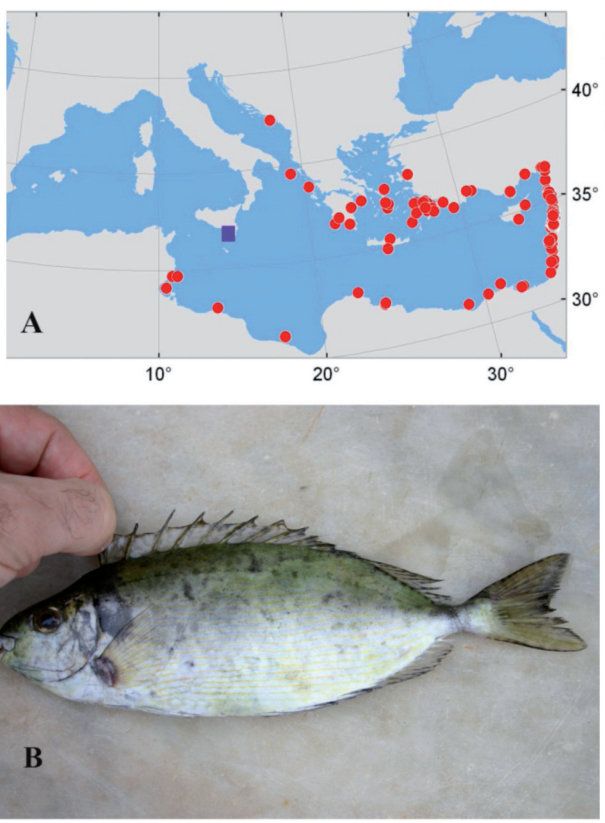

Fig. 10: **A.** Records of *Siganus rivulatus* in the Mediterranean Sea (red circles = literature data; blue square = present work - modified from Ispra ambiente); **B.** *Siganus rivulatus* specimen from off Donnalucata (Ragusa, Italy) MSNC 4511.

is known that all the spines are slightly venomous, and stinging is very painful but not lethal. The fresh specimen (Fig. 10B) was measured, weighed, photographed and identified according to Golani *et al*. (2006). Morphometric data and measurements are (in mm): Total length 208.0; Standard length 197.0; Fork length 163.8; Body depth 61.2; Predorsal length 40.1; Preanal length 86.9; Prepectoral length 38.6; Prepelvic length 49.4; Caudal fin height 44.0; Dorsal fin base length 118.8; Anal fin base length 74.1; Pectoral fin base length 11.9; Pectoral fin length 27.2; Pelvic fin base 14.2; Pelvic fin length 22.3; Head length 38.9; Preorbital length 11.2; Eye diameter 9.7; Interorbital width 19.5; Total weight (gr) 121. Meristic data are: fin rays: dorsal XIII, 10; pectoral 15; pelvic I, 3, I; anal VII, 9. The fresh specimen displayed the following colours: upper half of body grey-olive green to brown on the back; some dark spots on the flanks; light-gray to white on the belly. Many faded yellow-gold stripes on the lower half of the body, below the lateral line. The specimen was prepared and stored in the fish collection of Museo di Storia Naturale di Comiso (Province of Ragusa), MSNC 4511.

3.5 A new arrival of a circumtropical species in the Mediterranean: the Keeltail pomfret *Taractes rubescens* (Jordan & Evermann, 1887) (Pisces: Bramidae)

F. Fiorentino, D. Massi and B. Zava

Taractes rubescens (Jordan & Evermann, 1887) (Pisces, Bramidae) is an uncommon and cosmopolitan mesopelagic species living in tropical offshore waters of the Atlantic, Indian and Pacific Oceans (Froese & Pauly, 2015). This note reports on the first record of the species in the Mediterranean Sea.

Our specimen was caught on September 22nd 2014 in the Southern Tyrrhenian Sea (Central Mediterranean), off the northern coast of Sicily (38.1250° N, 13.7375° E) between 435 and 460 m depth by mid-water long line targeting the Atlantic pomfret, *Brama brama*, a species belonging to the same family. The measurements were recorded to the nearest 1 mm. In accordance with Thompson & Russel (1996), all measurements were expressed as a percentage of standard length (SL). Total weight was recorded to the nearest 50 g. Meristics, gonadic states and stomach contents were logged. *Taractes rubescens* was photographed and stored in the collection of the Museo Civico di Storia Naturale of Comiso (Ragusa), Sicily (MSNC 4512).

The individual examined was a female of 77.2 cm total length (TL) and 8.150 g in weight. The morphological characteristics for diagnosis were in agreement with the literature (Carvalho-Filho *et al.*, 2009 and references therein). The colour of the specimen was almost black to dark brown on the dorsal side with a silvery sheen, and silver on the sides and the belly. The branchyostegal membranes were pinkish. The pectoral and pelvic fins displayed the same dark colour of the body with a silvery sheen. The dorsal and anal fins appeared blackish in the anterior part and silvery in the posterior part. The caudal fin was silvery in the anterior part, followed by a blackish portion and a posterior white margin less discernible on the upper lobe (Fig. 11). The ovary appeared asymmetric with the left lobe being smaller than the right one; it was yellowish with a granular appearance. Small eggs were visible to the naked eye through the ovaric tunica, although they were not translucent yet. An evident web of blood vessels covered the gonad. All these characteristics allowed attributing the individual to a maturing stage. The stomach was empty. The main meristics and measurements of the specimen are summarised in Table 2.

Due to its rarity, information on this species is scarce. Data from the literature concerns fish caught as by-catch by pelagic long lines mainly targeting tuna and swordfish or hand lines for Alfonsinos (Thompson & Russel, 1996; Carvalho-Filho *et al*., 2009; Jawad *et al.*, 2014). *Taractes rubescens* adults are uncommon and solitary, living from the surface to about 600 m depth (Froese & Pauly, 2015). According to Froese & Pauly (2015), reproduction and the larvae of *T. rubescens* are unknown. The meristics and biometry of the Mediterranean specimen overall agreed

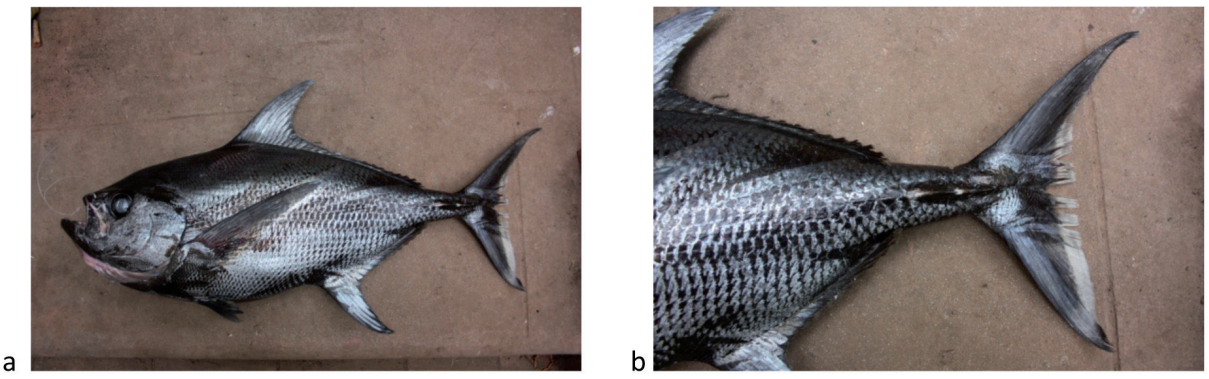

Fig. 11: a) *Taractes rubescens,* whole specimen. b) *Taractes rubescens,* caudal peduncle keel MSNC 4512.

