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New Mediterranean Biodiversity Records (April, 2014)

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Collective Article A

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New Mediterranean Marine biodiversity records (April, 2014)

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Abstract

According to reports, the following 16 species have extended their distribution to other Mediterranean areas or have made a new appearance in other regions. The first category includes the following organisms: The rare and common Indo-Pacific seaweed Codium arabicum (*Lebanese coasts*), the acari *Thalassarachna affinis* (Marmara Sea), and the non-indigenous nudibranch *Flabellina rubrolineata*, which has been found in several areas of the Aegean Sea. In addition, the rare sea slug *Thecacera pennigera* (Mar Piccolo of Taranto), the fangtooth moray *Enchelycore anatina* (National Marine Park of Zakynthos, Ionian Sea), the carangid *Seriola fasciata* (Gulf of Antalya), *Lagocephalus sceleratus* (SE Ionian Sea), the reticulated leatherjacket *Stephanolepis diaspros* (Slovenia, N. Adriatic Sea), the marbled stingray, *Dasyatis marmorata* (NE Levantine), the starry smooth-hound *Mustelus asterias* (Iskenderun Bay, NE Mediterranean), the cephalopod *Ommastrephes bartramii* (Ionian Sea) have also been reported. The Atlantic crab *Dyspanopeus sayi* has expanded to many Italian areas and the blue crab *Callinectes sapidus* to a lake in N. Greece and in the S. Adriatic Sea. Finally, *Farfantepenaeus aztecus* has been found in the Ionian Sea, thus showing its wide expansion in the Mediterranean. The larval stages of *Faccionella oxyrhyncha* have been found, after many years, in the Aegean Sea and the first report of an existence on intersexual acari *Litarachna duboscqi* in Split (Adriatic Sea) was reported.

Introduction

As part of its policy, Mediterranean Marine Science publishes a collective article, twice a year, with new records of marine species in the Mediterranean Sea and/or information on the spatial distribution of already known species of particular interest. The contributors are co-authors in this collective article, their names appearing in alphabetical order. Reports of plant and animal species are presented in each section according to the order of submission. The contributing authors are cited at the beginning of each record.

1. Plants

1.1. The presence of *Codium arabicum* on the Lebanese coast

By G. Bitar

Since its discovery in the Mediterranean, Haifa Bay, in 2007 (Hoffman *et al*., 2011), we report for the first time the presence of the Indo-Pacific Chlorobionta *Codium arabicum* on the Lebanese coast. It was observed on 28 August 2010 at Ramkine Island that is part of the Palm Islands. Actually, this introduced species is rare and not established because it is found in one location of the Lebanese coast (34º 29’ 52.90’’ N, 35º 45’ 40.33’’ E). At

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this locality, we observed only 5 specimens on a cliff between 1 and 4 m deep. The largest specimen observed does not exceed 10 cm in diameter (Fig. 1).

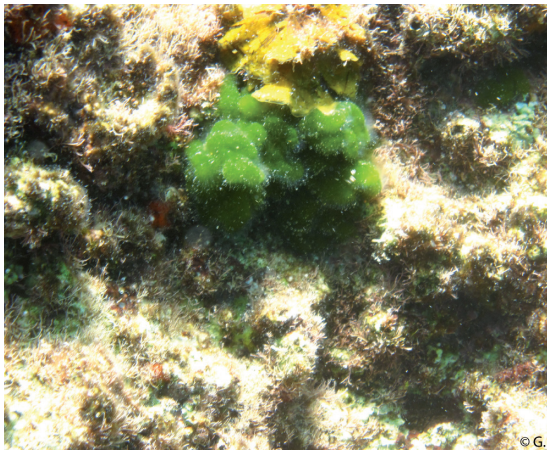


Fig. 1: Specimen of *Codium arabicum* found on the Lebanese coast.

2. Animals

2.1. First record of female intersex in *Litarachna duboscqi* Walter, 1925

By V. Pešić

Intersexuality, defined as the occurrence of male and female reproduction characteristics on the same individual of a normally gonochoristic species, has been found to be common among animals (Reinboth, 1975). This phenomenon has also been documented in water mites (Davids *et al*., 2007). Intersexual specimens are regularly found within larger populations of certain species (e.g. *Atractides nodipalpis*, see Gerecke, 2003), and usually combine a female external genital field with the presence of an ejaculatory complex, but they do not exhibit the secondary sexual characters found in males of the species to which they belong (David *et al*., 2007). However, as demonstrated in many marine and freshwater animals, intersexes can be anywhere in the continuum between male and female, with either one or variable forms within a population (West, 2009).

Litarachna duboscqi Walter, 1925 (Pontarachnidae, Hydrachnidia, Acari) is a water mite widely distributed in the Mediterranean Sea (Pešić *et al*., 2012). During a study on pontarachnid mites (specimens deposited in SMF - Senckenberg Forschungsinstitut and Naturmuseum, Frankfurt am Main), collected by K. Viets in 1934 from Split (S. Adriatic Sea) (Viets, 1941), one female of this species displaying intersexuality was found. Such a case of female intersex is reported here for the first time for pontarachnid mites.

In this study, an intersexual specimen of *Litarachna duboscqi* from Split (Adriatic Sea) was found, combining a female genital field with perigenital setae, which lie regularly free in integument around the male genital field. The genital field with shortened and less bowed pre- and -postgenital sclerite (Fig. 2A, C) distinctly differs from that found in the normal female *L. duboscqi* (Fig. 2B). However, the shape of palps with a ventral protrusion on the fourth segment and a pair of small platelets with coxoglandularia 4 and associated setae fused with a glandularium-like structure in the integument between the posterior apodemes of the fourth coxae, are typical of *Litarachna duboscqi*.

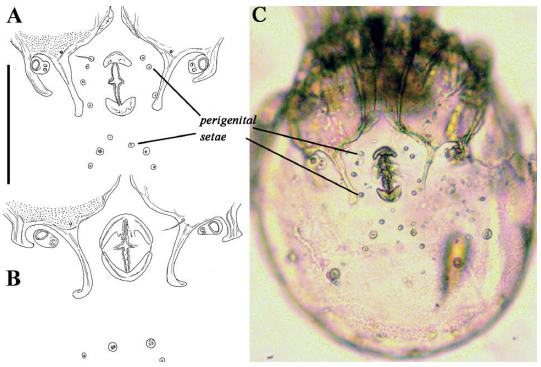


Fig. 2: *Litarachna duboscqi* Walter, 1925, female, Split, K.Viets coll. 1934, SMF (A, C - intersexual specimen, B – normal specimen): A-B = genital field (scale bar = 100µm), C = photograph of idiosoma, ventral view.