with those of oceanic individuals, with the exception of the predorsal length, and the length and height of the dorsal and anal fins. Comparing the Mediterranean specimen with individuals of the same length range (61.7-65.0 cm SL (Thompson & Russel, 1996)) from the Gulf of Mexico, the height of the dorsal and anal fins was shorter in the Mediterranean specimen. Furthermore, the length at the base of the dorsal and anal fins was greater than that of the Indian Ocean specimens (Jawad *et al*., 2014 and reference therein). Our finding extends the distribution of this "circumtropical" fish to the Mediterranean, increasing the number of "warm" species in this sea. The warming phase of the Mediterranean Sea, whose temperature has been increasing since the early 1980s, has been shown to be coupled with an increasing occurrence of "warm" species coming from both the tropical Eastern Atlantic and the Red Sea and, thus, contributing to a change in the biodiversity of the Mediterranean Sea from "temperate" to "tropical" (Bianchi *et al*., 2012). New findings of the species will clarify whether we recorded the beginning of colonization by a non-native species in the Mediterranean, or rather a vagrant adult individual or a specimen developed from an egg or larva transported through the Atlantic inflow currents of the Strait of Gibraltar into the Mediterranean.

Table 2. Main meristics and biometry of *Taractes rubescens*.

Scales in lateral line	48[1]	Head length[2]	31.3	Anal base length[2]	29.4
Rays in dorsal fin	30	Pre-orbital length[2]	9.3	Pectoral fin length[2]	35.9
Rays in anal fin	20	Eye diameter[2]	6.3	Ventral fin length[2]	12.7
Rays in pectoral fin	19	Pre-pectoral length[2]	31.5	Maximum body depth[2]	39.2
Rays in ventral fin	7	Pre-dorsal length[2]	34.0	Minimum body depth[2]	6.2
Total length (cm)	77.2	Pre-anal length[2]	63.6	Height dorsal fin[2]	20.3
Fork length (cm)	68.1	Dorsal base length[2]	50.2	Height anal fin[2]	16.6
Standard length (cm)	63.2				

[1]excluding the scutes of the caudal peduncle
[2]expressed as a percentage of standard length

4. MALTA

4.1 Yet another first for Malta… first record of the Arabian angelfish *Pomacanthus asfur* (Forsskal, 1775) from the Mediterranean

A. Deidun and C. Bonnici

The influx of non-indigenous fish species of tropical affinity into the the Mediterranean is unremitting and has escalated since the year 2000 (Arndt & Schembri, 2015), mainly due to the warming of the Basin and due to successive enlargement phases of the Suez Canal.

The native range of the Arabian angelfish *Pomacanthus asfur* extends along most of the western Indian Ocean, from the Red Sea to the Gulf of Aden and south to Zanzibar (Randall, 1983). Adults reach a maximum total length of 40 cm, preferring crevices and caves in shallow (depth range of 3 to 15 m) coral-protected reefs (Allen *et al*., 1998).

On September 20th 2015, a single individual of *Pomacanthus asfur* was harpooned by one of us (Clint Bonnici) from a depth of 15m, at a location off the south-eastern coast of the island of Malta in the Central Mediterranean (35.820297° N, 14.562753° E), as shown in figure 12. The same individual was subsequently re-photographed once out of the water (Fig. 12) and weighed (700 g). Unlike other members of the family Pomacanthidae, including *Pomacanthus imperator* and *P. maculosus*, which have been recorded several times from the coasts of Israel and Lebanon, this record from Maltese coastal waters marks the first Mediterranean record for this species.

The livery exhibited by the caught individual is consistent with the diagnostic one cited for adult *P. asfur* individuals, consisting of a solidly-yellow caudal fin and a broad, yellow crescent-shaped band running vertically along the middle part of the body (Allen *et al*., 1998). Unfortunately, the caught individual was not properly preserved at an early stage and had to be discarded, before further meristic and morphometric measurements were taken.

The species is highly valued within the aquarium trade. In order of importance, as regards an introduction pathway for non-indigenous marine species into the Mediterranean, the aquarium trade is ranked third, after shipping corridors and shipping (fouling, ballast water) (Zenetos *et al*., 2012).

Since *P. asfur* was found off the Maltese Islands, which are distant from the two entry points of the Mediterranean, coupled with the large size of the species (making its introduction through the ballast pathway unlikely) and considering the popularity of the species with the saltwater aquarium

Fig. 12: left: The *Pomacanthus asfur* individual soon after being harpooned in Maltese coastal waters, September 2015. Photo: Clint Bonnici. Right: another aspect of the *P. asfur* individual caught in Maltese coastal waters.

trade, it is most probable that the caught specimen is in fact an aquarium release. This (aquarium trade) putative mode of introduction has already been implicated in the arrival of new fish species in Maltese waters (e.g. *Scatophagus argus*: Zammit & Schembri, 2011) or other parts of the Mediterranean (e.g. *Platax teira*: Bilecenoglu & Kaya, 2006).

The high range-expansion potential of *P. asfur* is supported by its occurrence in reefs off the coast of Florida, along the western Atlantic (Semmens *et al*., 2004), where its introduction was once again attributed to the aquarium trade, thus suggesting that this is not the last time that the species will be encountered in the Mediterranean.

5. CROATIA

5.1 First record of the bastard grunt, *Pomadasys incisus* (Bowdich, 1825) (Haemulidae), for the Adriatic Sea

Ž. Đođo and J. Dulčić

The bastard grunt, *Pomadasys incisus* (Bowdich, 1825), is a native species of the eastern Atlantic and Mediterranean Sea. This subtropical species naturally entered the Mediterranean Sea through the Strait of Gibraltar in the first half of the nineteenth century. It is currently colonizing the entire Mediterranean coastline, with the exception of the Adriatic Sea (Bodilis *et al*., 2013). It is a small to medium-sized fish (usually not exceeding 30 cm - total length), characterized by quick growth in the first year of life (Tiralongo & Tibullo, 2013). It inhabits marine and brackish waters, usually near sandy or muddy substrate, at depths ranging from 10 to 100 m but often not far from 50 m (Kapiris *et al*., 2008).

One specimen of the bastard grunt (Fig. 13) (total length=14.3 cm, weight =39 g) was caught with a gillnet in the shallow coastal waters (at around 10 m depth) of Pelješac peninsula (southern Adriatic) by fishermen, near Žuljana (42.868831° N, 17.422723° E) on August 15th 2015. This record represents the first record of this species for the Adriatic Sea. Specimen: total length 14.3 cm, standard length 11.9 cm, head length 3.8 cm, preanal length 7.5 cm, dorsal fin length 6.1 cm; D: XII+16, A: III+13. *Pomadasys incisus* is easily distinguishable from *P. stridens* (present in the Mediterranean Sea) by the soft rays of the dorsal and anal fins, 16 in *P. incisus* versus 13-14 in *P. stridens* and 11-13 in *P. incisus* versus 8-10 in *P. stridens*. It was caught with sparids (*Diplodus* spp). Unfortunately, the specimen was misplaced during transportation to the fish market so it was not possible to obtain a specimen for the ichthyological collection of the Institute of Oceanography and Fisheries in Split.

Fig. 13: Specimen of *Pomadasys incisus* caught on August 15th 2015 near Žuljana (Pelješac peninsula, southern Adriatic Sea) (TL=14.3 cm). Photo by Dragan Lopin.

The ecological role of the bastard grunt in the ecosystem is important, since it can be considered as an indicator of changing marine conditions towards 'tropicalisation'. Villegas-Hernandez *et al*. (2015) showed that the plasticity of two key life-history traits of the bastard grunt in relation to different sea water temperature regimes may contribute to the successful establishment of this thermophilic species in new, colder habitats, in a climate change scenario. The current distribution of this species in the Mediterranean Sea and the recent records from the French Mediterranean coast may involve two non-exclusive phenomena: a recent warming of the western Mediterranean waters and a greater inflow of waters from the Atlantic through the Straits of Gibraltar (Bodilis *et al*., 2013). Accordingly, this record in the Adriatic Sea could also be related to a 'tropicalisation' process and the effect of the BiOS (Bimodal Oscillating System, the North Ionian Gyre (NIG) changes its circulation sense on a decadal scale due to the Bimodal Oscillating System, i.e. the feedback mechanism between the Adriatic and the Ionian) and oceanographic changes in the Adriatic Sea (Civitarese *et al*., 2010). The presence of non-indigenous organisms from the Atlantic/Western Mediterranean and Eastern Mediterranean/temperate zone in the Adriatic is concurrent with the anticyclonic and cyclonic circulation of the NIG, respectively (Civitarese *et al*., 2010). This can also be supported by the presence of the bastard grunt in the Ionian Sea (Tiralongo & Tibullo, 2013).

There is no doubt that fish biodiversity in the Adriatic Sea is changing but to what extent non-indigenous species will affect its ecological balance remains to be seen and continuous monitoring is essential.

6. MONTENEGRO & CROATIA

6.1 New additional records of the Lessepsian invader *Lagocephalus sceleratus* (Gmelin, 1758) (Tetraodontidae) in the Adriatic Sea

A. Joksimović and J. Dulčić

The silver-cheeked toadfish *Lagocephalus sceleratus* (Gmelin, 1789) is considered one of the "worst" biological invaders of the Mediterranean Sea (Streftaris & Zenetos, 2006), a pest for fisheries and a threat for native biodiversity and human health (Kalogirou, 2013). It is a Lessepsian migrant fish that has entered the Mediterranean via the Suez Canal from the Red Sea but is native to the Indo-West Pacific Ocean. Soon afterwards, it established abundant populations along the coasts of many countries of the Eastern Mediterranean (Kalogirou, 2013 and references therein), whilst still rapidly expanding westwards (Deidun *et al*., 2015 and references therein). The first sighting in the Adriatic Sea was recorded on October 17th 2012; a specimen (♀) measuring 66.3 cm total length, on the northern side of Jakljan Island (Southern Adriatic) (Sulić-Šprem *et al.*, 2014). Two additional sightings were observed on March 17th 2013 near Tribunj (middle eastern Adriatic), a specimen of 49.2 cm total length (Dulčić *et al*., 2014) and on April 8th 2014 near Vodice (middle eastern Adriatic), a specimen of 53.0 cm total length (Dulčić & Dragičević, 2014).

Two new additional records of *L. sceleratus* are from Lapad Bay near Dubrovnik (Croatian coast) (around 42.657852° N 18.082675° E, May 5th 2015) and near Rafailovići, in proximity to Budva (Montenegrin coast) (around 42.276104° N 18.880580° E, July 20th 2015). This record near Rafailovići represents the first record of this species for the Montenegrin coast. Two specimens of approximately the same length were also observed by visual census near Rafailovići while lifting fishing nets.

The first specimen from Lapad Bay (Total length (TL)=48.2 cm, Weight (W)= 1169 g) was captured from a depth of *ca* 1-4 m with a hand-line, while the second one from Budva (♂, TL=47.8 cm, W=1057 g) (Fig. 14) from a depth of 5 m with a trammel net. The second specimen was stored in the Ichthyological collection of the Institute of Marine Biology in Kotor.

Our observation provides further evidence of the occurrence of *L. sceleratus* in the Adriatic Sea (along the eastern coast) and these records increase the number of recorded specimens to five (TL range: 47.8-66.3 cm). Although there is no strong evidence of a permanent population in the study area, the captures described here are an indication of a current expansion of the distribution of the silver-cheeked toadfish in the Adriatic Sea in recent years. This species has probably extended its distribution from populations established in the Ionian Sea. This expansion strengthens the case for a greater monitoring effort, targeting non-indigenous marine species in the same geographical area.

Fig. 14: The specimen of *Lagocephalus sceleratus* caught near Rafailovići (Budva), Montenegro (July 20th 2015).

7. GREECE

7.1 A new locality for *Amathia (Zoobotryon) verticillata* (Delle Chiaje, 1822) from Aegina Island, Saronikos Gulf, Greece

D. Minchin

Several colonies of the spaghetti bryozoan, measuring up to ~25cm, *Amathia verticillata* were found attached to the quay wall, and close to the water surface, adjacent to where fishing vessels berth in the Port of Aegina (37.74611° N, 23.42750° E). Colonies, seen on October 6th 2015, were confined to one part of the port. Larger colonies were found attached to mooring ropes and boat hulls, extending up to ~50cm (Fig. 15). This species is now considered to be a pseudo-indigenous species, a non-indigenous species having been considered to be a native species, according to Ferrario *et al.* (2014). The species continues to expand within the Mediterranean Sea and Macaronesia (Marchini *et al.,* 2015). There are five previous records from Hellenic waters; these are from Piraeus, ~30km to the NE, in 1969 and 1978. More distant records in Greece are from Chalkis, 85km to the NNE and from Korinthiakos and Patraikos gulfs and Rodos >400km to the east. All these records (Castritsi-Catharios & Ganias, 1989) were reported more than thirty years ago. In 2014, *A. verticillata* was discovered while snorkelling close to a marina in Rodos. This is the only other recent record from the Aegean Sea (Corsini-Foka *et al.,* 2015).

Fig. 15: A colony of *Amathia verticillata* attached to the hull of a fishing vessel, Aegina Port.

This species can be frequent in sheltered harbours, often appearing on floating marina pontoons (Marchini *et al.,* 2015). Its frequent occurrence on the hulls of small craft implicates hull transmission as a likely spreading mode. Other localities for this species are likely to be reported in the future.

The species has undergone a recent nomenclature revision of ctenostome bryozoans and the genus of *Zoobotryon* is now considered to be a junior synonym of *Amathia*. Currently, the name *A. verticillata* (Delle Chiaje, 1822) is used (Waeschenbach *et al.,* 2015).

Material has been supplied to the University of Pavia.