2.2. First record of *Thalassarachna affinis* Trouessart, 1896 (Acari: Halacaridae) from the Marmara Sea, İstanbul

By F. Durucan and Y.Ö Boyaci

Nowadays, more than 1100 species of marine mites have been described from all over the world. Halacarid mites generally live in submerged habitats in a variety of substrata (e.g. bryozoans, sponges, macroalgae, sea grass on large fronds, polychaetes, hydrozoans, barnacles, mussels, flocculent ooze, amongst surface structures, crustaceans and between spines and in the gut of echinoderms). The small body size of mites has enabled them to contribute several independent subgroups to the meiobenthos (Bartsch, 2004a; 2006; Giere, 2009).

Thalassarachna (Packard, 1871) species generally live in epibiontic communities and inhabit subtidal habitats. This halacarid genus is represented with 15 species all over the world. Among them, 13 species of *Thalassarachna* genus are inhabitants of cold-temperate and polar waters (North Atlantic and Arctic Ocean), 2 species inhabit the Mediterranean Sea (Bartsch, 2004b, 2006).

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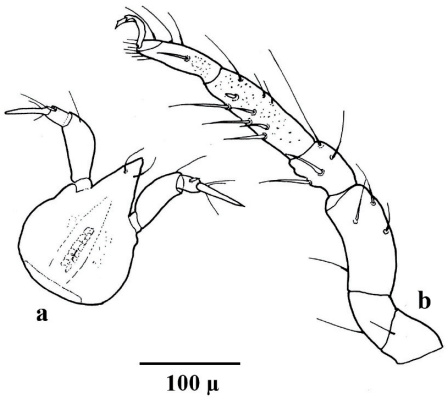


Fig. 3: Ventral view of the deutonymph, gnathosoma (a) and lateral view of leg I (b) of *Thalassarachna affinis* (Trouessart, 1896).

Thalassarachna affinis (Trouessart, 1896) was once recorded from the Turkish coast of the Black Sea (Sinop) (Bartsch, 2004b). This is the first record from the Marmara Sea including the shape of leg I and gnathosoma of *T. affinis* (Fig. 3). Five *T. affinis* deutonymphs were collected from among macroalgae of the sublittoral sandy coast, at a depth of 2-3 m (September, 2012), which is located near the Bostancı Coast beach (Marmara Sea, İstanbul) (40° 58' 89″ N, 29° 03' 37″ E). Specimens were collected by hand netting then sorted in the laboratory with the aid of a stereo microscope (Fig. 4). The collected specimens were cleared in lactic acid and mounted in glycerin jelly and then fixed and stored in 80% ethanol.



Fig. 4: Deutonymphs of *T. affinis* (Trouessart, 1896).

2.3. New records of the non-indigenous nudibranch *Flabellina rubrolineata* (O'Donoghue, 1929) from the Aegean Sea

By M. Sini, V. Gerovasileiou and D. Koutsoubas

The nudibranch *Flabellina rubrolineata* (O'Donoghue, 1929) is a widely distributed Indo-Pacific species. The first report of this species in the Mediterranean Sea comes from Ashqelon, Israel, in 1988 (Gat, 1993). Since then, several reports validate its presence in the eastern Mediterranean basin, but until recently its known range of establishment was mostly restricted to the Levantine Sea, and more specifically to the coasts of Israel, Lebanon, Cyprus, and south-western Turkey (Crocetta *et al*., 2013 and references therein). However, according to a previous report in Eleftheriou *et al*. (2011) and additional observations presented herein, the actual distribution range of *F. rubrolineata* seems to have expanded into the Aegean Sea (Greece). Several sightings of this nudibranch have been recorded since 2009 in different parts of the Aegean Sea (Fig. 5). Specifically, in Lesvos Island (2009/2010, 7/12 m, 39° 06' N, 26° 07' E), Ammouliani Island (2013, 20 m, 37° 02' N, 25° 18' E), Naxos Island (2013, 15 m, 37° 02' N, 25° 18' E), and Porto Rafti (2013, 15 m, 37° 52' N, 24° 02' E). The frequency of sightings, repeatability over time, and wide geographical range, alongside with the high density of individuals observed in certain areas, indicate that this non-indigenous species has established populations throughout the Aegean ecoregion. *F. rubrolineata* individuals were found solitarily or in large clusters on hard-substrates (natural or artificial) amongst hydroid branches (e.g. *Pennaria disticha* and *Eudendrium* spp.), which constitute their primary food source (Zenetos *et al.,* 2004).

The species is known to display variable coloration patterns that often differ among individuals inhabiting the same region. The body colour may vary from bright pink to translucent white, while the characteristic purple-red stripes running along the body may be broken into short dashes or be completely absent (Gosliner & Willan, 1991). Considering all specimens observed in the Aegean Sea, *F. rubrolineata* displays a common and quite distinct colour and stripe pattern (Fig. 6). There are three continuous purple stripes running along the semi-translucent

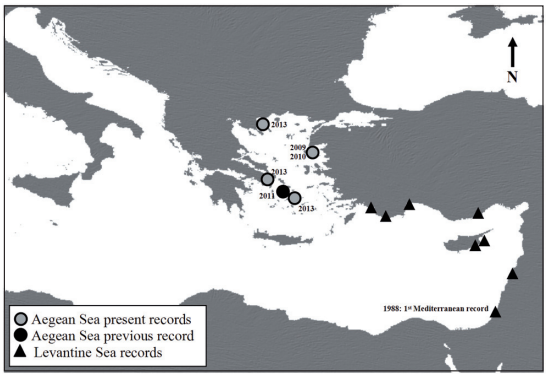


Fig. 5: Distribution of *F. rubrolineata* in the Aegean Sea; grey circles denote present findings; the black circle refers to a previously reported sighting. The distribution of the species in the rest of the eastern Mediterranean Sea is indicated by black triangles.

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Fig. 6: *F. rubrolineata* images from different locations of the Aegean Sea; a,b) Ammouliani Island, c) Naxos Island – Shipwreck Marianna, d) Lesvos Island (Photos a-c: Y. Iliopoulos, Photo d: M. Sini).

white body (one down the center of the back and one on each side of the body), the cerata have a sub-apical purple band and an ochra - orange tip, while the posterior side of the rhinophore club is papillated. It is worth noting that individuals found in the Red Sea share the same distinctive morphological characteristics with their Mediterranean counterparts (specimens recorded in the Aegean Sea included), indicating the common region of origin of this Lessepsian migrant (Gat, 1993; Sea slug forum: www.seaslugforum.net/showall/flabrub, accessed October 2013).