7.2 *Syphonota geographica* (A. Adams & Reeve, 1850) spreading in Greece

D. Poursanidis and F. Crocetta

The sea slug *Syphonota geographica* (A. Adams & Reeve, 1850) is a conspicuous sea slug species that has entered the Mediterranean basin in the last two decades, and was found for the first time in Italy in 1999 (Crocetta, 2012), in Turkey in 2002 (incorrectly reported in 1999 in Cinar *et al.*, 2011: Bilal Öztürk, personal communication), in Greece in 2002 (Mollo *et al.*, 2008) and in Lebanon in 2003 (Crocetta *et al.*, 2013). So far, the species is only known by a few Mediterranean records due to objective difficulties in its identification. It is thus speculated that its actual distribution is partially overlooked, in agreement with several past misidentification in the Mediterranean Sea. In Greece, the species is known from the Porto Germeno coasts (Korinthiakos Gulf), where eight individuals were reported by Mollo *et al*. (2008). We hereby first report its further spreading in Greece based on two sightings by recreational divers and confirm its establishment in the country. One specimen was found by Giorgos Karelas in May 2013 in Drepano, Achaia (Korinthiakos Gulf) (~38.3402967° N, 21.8525472° E), whilst a second specimen was observed in Kolymbari (Chania, Kriti) (~35.555184° N, 23.784677° E) in June 2014 by the team of the Oceanis Diving Centre (Fig. 16). Both specimens were found on a muddy bottom at ~15 m of depth. The key role of citizen scientists in reporting newly introduced species or further spreading of species already known from the Mediterranean is again confirmed as an invaluable parallel source of information.

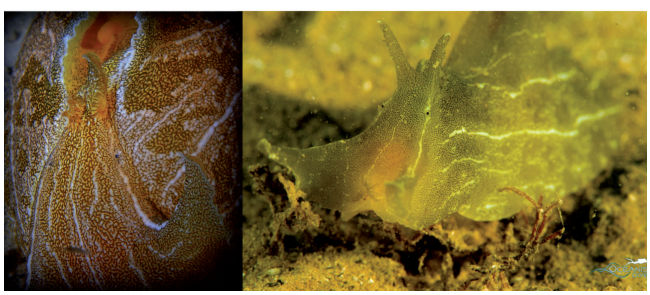

Fig. 16: *Syphonota geographica* from Drepano, Achaia (left) and Kolymbari (right).

7.3 Contribution to the alien molluscs in Greek Seas

P. Ovalis and A. Zenetos

Information on marine alien species in Greece, which is archived in ELNAIS (Zenetos *et al*., 2015) is based on the literature, including input from citizen scientists (Zenetos *et al*., 2013). Due to the fact that most marine studies focus on coastal areas and in particular soft substrata, the diversity of the hard substrata is under-reported. In this work, the presence of four molluscan species is presented. The data originates from personal collections, during diving in two of the most vulnerable areas as regards bioinvasion in Greece, i.e. the Rodos island (Dodecanese) and the Saronikos Gulf (Zenetos *et al*., 2011).

Chama pacifica Broderip, 1835 was first recorded from Fokia Bay (Karpathos Island, Dodecanese) in 2011 (Crocetta & Russo, 2013). Here, its presence in Greece is backdated to 2005 on the basis of five specimens collected alive in May 2005 from Faliraki (Rodos Island, Dodecanese) [36.340072° N, 28.207767° E] (Fig. 17). The specimens were found attached on stones at 6-8 m. depth.

Dendostrea cf. *folium* (Linnaeus, 1758) was first reported from Vai Bay (Astypalaia Island, Dodecanese) in 2010 (Zenetos *et al*., 2011). Here, its presence in Greece is backdated to 2005, as it was found in the aforementioned location, as a cluster with *Chama pacifica* (Fig. 17).

Syrnola fasciata Jickeli, 1882 was first reported from Kalymnos Island (Dodecanese) in 2012 (Perna, 2013). Here, its presence in Greece is documented on the basis of both live specimens and empty shells found in Saronikos Gulf. Three specimens were collected alive and another five as empty shells in September 2012, from a biogenic substrate at Psili Ammos (Salamina, Saronikos Gulf; 37.980637° N, 23.466510° E) (Fig. 18). A further six shells were collected in July 2013 during diving at 6-8 m depth, biogenic substrate at Lagonisi (Saronikos Gulf; 37.776263° N, 23.896616° E).

Atys macandrewii E. A. Smith, 1872 was first reported from Lambi (Kos Island, Dodecanese) in 2009 (Perna, 2013). Here, its presence in Greece is documented on the basis of its presence in a biogenic substrate from Anavyssos (Saronikos Gulf; 37.722909° N, 23.94212° E) (Fig. 19) in September 2012. So far, no living specimens are known from Greece.

Conclusively, the current work backdates the first sighting/collection dates in Greece for two of the most invasive molluscan species in the Levantine basin, namely *Chama pacifica* and *Dendostrea* cf. *folium*. In addition, it reports on the presence in Saronikos Gulf of another two species (*Syrnola fasciata* and *Atys macandrewii*) previously known from the Dodecanese area.

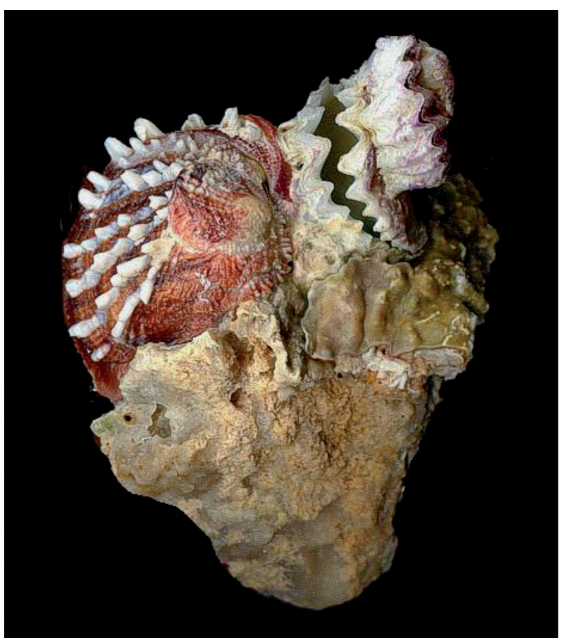

Fig. 17: *Chama pacifica* and *Dendostrea* cf. *folium* from Faliraki, Rodos.

Fig. 18: *Syrnola fasciata* from Saronikos, left: from Lagonisi and right: from Salamina.

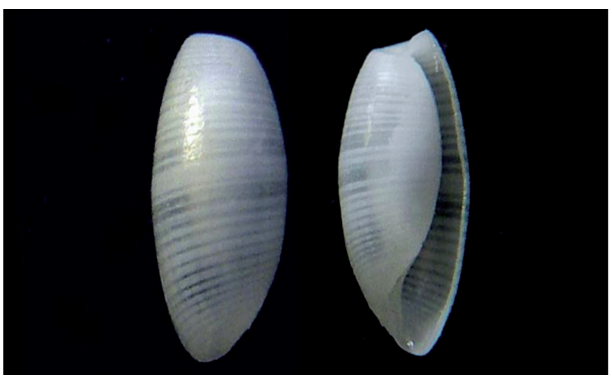

Fig. 19: *Atys macandrewii* from Anavyssos, Saronikos Gulf.

7.4 Records of five alien molluscan species from new localities in Greek waters

A. Angelidis

This work reports on five molluscan species among the well-established alien species in the Levantine Basin, in Greece, based on personal observations by the author. These are: (a) a population of *Chama pacifica* Broderip, 1835 well-established in Kastellorizo (b) *Dendostrea* cf. *folium* (Linnaeus, 1758) associated with *C. pacifica* in Kastellorizo; (c) *Cerithium scabridum* (Philippi, 1848) thriving in Karpathos; (d) *Septifer cumingii* (Récluz, 1849) from Chalki and Kastellorizo islands; and (e) *Ergalatax junionae* (Houart, 2008) recorded near the city of Kavala. All reported specimens are kept in the author's collec-

tion. *Chama pacifica* Broderip, 1835, an Indo-Pacific species, commonly named red sea Jewell box, was reported from the Mediterranean as early as the early 1900s and spread all along the eastern Mediterranean coast of Israel Lebanon, Syria, Turkey, Cyprus and Greece (http://www.ciesm.org/atlas; Crocetta & Russo, 2013). During a personal snorkelling survey performed by the author, the species were found to be well-established and thriving in Kas gulf on the Turkish coast in close vicinity to Kastellorizo Island. This record of the species is no more than confirmation of its expected spreading in Greek waters where it has already been reported recently from the Dodecanese islands, in particular Karpathos (Crocetta & Russo, 2013) and Rodos (Corsini-Foka *et al*., 2015). The suveyed coast of Kastellorizo (36.1505404° N, 29.6216178° E) lies in vicinity of the popular beach of St. Andreas and can be described as very steep and rocky. The underwater surfaces consist of very irregular solid rock full of holes and large stone extrusions. All the surfaces were covered by short and even algae. More than 60 specimens were counted along a short distance of less than 100 m. The individuals were attached solidly on the rock and distances between them ranged from 0.5 to 2 m and in 2 to 5 m depth. All the individuals observed were well covered by organic material and only some white, tooth like, short spines on their upper lip were clean and conspicuous. The majority of the observed individuals measured 60mm in height (average).

Five individuals of *D.* cf. *folium* were observed together with the *C. pacifica* population described above. One *Dendostrea* specimen was found growing on a *C. pacifica*. The cluster of the two specimens was detached from the rock and collected (Fig. 20). Any organic material on the shell's surface was removed using a chlorine solution. A vivid red colour was revealed on the surface of the *Chama* between the white spines.

Cerithium scabridum (Philippi, 1848) is considered one of the earliest recorded and most successful Lessepsian Immigrants, which is now established in the Eastern Mediterranean. The first Mediterranean record was from Port Said, Egypt, and then successively from the coasts of the Eastern Mediterranean and Southern Italy (http://www.ciesm.org/atlas). In Greece, it was first reported from Rodos island (Zenetos *et al*., 2009). A dense population of the species was observed to be abundant in Karpathos Island, Dodecanese. In August 2012, the author performed a snorkelling survey in the rocky surroundings of the popular sandy beach of Apella (35.6043599° N, 27.1562363° E). It was found at a depth of 4-5 m, with large wave-rounded stones, whose clear surface was occupied by large clusters of *C. scabridum* individuals. The whole phenomenon had the aspect of a matting episode due also to the adult size (12mm in average) of the individuals. (Fig. 21).

The first record of *Septifer cumingii* (Récluz, 1849) in Greek waters was from Astypalaia Island (Zenetos *et al*., 2011), followed by a record from Sigri Bay, Lesvos Island (Evagelopoulos *et al*., 2015) and Rodos island (Corsini-Foka *et al*., 2015). Here, the species is reported from two new localities in Greek waters, Kastellorizo Island and Chalki Island, both southern Dodecanese Islands. In Kastelorizo, three live specimens were found in coralligenous material from fishing nets hauled from a depth of 55 m (36.1308015° N, 29.5241783° E) (Fig. 22). In Chalki, one specimen and a single valve were found in shell grit taken from a depth of 6 m next to a *Posidonia oceanica* (Linnaeus) Delile 1813 meadow, (36.214321° N, 27.608937° E) (Fig. 22). All the above specimens were found in August 2015.

Fig. 20: Left: *Chama pacifica* found in Kastellorizo; right: *Dendostrea* cf. *folium* growing on *Chama pacifica* from Kastellorizo

Fig. 21: *Cerithium scabridum* (Philippi, 1848) from Apella gulf, east Karpathos.

Fig. 22: *Septifer cumingii* (Récluz, 1849). 1: Chalki Island, the specimen's greenish colour is possibly due to living in a *Posidonia oceanica* meadow, in shallow water. 2-3: Kastellorizo Island, a specimen living on a coralligenous reef at a depth of 55 m. which may explain the prevailing reddish colour.

Ergalatax junionae (Houart, 2008), Muricidae family, is a post 1992 Red sea immigrant, in the Eastern Mediterranean waters. Recent works describing the expansion of the species along the eastern Mediterranean coasts, record established populations from Syria to Turkey and in Greek waters from Vai beach in Kriti (Zenetos *et al*., 2008) to Rodos Island (ELNAIS, 2015 in Corsini-Foka *et al*., 2015). Although, since its first record the species was observed to expand in natural ways, shipping is also assumed to be a possible mechanism for its expansion. This may also justify the remote occurrence of the species as far north as Kavala (harbour city), in the north Aegean, reported herein. In September 2013, a single individual (Fig. 23) was found while snorkelling along the rocky shore in the vicinity of Kavala Harbour (40.9081012° N, 24.3407478° E). The gastropod was located in a rock fissure next to a young mussel bed. It measured 19 mm in height and 9 mm in width.

Fig. 23: *Ergalatax junionae* (Houart, 2008), from Kavala, N. Greece.

7.5 First record of the Lessepsian fish *Upeneus pori* Ben-Tuvia & Golani, 1989 in Saronikos Gulf

C. Stamouli and A. Dogrammatzi

Upeneus pori Ben-Tuvia & Golani, 1989, is a Lessepsian fish species that arrived in the Mediterranean sea via the Suez canal. The species represents one of the most abundant Lessepsian fishes captured in the eastern Mediterranean Sea (Cicek & Avsar, 2003).

Since its initial detection, *U. pori* is considered to be successfully established in the Mediterranean Sea. Westwards, it has reached the Tunisian Sea (Ben Souissi *et al*., 2005) and northwards it has been reported form Gokova Bay (Ogretmen *et al*., 2005). The first sighting of the species in Hellenic seas was in 2003 on the SE coast of Rodos, Aegean Sea (Corsini *et al*., 2005). This record

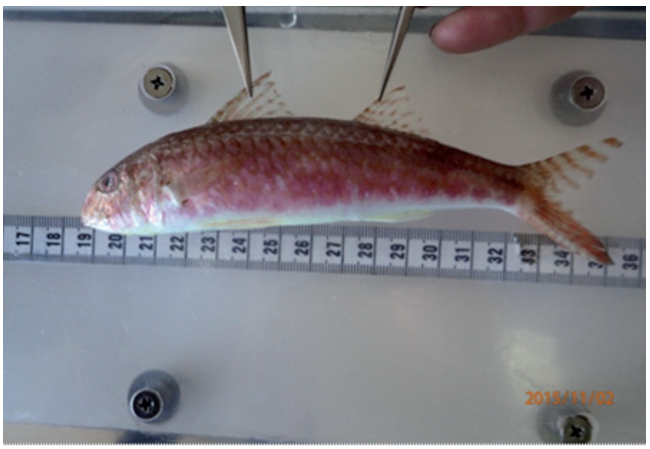

Fig. 24: *Upenaeus pori* (TL=165 cm) caught in October 2015, Saronikos Gulf, Aegean Sea.

from Rodos Island is the last sighting of the species in Hellenic seas.