2.4. New Mediterranean record of the rare sea slug *Thecacera pennigera* (Montagu, 1815), (Nudibranchia, Polyceridae)

By F. Tiralongo and R. Baldacconi

In the Mediterranean Sea, *Thecacera pennigera* (Montagu, 1815) has always been a very rare species (Cattaneo-Vietti & Barletta, 1984). Furthermore, its biology is poorly studied. It is a small sea slug (maximum length of about 30 mm) with a translucent white colour (background). Irregular yellow and black spots are scattered over the whole body. This general coloration is subject to certain variability. The anterior part of the body is wide and becomes thinner in the posterior part, forming a slender foot. Despite the fact that the description of this species is from the Atlantic coast of Europe, South West England (Montagu, 1815), its Indo-Pacific origin has been hypothesized. It is a cosmopolitan species with an uncertain distribution. It has been reported for the Pacific, Atlantic and Indian Ocean, but its distribution range is not continuous (Mead *et al.,* 2011). In the past, its worldwide diffusion was attributed mainly to dispersion along with its prey *Bugula*, a bryozoan, present in ship fouling. Instead, at least in more recent times, this sea slug was probably introduced with the ballast waters of the numerous ships that navigate the oceans. In this way, the species can potentially reach anywhere in the world maintaining a discontinuous area. In the Mediterranean Sea, the species was recently recorded in the waters of Israel, in 2008. The specimen was photographed at about 6 meters in depth. In 1933, *T. pennigera* was re-described as a new species (Barnard, 1933) with the name *Thecacera lamellata* (South Africa, Cape Town). In Italian waters, the species has been recorded in the Tyrrhenian Sea only (Cattaneo-Vietti & Chemello, 1987; Cattaneo-Vietti & Giovine, 2008). During snorkelling activity, between 2011 and 2013, we observed two specimens of *T. pennigera* in the Mar Piccolo, Taranto. In June 2011, we observed the first specimen at a depth of about 2 meters, on a coverage of red algae of the genus *Corallina* on artificial substrate well exposed to sunlight (40° 28’ 50.9” N, 17° 16’ 02.3” E) (Fig. 7). The second specimen was observed in June 2013. It was in very shallow waters (a few centimetres in depth). In this case too the substrate was artificial but poorly illuminated (40° 28’ 50.5” N, 17° 16’ 01.2” E). In conclusion, the pres-

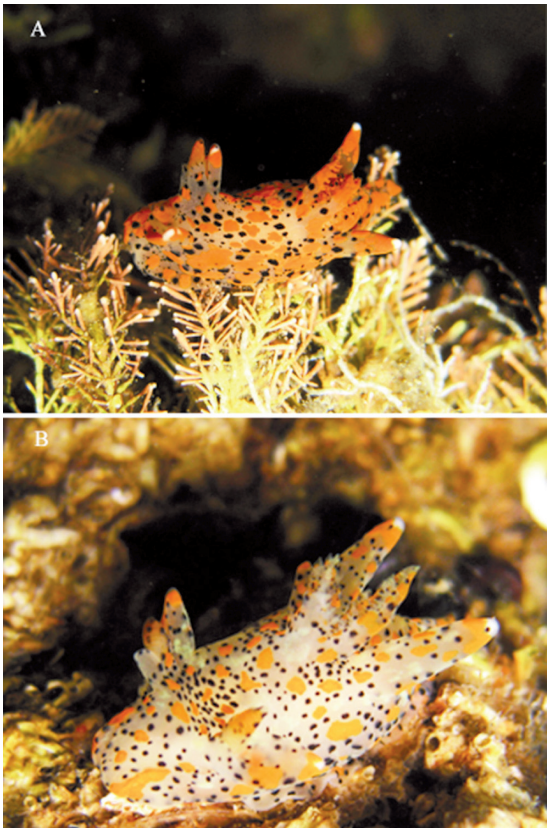


Fig. 7: The two specimens of *Thecacera pennigera* in the Mar Piccolo, Taranto (Ionian Sea), with some differences in the colour pattern. A: specimen with orange and black spots larger. B: specimen with yellow and black spots smaller.

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ence of *T. pennigera* is not a great surprise in the study area of Mar Piccolo of Taranto, an area which is now well-known for the introduction of non-native species from all over the world and one of the most relevant hotspots in the Mediterranean Sea (Occhipinti-Ambrogi, 2010). We cannot definitively exclude a future natural spread of this cryptic species along the coast from Mar Piccolo, Taranto, to news coastal areas.

2.5. First record of larval *Faccionella oxyrhyncha* (Pisces: Nettastomatidae) in the Aegean Sea

By A. Siapatis

The genus *Facciolella* (Nettastomidae) consists of 6 species of which only *Faccionella oxyrhyncha* (Bellotti, 1883) is found in the Mediterranean and the eastern Atlantic Ocean from Portugal to Angola. Younger individuals are caught, sometimes, in caves, while the larger ones are caught in deeper layers (down to 730 m). The larval stage of this species was firstly described by Bellotti (1883) as *Leptocephalus oxyrhynchus*. Grassi (1913) also identified larvae of the same species under the name *Saurenchelys cancrivora.* All these larvae were collected in spring from the shore of the Strait of Messina.

In the present study, a total of 44 ichthyoplankton samples were analysed. These plankton samples were taken using a 60-cm bongo net (0.300 & 0.500 mm nets) with oblique tows, in the central Aegean Sea, between 3 and 24 May 1996. After a recent, deeper and more detailed examination of the samples, two leptocephalus-type larvae, 35 and 115 mm SL, were clearly identified as *F. oxyrhyncha*. This is the first record of larval stages of *F. oxyrhyncha* in the Mediterranean Sea after Grassi's (1913) report from the Starit of Messina. The 35-mm larva (Fig. 8) was collected at a station south of Kythnos island (37^0 53' 65'' N, & 24^0 01' 09'' E,, depth 284 m) on 9 May 1996. The anus of these larvae is located slightly in front of the middle of the body, the dorsal originates at a short distance from the head and maximum height is slightly more than 3 mm. The number of myomeres is 244 (preanal 65 & postanal 179). There are six almost linear lateral spots, arranged on the trunk and tail. The snout is very acuminate and the teeth are long and sharp (Fig. 9). The second larva (115 mm) was collected north to Samos island (37^0 15' 31.8'' N, 24^0 24' 43.6'' E,, depth 173m) on 23 May 1996 and the larval characteristics were similar to Grassi's 115-mm larvae. Recently, Leblebici *et al*. (2010) recorded the first presence of a *F. oxyrhyncha* adult, caught by a commercial bottom trawler, south of



Fig. 8: Larvae of *Facciolella oxyrhyncha* (35 mm).



Fig. 9: Head of the same specimen (enlarged).

Sigarik Bay (E. Turkey), close to Samos Island, on January 2007. Adult specimens have been recorded recently in the central and eastern Mediterranean Sea (Stramigioli *et al.*, 2002; Golani *et al.*, 2006; Edelist *et al.*, 2010). This species may have been inappropriately identified in earlier samples due to the superficial resemblance to its co familial *Netastoma melanurum* (Golani *et al.*, 2006). Taking into account the presence of these two larvae in the Aegean Sea and Grassi's larvae from the Starit of Messina strait, it is possible that the spawning period of this species in the Mediterranean Sea is spring.