On October 24th 2015, one individual of *U. pori* was caught in Saronikos Gulf (37.55020° N, 23.08215° E) at a depth of 20 m during commercial fishing using trammel nets (inner net mesh size: 36 mm stretched). The individual was a female, at stage III (Nikolsky, 1963), having a total length of 165 mm and a total weight of 51.267 gr.

The present record of *U. pori* in Saronikos Gulf demonstrates the gradual range expansion of the species to the northern parts of the Mediterranean and Hellenic Seas.

7.6 New records of two fish species in Hellenic Waters (Kastellorizo Island): *Scarus ghobban* (Forsskal, 1775) and *Oxyurichthys petersi* (Klunzinger, 1871)

G. Apostolopoulos and P.K. Karachle

The presence of approximately 20 individuals of *Oxyurichthys petersi* was recorded in September 2010, at Kastellorizo Island (Greece), in the port of Mandraki (36.15025° N, 29.58934° E). As fishes were hiding in holes deep in the mud, only a single specimen has been photographed (Fig. 25). *Oxyurichthys petersi* individuals were observed at a depth of 2 m, on a muddy substrate, close to *Posidonia oceanica* meadows and near the shore. The photographed specimen had the external characteristics, typical of the species (Golani *et al*., 2002): body elongated and compressed; head broad with eye dorsally, extending above profile contour; colour light greenish and grey on the back; side with a series of 4 dark blotches and a black spot on the base of caudal fin. This species is considered a Red Sea endemic, yet has expanded to the Mediterranean via the Suez Canal (Golani *et al*., 2002). It is considered as very common in the eastern part of the basin, being recorded from Syria, Turkey and Tunisia (Golani *et al*., 2002). The last record of the species is from Gökova Bay in May 2005 (Akyol *et al*., 2006).

In September 2014, a single specimen of *Scarus ghobban*, following a shoal of native parrotfishes *(Sparisoma cretense)*, was captured with a small fishing net in the port of Kastellorizo (36.15017° N, 29.59203° E), in shallow waters not exceeding 50 cm. The specimen was preserved alive in a small plastic tank, in which it was photographed (Fig. 25). A few days later, it was transferred to the aquarium of the first author (G. Apostolopoulos) in Athens together with a small *S. cretense* and it is alive to date (Fig. 25). Its behaviour in a 450 l aquarium is very peaceful. At the time of capture, the total length of the specimen was approximately 110 mm, whereas after one year in captivity it has reached the length of about 130 mm. The body shape and colour pattern of the individual is in accordance with previous descriptions: scales turquoise blue and head with turquoise blue irregular bands; upper rays on pectoral and pelvic fins also turquoise blue; caudal fin turquoise blue and middle longitudinal band grey brown with some pink reflections, upper dorsal fin and 2/3 of the lower part of the rays turquoise blue, membrane between the rays and the rest of the fish grey brownish with some pink reflections. *Scarus ghobban* is widely distributed in the Indo-Pacific, yet it is a rare species in the Mediterranean (Golani *et al*., 2002). After its first record off the coast of Shiqmona, Israel, in 2001 (Goren & Aronov, 2002), it has also been reported from Lebanon and the Turkish Levantine coasts (Turan *et al*., 2014), as well as Cyprus (Ioannou *et al*., 2010). This is the first record of the species in the Aegean Sea, thus further expanding its known distribution westwards in the Mediterranean Sea.

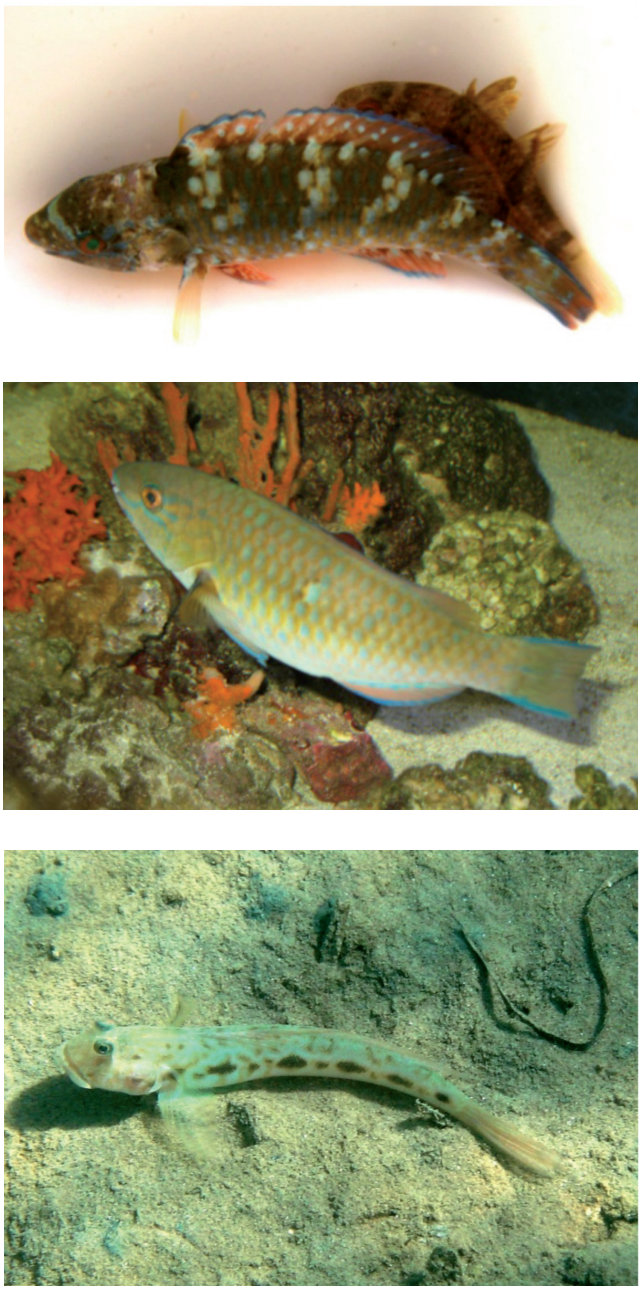

Fig. 25: Bottom: *Oxyurichthys petersi* recorded in the port of Mandraki, Kastellorizo Island (September 2010). Top & middle: *Scarus ghobban* caught in Greek coastal waters in the port of Kastellorizo (top: specimen photographed after capture (September 2014); middle: specimen in captivity (February 2016).

7.7 On the occurrence of the Egyptian sole *Solea aegyptiaca* Chabanaud, 1927 (Soleidae: Pleuronectiformes) in Maliakos Gulf (E. Mediterranean)

S. Kavadas and A. Siapatis

The demersal flatfish *Solea aegyptiaca* Chabanaud, 1927 (Soleidae: Pleuronectiformes) is a cryptic species, often confused with its sympatric species *Solea solea* (Linnaeus, 1758) (Quignard *et al*., 1984). The difference among species has been assessed through molecular data studies (Boukouvala *et al*., 2012) and morphological studies (Vachon *et al*., 2008). Both species prefer living on sandy and muddy bottoms (Froese & Pauly, 2015). It seems to form sympatric demes in the southern and eastern part of the Mediterranean (Mehanna, 2007), the Gulf of Lions and the southern Adriatic coasts (Borsa & Quignard, 2001).

In our study, we report on the occurrence of *Solea aegyptiaca* in Maliakos Gulf, in sympatry with *S. solea*. Maliakos Gulf is a semi-enclosed embayment, located on the central west mainland of Greece, occupying an area of 110 Km^2, with 48 m maximum depth. It is influenced by the Spercheios River that flows into the inner part of the Gulf.

Fish samples were collected within the framework of the research project "Development of an integrated management system for basin, coastal and marine zones" (KRIPIS) (www.spercheios.com) in the period from June 2014 to December 2015, on a monthly basis, using a bag-seine net and static nets. Additionally, bottom trawl surveys were conducted in July 2014, November 2014 and March 2015. Both species were caught throughout the area of the Gulf at depths ranging from the surface down to 45 m. Morphometric characteristics and meristics from 213 individuals of both species were measured and

Fig. 26: Appearance of the eyed side, blind side and otolith for *Solea aegyptiaca* (up) and *Solea solea* (down).

otoliths from 120 individuals were removed. The differentiation between the two cryptic species is documented by mitochondrial DNA (mtDNA) analysis. According to the mtDNA analysis report, 35 individuals were identified as *Solea aegyptiaca* (Total length (TL) range: 25.43 - 317 mm) and 42 as *Solea solea* (TL range: 35 - 340 mm). In addition, differences in otolith structure between the species have been detected (Kavadas *et al*., in preparation) (Fig. 26).

7.8 Confirmed record of the Madeira rockfish *Scorpaena maderensis* Valenciennes, 1833 in Saronikos Gulf (West Aegean Sea, Greece)

M.M. Brodersen and N. Chalari

The family Scorpaenidae is a commercially important demersal fish group. In Greece, it comprises seven species (Papaconstantinou, 2014). *Scorpaena maderensis* is one of the most poorly known scorpaenids. According to Cadenat (1943), the Madeira rockfish is distributed in the eastern Atlantic islands (Canaries, Madeira, Cape Verde, Azores) area and in several localities along the coasts of the Mediterranean, such as Spain, Sicily, Lebanon and Cyprus. In Greece, it was first recorded in the Ionian Sea in 1975 (Papaconstantinou, 2014 and references therein). This species was also found in Rodos, Kriti (Ahnelt, 1983) and recently in Mytilini Island (Gerovasileiou *et al.*, 2015).

Samplings were conducted in Saronikos Gulf during November and December 2015, within the framework of the Greek National Data Collection Framework Program, using trammel nets (28 mm mesh size knot-to knot). In the coastal area of Batis (37.91944° N, 23.69167° E), one male *S. maderensis* (total length (TL)=129 mm; total weight (TW)=37 g) was caught on November 14th 2015. Additionally, a female (TL=104 mm; TW=21 g) was caught on November 30th 2015, in the coastal area of Hellinico (37.89389°N, 23.71306° E). On December 13th 2015, in the area of Agios Kosmas (37.89056° N, 23.71194° E), another four individuals (female: TL= 117 mm; TW= 26g; males: TL range = 102-118 mm; TW range = 19 – 31 g) were caught (Fig. 27). The individuals were immature, at stage I and II (Nikolsky, 1963). The specimens were caught at a depth ranging from 5 to 18 m, on a bottom covered by seaweed.

Although the first record of *S. maderensis* in Greek waters dates back to 40 years ago, there are limited records probably because it can be misidentified as *S. porcus* (La Mesa, 2005), which is more abundant and shares the same habitat. According to local fishermen, the Madeira rockfish has been present in Saronikos Gulf for the past ten years. The past and current status of occurrence and abundance of *S. maderensis* in Greece should be carefully and completely re-assessed considering that many *S. porcus* reports actually seem to be *S. maderensis*.

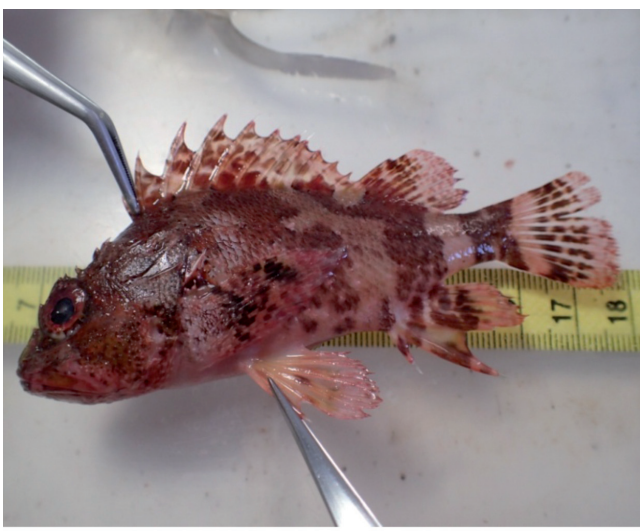

Fig. 27*: *Scorpaena maderensis (Total length 113 mm) caught in Saronikos Gulf, Aegean Sea (December 2015).

8. TURKEY

8.1 A note on the occurence of *Ophiocten abyssicolum* (Forbes, 1843) in the Northern Aegean Sea

O. Gönülal

Ophiocten abyssicolum was originally described by Forbes (1843, Tab. XIII. fig. 8-14) in the Aegean sea as *Ophiura abyssicola.* It have been caught alive at 360 m depth. *Ophiocten abyssicolum* is considered by Mortensen (1927) to be a synonym of *O. sericeum* (Forbes, 1852). These two species are distinguished by the scales of the disk, the arm spines and the papillae on the dorsal plates. Mortensen (1927) claims that specimens known from the British seas probably belong to this variety. Finally, the synonyms and status of species of the genus *Ophiocten* have been revised by Paterson *et al*. (1982). They recognized that *O. sericeum* is restricted to Arctic Seas and indicative of cold Norwegian Sea Deep Water; *Ophiocten abyssicolum* is recorded from the Mediterranean, as far north as south west Ireland on the eastern Atlantic slopes, in association with the salinity maximum due to Gibraltar water.

One specimen of *O. abyssicolum* was collected in August 2015 in the far north of Gökçeada Island (north-eastern Aegean Sea) using a baited trap at 830 m depth (Fig. 28). The survey was carried out with a fishing boat (12 m long, 120 hp). We used 30×30×60 cm rectangular cuboid shaped traps covered with a 7 mm mesh polypropylene net. A funnel-shaped opening allowed the entrance of animals through each trap.

Diagnosis: Disk circular, 11 mm diameter. Dorsal arm plates strongly arched; the ventral arm plates wider than long with a distinctly convex outer edge and widely separated; their roximal edge with an acute peak in the middle and an angular distal edge; arm spines stubby and of equal size, just shorter than the corresponding arm segment. Oral shield longer than broad, its proximal angle acute, with parallel sides and a semi-circular distal end (Fig. 29).