2.6. New records of the fangtooth moray *Enchelycore anatina* (Lowe, 1838) from the National Marine Park of Zakynthos (eastern Ionian Sea, Greece)

By V. Gerovasileiou, M. Sini, C. Dimitriadis and D. Koutsoubas

The subtropical eastern Atlantic fangtooth moray *Enchelycore anatina* (Lowe, 1838) was recorded on the 9th August and the 3rd of November 2012 at distinct locations of the National Marine Park of Zakynthos - NMPZ (eastern Ionian Sea, Greece). The first specimen (37.701˚N, 20.939˚E) was photographed by a recreational SCUBA diver, while the second one (37^0 06' 47'' N, 20^0 08' 18" E) was recorded by the authors during an underwater visual census. Both specimens were observed in rocky crevices of large boulders at a depth range of 11–15 m (Fig.10). Key morphological characteristics enabled the positive identification of this species, although only the anterior end of the fish was visible in both occasions. Specifically, the dark brown body with the numer-

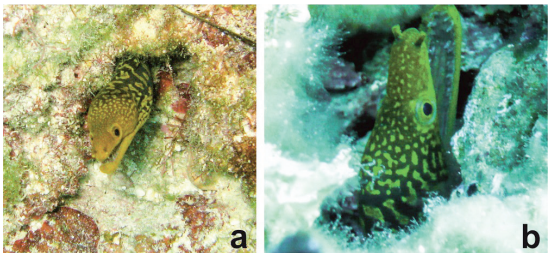


Fig. 10: *E. anatina* in the National Marine Park of Zakytnhos (Photo a: V. Gerovasileiou, Photo b: Markus Schommer).

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ous yellow blotches, as well as the sharp fang-like teeth, which protrude even when the mouth is closed, allowed its identification as *E. anatina* and clear distinction from *Gymnothorax unicolor* and *Muraena helena*, the only two other moray species known to occur in the Mediterranean Sea (Ben-Tuvia & Golani, 1984). These two sightings follow a local fisherman's previous report to NMPZ personnel in 2010 of a single *E. anatina* specimen caught with trammel nets in the specific area.

E. anatina was first recorded in 1979 off the coasts of Israel, at approximately 50 m depth (Ben-Tuvia & Golani, 1984). Since then, the species has been caught by fishermen and encountered by SCUBA divers at shallower rocky bottoms (6-23 m) at 14 locations of the eastern and central Mediterranean (Fig. 11). In certain areas, the frequency of the sightings indicates possible establishment of the species (e.g. Island of Rhodes - Kalogirou, 2010), while the overall distribution range is known to be expanding (Zenetos *et al*., 2012). All published sightings up to 2007 come from the southern Aegean and the Levantine Sea (Guidetti *et al*., 2012 and references therein). The present record of *E. anatina* can be considered as the third published report from Greek territorial waters, and confirms the presence of this species in the eastern Ionian Sea, following recent sightings in the Adriatic (Lipej *et al*., 2011) and western Ionian (Guidetti *et al*., 2012). In addition, it provides further information regarding the westward expansion pathway of this species in the Mediterranean basin since its initial sighting in the Levantine Sea. However, given the eastern Atlantic origin of *E. anatina*, it is also reasonable to assume that its presence in the eastern and western Ionian Sea may also be attributed to its gradual range expansion via the Strait of Gibraltar (Guidetti *et al*., 2012; Zenetos *et al*., 2012).

Furthermore, four non-indigenous species were recorded during visual surveys in the NMPZ area in 2012. These were the highly invasive chlorophyte *Caulerpa racemosa var. cylindracea*, the rhodophyte *Lophocladia lallemandii*, the crab *Percnon gibbesi*, and the rabbitfish *Siganus luridus*, which seem to be well-established in the area.

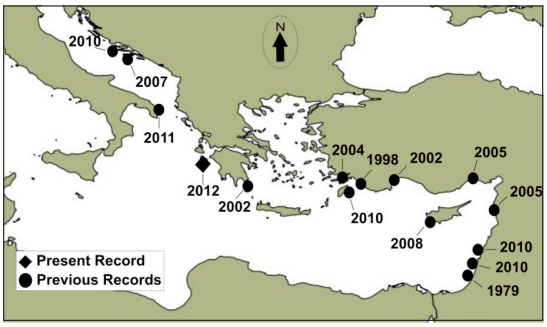


Fig. 11: Distribution of *E. anatina* sightings in the Mediterranean according to published data (modified from Guidetti *et al.*, 2012).

2.7. First report of the lesser amberjack, *Seriola fasciata* (Bloch, 1793), (Carangidae) along the Mediterranean shores of Turkey

By Y. Özvarol and M. Gökoğlu

Seriola fasciata (Bloch, 1793) (Fig. 12), is a member of the Carangidae family. It has an Atlantic distribution: Madeira and the Canary Islands - on the eastern coast and from Massachusetts to the Gulf of Mexico - on the western coast (Fischer *et al.,* 1981; Smith-Vaniz, 1986). *S. fasciata* was previously reported by some researches in several areas of Mediterranean Sea, between 1993-2011.

On 25 September 2012 and 19 November 2013, two specimens of *S. fasciata* (Fig. 12) were caught, by purse seine net (20 mm mesh size), from 35 -50 m depths in the Gulf of Antalya (37^0 06' 47'' N, 20^0 08' 18'' E and 36^0 44' 03.72'' N, 30^0 35' 16.4^0'' E). The morphometric measurements and meristic counts of *S. fasciata* were performed according to Smith-Vaniz (1986) and Golani *et al.* (2002). Specimens were fixed in formalin and deposited in the Fisheries Faculty museum of Akdeniz University (Fish ID: 121, 153).

Counts, measurements, colour pattern and especially the narrow supramaxilla agree with the description of *S. fasciata* and distinguish it from all Atlantic and Mediterranean specimens of the genus *Seriola.* This is the first report of *Seriola fasciata* along the Mediterranean shores of Turkey.



Fig. 12: *Seriola fasciata* Bloch, 1793 specimen caught along the Turkish Mediterranean shores.

2.8. *Lagocephalus sceleratus* (Gmelin, 1789), (Pisces: Tetraodontidae) reaches the Italian Ionian Sea

By F. Tiralongo and D. Tibullo

On January 2014 the Lessepsian immigrant *Lagocephalus sceleratus* (Gmelin, 1789) was reported for the first time in the Italian Ionian Sea. In November 2013, the species was recorded for the first time in Italian waters, near Lampedusa, close to Sicily (Andaloro, pers. comm.). On the morning of January 16, the species was caught with a trammel net by fishermen in Avola (36° 55' 09.7" N, 15° 10' 42.4" E), near Syracuse (south-east Ionian Sea) at a depth of 15-20 m, on

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sandy bottom. The fishermen did not identify the fish and they simply photographed the "strange animal" with a mobile phone (Fig. 13), and they did not consume it. When the fisherman handed the specimen to us, the fish had been gutted and skinned but almost nothing had been thrown away (Fig. 14). The estimated length was of about 65 cm. This species, known for its toxicity due to the presence of tetrodotoxin, is the first fish species found in Italian waters that is potentially lethal to humans if ingested. The first record in the Mediterranean Sea is dates back to 2003 (Akyol *et al.*, 2005), in the south-eastern Aegean Sea coast of Turkey. A specimen was caught with a trammel net at a depth of 15 m on sandy bottom. In November 2004, the species was reported along the Israeli coast (Golani & Levy, 2005) and another specimen was captured in the same year in the eastern Mediterranean Sea (Levantine Sea) (Bilecenoglu *et al.,* 2006). The first record for Greek waters dates back to 2005 (Corsini *et al.,* 2006); one specimen was caught on the South-East coast of Rhodes at a depth of 15-20 m on sandy bottom. In year 2006, another specimen was caught by spear gun in the Aegean Sea at a depth of 10-12 m (Bilecenoglu *et al.,* 2006). In December 2010, a single specimen of *L. sceleratus* was caught in the Gulf of Gabès (Central Mediterranean Sea, Tunisia) (Jribi & Bradai, 2012). In the same year, five specimens of *L. sceleratus* were recorded for the first time in Libyan waters (Milazzo *et al.,* 2012). Furthermore, several new records come from the eastern Mediterranean Sea. The species was recently observed in the Adriatic Sea and in the northern area of the Greek Ionian Sea, as Igoumenitsa (Zenetos *et al.,* 2013). The data suggest a rapid spread of this invasive species northwards to the Central Mediterranean Sea, with all the consequences that this may have for human health.



Fig. 13: The specimen of *Lagocephalus sceleratus* caught in Avola (Ionian Sea), immediately after capture and held by fisherman.



Fig. 14: The specimen of *Lagocephalus sceleratus* caught in Avola (Ionian Sea) after being gutted and skinned. Note the almost intact skin and its characteristic colour pattern (Photo: F. Tiralongo).

2.9. Northernmost record of the reticulated leatherjacket *Stephanolepis diaspros* Fraser-Brunner, 1940 in the Mediterranean Sea

By L. Lipej, B. Mavrič and J. Dulčić

On 27th September 2013, a specimen of the reticulated leatherjacket *Stephanolepis diaspros* (Fraser-Brunner, 1940) (Monacanthidae) was caught in the waters off Piran, Slovenia, Northern Adriatic Sea (3.5 NM in direction 300° off Punta Piran, 45° 35' 4.32" N, 13° 29' 46.47"E) on sandy muddy bottom at 20 m depth. The specimen was delivered to the Piran aquarium alive; however, it died on the very next day. It was preserved in the ichthyological collection of the Marine Biology Station in Piran. This is the first record of the reticulated leatherjacket in Slovenia and the northern Adriatic, as well, and the second for the entire Adriatic Sea (Dulčić & Pallaoro, 2003). At the same time, it is also the northernmost record in the Mediterranean Sea.

The main morphometric and meristic data for the studied specimen (Fig. 15) are presented in Table 1. All measurements and diagnostic characters were in accordance with Dulčić & Pallaoro (2002) and references mentioned therein.

S. diaspros is one of the very first Lessepsian settlers in the Mediterranean, where it was recorded for the first time in 1927 by Steinitz (1927) in Palestinian waters. It was among the first Lessepsian migrants to overcome the winter isotherm of 15°C, together with the two siganids,

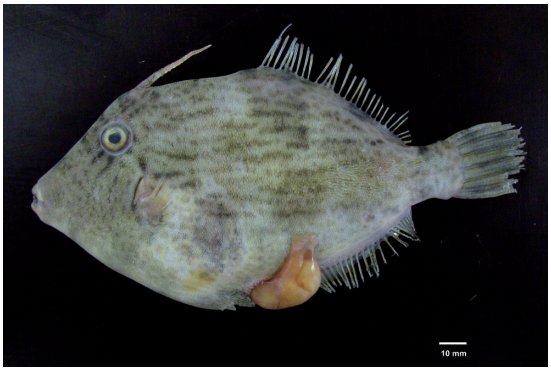


Fig. 15: *Stephanolepis diaspros* caught in the waters off Piran (Slovenia, northern Adriatic Sea) in November 2013 (Photo: B. Mavric).

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Table 1: Biometry and meristics of the specimen of *Stephanolepis diaspros,* caught in November 2013 in the waters off Piran.

	mm	% TL
Total length	129.9	1.00
standard length	111.6	0.86
head length	31.5	0.24
first predorsal length	28	0.22
second predorsal length	56.6	0.44
preanal length	61.8	0.48
prepectoral length	34.4	0.26
first dorsal fin length	10.4	0.08
second dorsal fin length	41.1	0.32
anal fin length	39.5	0.30
pectoral fin length	14.7	0.11
caudal fin length	19.2	0.15
minimum body height	13.4	0.10
maximum body height	57.8	0.44
eye diameter	9.1	0.07
interorbital length	9.2	0.07
preorbital length	12.8	0.10
postorbital length	1.5	0.01
weight	52.32 g	
Meristics		
first dorsal fin	I	
second dorsal fin	30	
anal fin	28	
pectoral fin	13	
caudal fin	I+10+I	

Siganus luridus and *S. rivulatus* (Corsini-Foka *et al.,* 2010). Zenetos *et al*. (2005) included this species, with a strong dispersal capability, in the list of the 100 worst invasive species, arguing that abundant populations of alien fish without direct economic use represent an economic burden to fishermen who have to discard them from their gear.

The presence of *S. diaspros* in the northernmost area of the Mediterranean Sea could be interpreted as a sign that even the most remote Mediterranean areas are nowadays facing the westward spreading of Lessepsian species. The presence of Lessepsian organisms originating from tropical and/or temperate areas coincides with the cyclonic North Ionian Gyre that advects Eastern Mediterranean waters into the Adriatic, blocking the intrusion of Modified Atlantic Water (Civitarese *et al.,* 2010). On this basis, it could be said that occurrences of *S. diaspros* in the Adriatic Sea might be directly related to the Bimodal Oscillating System mechanism.

In our opinion, *S. diaspros* should at present, due to the scarcity of records in northern parts of the Mediterranean Sea, (still) be considered as a species established in the eastern part of the Mediterranean basin only, while its presence in other areas is still sporadic.