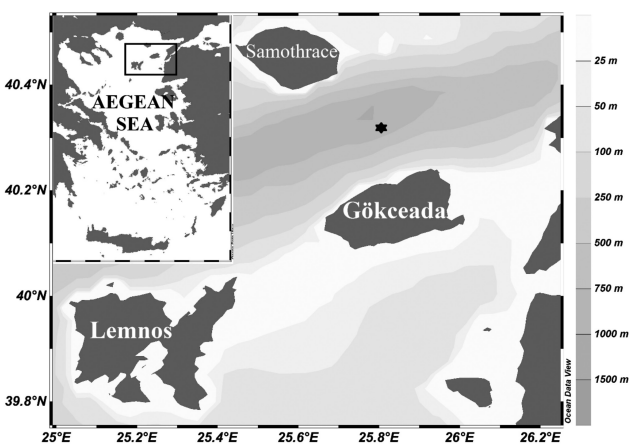

Fig. 28: Sampling station.

Remarks: *Ophiocten abyssicolum* is reported for the first time from the Turkish coast of the Aegean Sea. The only record for *O. abyssicolum* known to date from the Turkish coast is from Çanakkale strait (Ostroumoff, 1896). The species is also known from the Balearic Sea, Gulf of Lion, Gulf of Genoa and Aegean Sea (Tortonese, 1980).

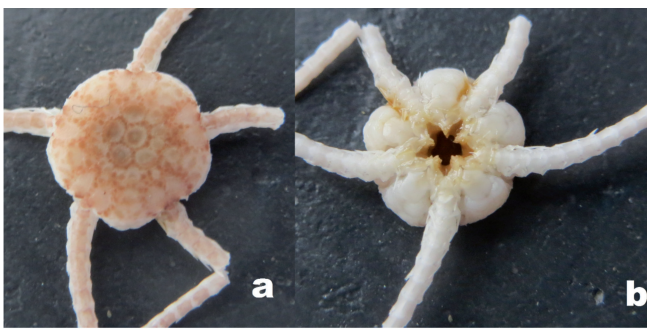

Fig. 29: *Ophiocten abyssicolum* (Forbes, 1843) a. dorsal view. b. ventral view.

8.2 The occurrence of the Atlantic Tripletail, *Lobotes surinamensis* (Bloch, 1790), in the Çanakkale Strait

S. Tunçer and U. Önal

The Atlantic tripletail, *Lobotes surinamensis* (Bloch, 1790) belongs to the family Lobotidae and is a cosmopolitan species that inhabits tropical and subtropical seas (Tortonese, 1990). Adult tripletails inhabit deep waters with rocky bottoms and wrecks (Brown-Peterson & Franks, 2001). Both the adults and the juveniles are often found associated with floating objects and seaweeds mimicking floating debris. This behaviour may be an effective strategy for feeding and avoiding predators as well as rafting that can enhance species dispersal over long distances.

On October 21st 2015, a male specimen of the Atlantic tripletail (Fig. 30) was captured by a commercial fisherman, using a lift net in the Çanakkale Strait (40.09166° N; 26.3° E). The specimen was deposited at Çanakkale Onsekiz Mart University, Piri Reis marine museum (PRMPIS 2015-006). Total length, standard length and weight of the fish were 48.9 cm, 42.4 cm and 2545g, respectively. Other major morphometric characteristics were as follows: head length 12.8, preanal length 27.5; predorsal length 12.6, preorbital length 3.5, and maximum body depth 39.9 percent of total length. The external morphol-

Fig. 30: Specimen (♂) of *Lobotes surinamensis* from the Çanakkale Strait, north-western Turkey (Aegean Sea).

ogy of the present specimen is very characteristic and is in accordance with other reports (Akyol & Kara, 2012; Kavadas & Bekas, 2014). The specimen is within the size range of sexually mature males, as reported by Brown-Peterson & Franks (2001). The specimen was actively feeding as indicated by the stomach contents comprised of recently ingested unidentified demersal fish species and a cuttlebone belonging to *Sepia* spp.

Earlier records of *L. surinamensis* in the Aegean Sea are rather rare. In recent years, it has been reported from Thessaloniki Bay (Minos & Economidis, 2007), and Maliakos Gulf in Greece (Kavadas & Bekas, 2014). The only documented case from the Turkish waters of the Aegean Sea is from İzmir Bay, Turkey (Akyol & Kara, 2012). This finding is the first record of the Atlantic tripletail in the Çanakkale Strait, the northernmost record for this species in the Turkish waters of the Aegean Sea. Despite increasing reports of this species in recent years form the Aegean Sea, the species is considered to be a very rare occurrence in the Turkish waters of the eastern Mediterranean and can be considered a vagrant species.

8.3 Occurrence of the Oilfish *Ruvettus pretiosus* (Cocco 1833 Gempylidae) in Mersin Bay, Turkey

D. Ayas and D. Yaglioglu

The Gempylidae family (Snake mackerels) includes fish living in tropical and subtropical waters. They consist of sixteen genuses and twenty four species (Nelson, 2006). The oilfish [*Ruvettus pretiosus* (Cocco, 1833), which is the only species found in the *Ruvettus* genus of this family, has a widespread distribution throughout the Atlantic, Pacific, and Indian oceans, and the Mediterranean Sea (Froese & Pauly, 2015). The oilfish inhabit marine and oceanic waters and occur near the bottom areas, between 100-800 m (Froese & Pauly, 2015). *R. pretiosus* reaches the maximum size of 300 cm and feeds on fish, crustaceans, and cephalopods (Froese & Pauly, 2015).

At a depth of 110-120 m, a commercial bottom trawl caught one female *R. pretiosus* on December 24th 2014 on the Silifke-Yeşilovacık coast (36.12389° N, 33.61972° E). Total length and weight measurements were carried out. The total length of the specimen was 64 cm and its weight 1802 g. The specimen (Fig. 31) was preserved in 4% formalin, photographed and deposited in the fish collection of EKOSFER, (catalogue number: EKOSFER/2014-001). The body of the specimen had very rough skin, scales with spiky bony tubercles and black pectoral and pelvic fins. The body colour was brown to dark brown.

Ruvettus pretiosus was recorded for the first time in the Mediterranean waters of Turkey in 1999 (Alanya coast, Antalya Bay) (Kaya & Bilecenoglu, 1999); Gurlek *et al*. (2013) also reported the occurrence of this species in the north-eastern Mediterranean (Iskenderun Bay). Vasilakopoulos *et al.* (2011, 2015) studied the reproduction, diet and growth of this species from 50 specimens caught in the Cretan Sea, the central Aegean Sea and the

Fig. 31: *Ruvettus pretiosus* caught in Mersin Bay (Silifke-Yeşilovacık coast), Turkey.

Table 3. *Ruvettus pretiosus* caught in the Eastern Mediterranean.

	Present study	Gurlek *et al.* (2013)	Vasilakopoulos *et al.* (2011)	Kaya & Bilecenoglu (1999)
Total Length (cm)	64.0	55	89-166	24.6
Standard Length (cm)	56.5			
Fork Length (cm)	59.0			
Head Length (cm)	17.2			
Body Height	14.8			
Total Weight (g)	1802	1272		
Sample Number	1	1	50	1
Location	Mersin Bay, north-eastern Mediterranean	Iskenderun Bay, north-eastern Mediterranean	Cretan Sea, the central Aegean Sea and the Levantine Sea	Alanya, Antalya Bay

Levantine Sea (eastern Mediterranean). This report is the first record of *R. pretiosus* in Mersin Bay (Silifke-Yeşilovacık coast) and the third in Turkey (Table 3).

Aknowledgements

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