2.10. Substantiated record of *Dasyatis marmorata* (Steindachner, 1892) from the northeastern Levant

By M. Bilecenoglu

The marbled stingray, *Dasyatis marmorata* (Steindachner, 1892), is a closely related species with *D. pastinaca* (Linnaeus, 1758) and *D. chrysonota* (Smith, 1828), which have long been confused and misidentified. These species can be distinguished by the proportional measurements of disc length and snout-to-vent length, expressed as a percentage of disc width (Cowley & Compagno, 1993). Previous records of *D. marmorata* from the Mediterranean Sea are confined to the coasts of Tunisia and Israel (Bradai *et al.*, 2012), and the distribution range of the marbled stingray previously indicated by Serena (2005) as "south of Tunisia and along the coast of Turkey" is a typographical error, where Turkey should be replaced with Israel (F. Serena, pers.comm.). Diamant *et al.* (2010) first mentioned the occurrence of *D. marmorata* (as *D. chrysonota*) from the north-eastern Levant – but without providing any taxonomical information; they have collected 131 specimens from Iskenderun Bay during July 2009. In this paper, the occurrence of *D. marmorata* in Turkey is confirmed and new locality records are given from the Adana and Mersin coasts.

During bottom trawlings carried out along the north-eastern Levant, numerous *D. marmorata* specimens (often symptaric with *D. pastinaca*) were collected from depths ranging from 17 to 30 m (Fig. 16). Material examined: 4 specimens, with a disc width range of 13.5-32.4 cm, Yumurtalik/Iskenderun Bay, July 2007, 36°51′N-35°55′E; 2 specimens, with disc width 18.2-22.5 cm, Karatas/Adana, November 2011, 36^0 31' N, 35^0 16' E; 1 specimen, with disc width 30.5 cm, material obtained from a commercial trawler fishing off Tasucu/Mersin, June 2005). Morphometric measurements expressed as percentage of disc width are as follows: 88.8-90.7% of disc length, 17.1-18.5% of disc depth, 79.7-80.9% of the snout-to-vent length, 19.3-19.5% of the preorbital length, 21.6-22.5% of the preoral length, 35.1-36.4% of the lower caudal fold length and 24.8-27.6% of

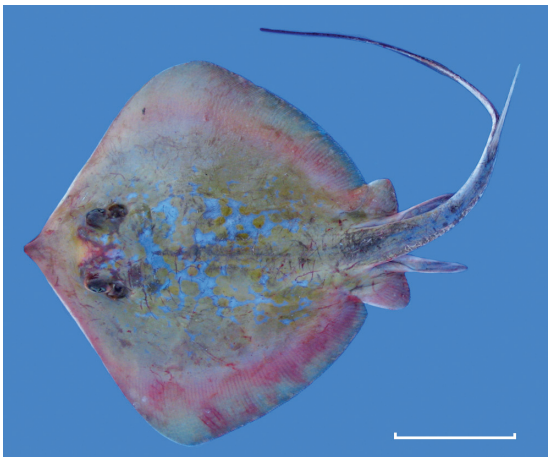


Fig. 16: *Dasyatis marmorata* (Steindachner, 1892), 32.4 cm disc width, Yumurtalik/Iskenderun Bay (scale bar = 10 cm) (Photo: M. Bilecenoglu)

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the upper caudal fold length. The dorsal surface is beige on the background, with a touch of golden colour through the center and posteriodorsal region, including prominent irregular blue blotches from the interorbital area to the tail (Fig. 16). Coloration and metric proportions are well in agreement with the descriptions of Cowley & Compagno (1993).

According to Bradai *et al.* (2012), all previous records given from the Mediterranean Sea under the names *D. pastinaca marmorata* and *D. chrysonota* should be considered as *D. marmorata*, and DNA studies are required to solve the taxonomical dispute. It is believed that scattered observations of *D. marmorata* at remarkably distant localities (Tunisia, Israel and Turkey) in the Mediterranean do not essentially denote an occasional occurrence, where the species might have been overlooked or confused with its congeneric members.

2.11. On the occurrence of the starry smooth-hound *Mustelus asterias* from Iskenderun Bay, north-eastern Mediterranean after 30 years

By N. Başusta

The starry smooth-hound (*Mustelus asterias*, Cloquet, 1819) is a small demersal dog fish and one of three species belonging to the Triakidae inhabiting the Mediterranean. This species is rarely found in the eastern Mediterranean but is more common in the temperate waters of the North-east Atlantic Ocean (Serena, 2005). The basic biology of this species has been reported by Farell *et al*. (2010) from the northeast Atlantic Ocean.

On 25 February 2014, an adult male specimen of *M. asterias*, of 93.9 cm TL (total length) and 2.675 kg total weight, was caught by a common trawler, at 90 m depth, off Samandag, Iskenderun Bay (36^0 14' 04.6'' N, 35^0 38' 38.5'' E). All diagnostic characteristics and colour pattern agree with the descriptions of Serena (2005). The specific morphometric characters measured are: fork length 82.9 cm, standard length 76 cm, clasper length 7.9 cm, head length 18.4 cm, eye diameter 2.3 cm (Fig. 16). The specimen (Fig. 17) was preserved at the Museum of Fisheries Faculty, Firat University (FFM-FISH/2014-3).

Recently, the first record of *M. asterias* was reported from the south-western Black Sea by Keskin (2012). Although the first sample was caught between 1980 and 1984 by Gucu and Bingel (1994) in Iskenderun Bay, the present individual was caught approximately after 30 years of its first presence in the eastern Mediterranean. The present starry smooth-hound does not provide valuable information regarding the reproduction of this species in Iskenderun Bay, but offers important data for its assessment. *M. asterias* is assessed as an endangered species (EN) in the Mediterranean and as a least concern species (LC) in the global red lists by the IUCN (Abdul Malak *et al*., 2011). However, it is necessary to describe more accurately its potential nursery and protection grounds.



Fig. 17: *Mustelus asterias*, an adult male caught from Iskenderun Bay, Turkey

2.12. New records of *Ommastrephes bartramii* (Lesueur, 1821), (Cephalopoda: Ommastrephidae), in the Ionian Sea and considerations about its presence in the Central Mediterranean

By F. Tiralongo and E. Lefkaditou

Ommastrephes bartramii (Lesueur, 1821) is one of the biggest cephalopod molluscs of the Mediterranean Sea. The largest specimen recorded in the world (SE Pacific) was a female with a 1020 mm dorsal mantle length (DML) and a weight of about 35 Kg (Guerra *et al.,* 2010). However, common sizes are between 30 and 35 cm mantle length (ML) for adult males and about 50 cm (ML) for adult females. It is distributed worldwide, in subtropical and temperate waters. In the Mediterranean Sea, it is considered a rare species; however, according to recent studies, the frequency of observation of this species is increasing, a fact that has been attributed to various causes: warming of upper sea layers (Lefkaditou *et al.,* 2011) and lack of adequate observations in the past (Cuccu *et al*., 2009). Within the last decade, 4 juveniles were sighted at the sea surface in the Gulf of Taranto, attracted by the vessel's electric light, during a swordfish fishing cruise in September 2006 (Bello, 2007) and a spent female was found stranded in March 2009 on a beach off west Peloponnisos (Lefkaditou *et al*., 2011). Five additional records of large females from the Ionian Sea, identified in the laboratory or from photographs are reported here. In April 2012, a female of about 150 cm in total length (TL) (Fig. 18) was caught by troll targeting European barracuda (*Sphyraena sphyraena*), west off cape Gerogompos, Cephalonia island (38^0 N, 20^0 29' E) at 40 m depth. In 2013, three more individuals, weighting 5-6 kg, were caught near the shore in January (off Valanidorahi, Preveza, 39^0 N, 20^0 29' E), March (off Koroni, 36^0 30' N, 22^0 30' E) and April (off Sami, Cephalonia island (38^0 11' N, 20^0 20' E). The most recent one was a female of

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47 cm (ML) and 117 cm (TL) (Fig. 19), which was found stranded on the beach of Avola in south-eastern Sicily (36^0 55' N, 15^0 09' E) 3 days after a big storm, on February 9, 2014. In all likelihood, this species appears to be rare because of frequent misidentification with the more common, in the Mediterranean Sea, ommastrephid *Todarodes sagittatus* (Lamarck, 1798), as they show similar general morphology, colour pattern and sizes, whereas in some countries, Italy and Greece included, they share the same common name. The size range and the temporal distribution of records in the Ionian Sea, show that the species is present there at least from September to April, with females larger than 45 cm spawning from January to March.



Fig. 18: Dorsal view of *O. bartramii* caught by trawler while targeting S. sphyraena off cape Gerogompos, Cephalonia Island (Photo: S. Damoulianos).



Fig. 19: Dorsal view of *O.bartramii* stranded on the beach of Avola in south-east Sicily (Photo: F. Tiralongo).

Furthermore, the long-term periods of *O. bartramii* appearance in the Ionian and Adriatic Seas, 1967-1986 and 2006-now, seem to follow the warmer periods identified by long term analysis of mean annual SST oscillation (Axaopoulos *et al.*, 2010). In conclusion, further studies are needed to better understand the distribution and abundance of *O. bartramii* in the Central Mediterranean Sea.

2.13. The spread of the Atlantic species *Dyspanopeus sayi* (Smith, 1869), (Brachyura, Panopeidae) in Italian waters

By F. Tiralongo and R. Baldacconi

Dyspanopeus sayi (Smith, 1869) is a native species of the Atlantic coast of North America (from Florida to Canada). The diet of this little crab consists mainly of bivalve molluscs (mussels and clams), crashing (small and medium sized mussels) or chipping (large sized mussels) their shells with their larger chelae. It often inhabits muddy bottoms where it finds its favourite prey. In the northern Adriatic Sea, the feeding preference of *D. sayi* for the Asian mussel *Arcuatula senhousia*, a non-native species introduced in the early 1990 (Mistri, 2004), has been demonstrated (Benson in Cantor, 1842). The carapace length of this crab rarely exceeds 25 mm. There is considerable sexual dimorphism, since males are bigger than females. It is a euryhaline and heurytermic species inhabiting estuaries and shallow waters of coastal environments. The duration of the zoeal development is 15 days at 18 °C (Marco-Herrero *et al.,* 2013). The larval development of this species consists of four zoeal stages plus megalopa. Its introduction was reported from south-west England, and the French, Dutch and Netherlands coasts of the North Sea; the Mediterranean Sea and the Black Sea (Schubart *et al.,* 2012). In 1992, two specimens (adult males) were caught, for the first time in the Mediterranean Sea, in the lagoon of Venice (Froglia & Speranza, 1993). It was assumed that this crab entered our waters through ballast waters or was transported with mussels imported for mariculture purposes. In 2011, nine specimens (six males and three females) were collected with an experimental beach-seine used for the study of fish fauna in the coastal lagoon of Varano (central-southern Adriatic) (Ungaro *et al.*, 2012). During snorkelling activity, we firstly discovered this species in the coastal lagoon of Mar Piccolo (Taranto, Ionian Sea) in 2011 (two specimens) and then in 2013 (one specimen) (Fig. 20). The specimens were ob-

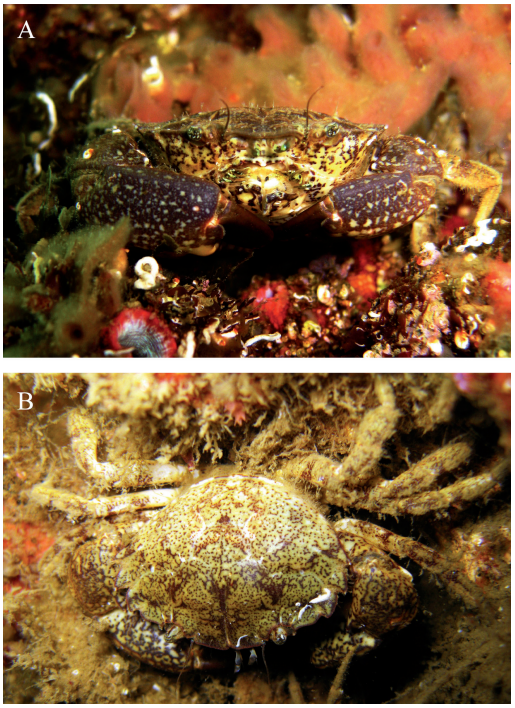


Fig. 20: Two specimens of *Dyspanopeus sayi* recorded in the Ionian Sea (Taranto, Italy). A: frontal view (in July 2011). B: dorsal view (in September 2013).

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served on the poles used for mussel culture, among several encrusting and sessile invertebrates (40° 28' 46.5" N, 17° 16' 16.0" E), and on the submerged part of the concrete blocks (40° 29' 53.4" N, 17° 15' 56.3" E). In both places, the depth was less than 1 meter. Our reporting indicates the southwards spread of this species, which is now present in the Ionian Sea. The expanding area of *Dyspanopeus sayi* has not been in totally proved. Considering the peculiarity of Mar Piccolo, Taranto, which like the Venice lagoon is another important "hotspot" for non-native species, the possibility of a new involuntary introduction with ballast waters or with imported mussels should also be considered in this case. Recently, the species has also been reported from the Iberian Peninsula (Schubart *et al.,* 2012) and Italian waters (Tyrrhenian Sea), where it was observed in a brackish lagoon and where it seems to have entered with mussels used in aquaculture (Crocetta *et al*., 2012).

2.14. First record of *Callinectes sapidus* Rathbun, 1896 (Crustacea, Brachyura) in a freshwater ecosystem (Lake Volvi, Northern Greece)

By O. Petriki and D.C. Bobori

The American blue crab *Callinectes sapidus* Rathbun, 1896, native of the Western Atlantic (FAO, 2013), is an euryaline species that lives in estuarine and marine habitats, conducting long distance migrations in different phases of its life cycle (Carr *et al.*, 2004). The species can also inhabit freshwater systems, due to its specific salt regulatory mechanisms (Cameron, 1978). However, its reproduction in such ecosystems is unlikely, since it has to migrate back to brackish or sea waters to reproduce (Cameron, 1978).

The species has invaded the Mediterranean Sea since 1935, where it has established abundant populations (Nehring, 2011) thus, it is now considered as one of the most successful invaders. In Greece, the species is very abundant along the northern Aegean coastline (Oikonomidis, 2013), where it is commercially exploited.

A live adult male specimen of the species (Fig. 21) was caught in November 2012, by a professional fishing vessel using gillnets, in Lake Volvi (northern Greece, 40^0 40' N, 23^0 28' E). Lake Volvi is a large (surface area: 68 km^2), relatively deep (maximum depth: 20 m, mean depth: 13.5 m), eutrophic lake, which flows into Strymonikos Gulf through River Rihios (length: about 10 Km in a straight line). River Rihios, is the only route for anadromous fish species to enter the lake and probably the pathway of the crab's entrance to Volvi. Noted that the species exists in Strymonikos Gulf (Nehrid, 2011).



Fig. 21: *Callinectes sapidus* specimen fished in Lake Volvi on November 2012.

Although the establishment of a self-sustained population of the species in Lake Volvi is theoretically not feasible due to the inability of the species to spawn in freshwater (Cameron, 1978), the permanent presence of the species in the Lake cannot be excluded. The perspective of species presence in high numbers and its omnivorous feeding habits, triggers concerns about the future impacts on native species of molluscs, crustaceans and small fish. The impacts of the species invasion on native aquatic organisms of European waters still remain undefined, despite its long-standing presence and further research should be undertaken (Nehring, 2011). Thus, surveys should be conducted in Lake Volvi and the adjacent streams for an early assessment of a potential increase in species abundance in the area. Furthermore, the species should be included in the monitoring programs implemented in the broader area.

2.15. First documented record of the American blue crab, *Callinectes sapidus* Rathbun, 1896 in the Boka Kotorska Bay, Southern Adriatic Sea, Montenegro

By O. Marković and M. Djurović

The blue crab (*Callinectes sapidus* Rathbun, 1896) is one of the most invasive aquatic species in the Mediterranean Sea (Zenetos *et al.,* 2010). This species has been widely recorded in the Mediterranean, especially in its eastern basin.

The first occurrence of this species in the Adriatic Sea as well as in the Mediterranean dates back to 1949, when the blue crab was reported in Grado (northern Adriatic Sea) by Giordani Soika (1951). Recent records in the eastern part of the Adriatic Sea refer to Croatia (Dulčić *et al*., 2011) and Albania (Beqiraj & Kashta, 2010).

Information on the presence of this species in Montenegro exists only as a personal observation of Mačić & Kljajić (2012) referring to Port Milena, inlet Jaz and Oblatno. Besides that, in the course of a rapid assessment survey of marine alien species along the Albanian and Montenegrin coast (Zenetos *et al*., 2011), it is reported that *Callinectes sapidus* was not encountered during the survey, but its presence was only documented by existing photos (V. Mačić, pers. obs). Besides these photos

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and data, no other detailed information on the presence of the American blue crab in Montenegro has ever been published. This is the first record of the occurrence of *C. sapidus* in Boka Kotorska Bay.

On 2 December 2013, two adult male specimens of *C. sapidus* (Ives, 1891) were caught by gillnet called "polandara" with a 45 mm mesh size at a depth of 15 m on sandy-mud bottom in Boka Kotorska Bay (42^0 24' 48" N, 18^0 41' 56" E), Montenegro. The length of the first male carapace was 81 mm CL, carapace width (CW), including lateral spines, was 176 mm and total weight 408.61 g, while the carapace length of the second male was 84 mm CL, carapace width was 187 mm CW and weight 464.95 g. The specimen was transported to the Laboratory of Ichthyology and Marine Fishery, Institute of Marine Biology, and photographed, but not preserved (Fig. 22).



Fig. 22: Two adult males of *Callinectes sapidus* caught in Boka Kotorska Bay (A=dorsal side, B=ventral side).

This presence of adult males of *C. sapidus* in Boka Kotorska Bay suggests that this species might have established a population in the neighbouring area of Albania (Beqiraj & Kashta, 2010) and Croatia (Dulčić *et al*., 2011), so further research should be undertaken.

2.16. *Farfantepenaeus aztecus*: a new alien decapod in the Ionian Sea

By K. Kapiris and C. Apostolidis

The northern brown shrimp, *Farfantepenaeus aztecus (Ives, 1891)* is very abundant along the Western Atlantic coast and prefers shallow waters. Its presence in the Mediterranean basin has been reported in Antalya Bay, Turkey (Deval *et al.,* 2010), the Gulf of Iskenderun and Finike (Gökoğlu & Ovzarol, 2013), and in Montenegrin waters (Marković *et al*., 2014). Deval *et al.* (2010) considered ship ballast waters as the most likely vector for its introduction in the eastern Mediterranean.

One female individual was caught from a sandy bottom at 70 m depth by a commercial trawler with a 22 mm mesh size in the eastern part of Corfu island (390 37' 21" N, 20^0 05' 50" E (Ionian Sea) in November 2013 and was transferred to the Institute of Marine Biological Resources and Inland Waters, Hellenic Centre for Marine Research, where it was identified, measured by electronic calliper and photographed (Fig. 23). The carapace



Fig. 23: A female individual of *Farfantepenaeus aztecus* caught in Corfu Island (Ionian Sea). A=Total length, B=Carapace length.

length (CL) was 52.87 mm and wet weight was 138.42 gr. Ovarian development was at the developing stage, according Cook and Lindner (1968). The above measurements were bigger than those found in Antalya Bay and Montenegrin waters. Future sampling could show whether this new alien shrimp will be able to establish a population in the region.

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help in the identification of *Thalassarachna affinis* and for their helpful comments. The authors Sini, Gerovasileiou and Koutsoubas are grateful to Yiannis Iliopoulos for providing relevant information and photographic material for *F. rubrolineata*. This research has been co-financed by the European Union (European Social Fund) and Greek national funds (Ministry of Education and Religious Affairs as management authority), through the Operational Program "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF 2007-2013) - Research Funding Program: Heracleitus II, Investing in knowledge society. The same authors, including Dimitriadis, would like to thank the diver Markus Schommer who kindly provided the second image of E. anatina, in the framework of the Citizen Science Project implemented by the NMPZ. In the same study, the underwater visual surveys were realized in the framework of the MedPAN North Project. Y. Özvarol and M. Gökoğlu are grateful to the crews and Captain of the fishing vessel "İsmet Kaptan" for their invaluable help during works. F. Tiralongo and D. Tibullo would like to thank the fishermen of Avola for their kind cooperation and in particular the fisherman Fabio Marino.

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