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OCCURRENCE OF *CHEILINUS LUNULATUS* (LABRIDAE), *TRIACANTHUS* CF. *BIACULEATUS* (TRIACANTHIDAE) AND OTHER FOUR NON-INDIGENOUS FISH SPECIES NEW TO THE GAZA STRIP WATERS, PALESTINE

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ABSTRACT

Six non-indigenous fish species, all of Indo-Pacific origin, are here reported from the waters of Gaza Strip, Palestine, on the basis of photos and data collected from 2016 to 2023 on dedicated platforms through local citizen scientists and fishers contribute. Two species, Cheilinus lunulatus *and* Triacanthus *cf.* biaculeatus*, are recorded for the first time in the Mediterranean Sea, and other four,* Ambassis *sp.,* Equulites *cf.* elongatus*,* Parupeneus forsskali *and* Heniochus intermedius *are recorded for the first time in the Palestinian waters of Gaza. Although data and material were limited, the results reinforce the useful support of citizen science in monitoring introduction and/or expansion of non-indigenous species in a basin strongly affected by biological invasion, such as the eastern Mediterranean Sea.*

Key words: Levantine Sea, Palestine, Gaza Strip, non-indigenous fish, Lessepsian migration, citizen scientists

PRESENZA DI *CHEILINUS LUNULATUS* (LABRIDAE), *TRIACANTHUS* CF. *BIACULEATUS* (TRIACANTHIDAE) E DI ALTRE QUATTRO SPECIE DI PESCI NON INDIGENI NUOVE PER LE ACQUE DELLA STRISCIA DI GAZA, PALESTINA

SINTESI

Sei specie di pesci non indigeni, tutte di origine Indo-Pacifica, sono qui segnalate per le acque della Striscia di Gaza, Palestina, sulla base di foto e dati raccolti dal 2016 al 2023 su piattaforme dedicate, grazie al contributo di scienziati cittadini e pescatori. Due specie, Cheilinus lunulatus *e* Triacanthus *cf.* biaculeatus*, sono segnalate per la prima volta nel Mediterraneo, e altre quattro,* Ambassis *sp.,* Equulites *cf.* elongatus*,* Parupeneus forsskali *e* Heniochus intermedius *vengono segnalate per la prima volta nelle acque palestinesi di Gaza. Sebbene i dati e il materiale siano limitati, i risultati rafforzano l'utile supporto della scienza dei cittadini (citizen science) nel monitorare l'introduzione e/o l'espansione di specie non indigene in un bacino fortemente colpito dall'invasione biologica, come il mare Mediterraneo orientale.*

Parole chiave: Mar di Levante, Palestina, Striscia di Gaza, pesci non indigeni, migrazione lessepsiana, citizen science

INTRODUCTION

The Mediterranean Sea biodiversity is undergoing profound and fast changes driven by various threats, among which climate changes and biological invasions of organisms mainly introduced via the Suez Canal from the Red Sea and the Indo-Pacific Ocean, in particular in the eastern side of the basin (Galanidi *et al*., 2023; Galil, 2023).

Citizen science input is particularly useful for monitoring marine biodiversity, including non-indigenous species (NIS) introductions and spreading (Pocock *et al*., 2024). This is of particular importance in poorly studied areas of the eastern Mediterranean, such as the Palestinian waters of the Gaza Strip, where regular field scientific research and published material is extremely limited. The Gaza Strip is located at the southeast corner of the Mediterranean Sea, about 170 km east to the mouth of the Suez Canal into the Mediterranean, a significant geographical position for the detection of new non-indigenous species entered via the Canal from the Indo-Pacific and the Red Sea ecosystems (Lessepsian migrant species, see Golani & Fricke, 2018), as well as for the monitoring of their spreading (Bariche *et al*., 2019; Abd Rabou *et al*., 2023).

In the present study, efforts were made in order to validate ichthyological material of particular interest from the Gaza Strip waters obtained mainly through the input of Palestinian citizen scientists and fishers via social media platforms. The first finding in the eastern Mediterranean waters (Palestinian waters) of the non-indigenous *Cheilinus lunulatus* (Forsskål, 1775) and *Triacanthus* cf. *biaculeatus* (Bloch, 1786) is here described. The occurrence of other three non-indigenous fish species already known in the wider area, namely *Equulites* cf. *popei* (Whitley, 1932), *Parupeneus forsskali* (Fourmanoir & Guézé, 1976) and *Heniochus intermedius* Steindachner, 1893, is furthermore documented in the present study for the first time in Palestinian waters, where also a glassfish *Ambassis* Cuvier, 1828 sp. is here newly recorded. The presence of the above NIS fishes new to the Gaza Sea increases knowledge on the diversity of fish communities in this restricted zone of the Levantine Sea highly affected by the occurrence of species of Indo-Pacific/Red Sea origin.

MATERIAL AND METHODS

Photos of six fishes unknown to fishers operating in the Gaza Strip waters, Palestine, were submitted between 2016 and 2023 to the social media citizen science platform for Libyan waters called 'Marine Biology in Libya' (https://www. facebook.com/MarineBiologyinlibya) or transmitted directly to the authors by fishers.

All fishes were caught in the marine waters of the Gaza Strip. None of the specimens was preserved. In some occasions, the authors were unable to trace back the name of observer/fisher who submitted photos to the above platform, or to obtain information on the exact location of capture in the Gaza Sea and/or the fishing method used, as well as further data as depth of capture and bottom type. Efforts for identification of the fishes to species level through the available photographic material were applied by the authors, but in some cases they faced substantial impediments in achieving results with certainty for the following reasons: a) photos transmitted through the mentioned above social media were of low quality, b) fishes were positioned hastily, careless to show the fin rays or other body characteristics and c) any object of known size was placed nearby the fish in order to approximate their size and some proportions of the body. All the above obstacles and the lack of samples unfortunately prevented an accurate description of morphological and meristic characters of the specimens.

RESULTS

The following six fish were recognized as new species or genus for the Palestinian waters.

AMBASSIDAE

Ambassis Cuvier, 1828 sp.

Two similar fish specimens were caught by fishing rod in the Gaza Port (31°31′27.2″N, 34°25′46.4″E) at 0-6 m of depth. The first specimen, with an approximate total length of 50 mm, was captured on 1 January 2021 (Fig. 1A1) and the second, with an approximate total length of 40 mm, on 10 August 2022 (Fig. 1A2). The quality of the available photos was extremely low. The body was translucent dorsally, darker in Fig. A1, brighter in Fig. A2; a horizontal silver band along mid-body (Fig. 1A2); a visible dark membrane around second dorsal-fin spine (Fig. A1); black lineation along base of dorsal and anal fins apparently extending to caudal peduncle in both specimens; caudal fin dark (Fig. A1) or pale with dark edges (Fig. A2). The specimens were assigned to the genus *Ambassis*, being impossible to distinguish from Fig. 1A1, A2 some fundamental features, such as the presence or absence of cheek scales, the continuous or interrupted lateral line and the smooth or serrate interopercle that allow to separate species (Allen, 1999; Anderson & Heemstra, 2003; Stern *et al*., 2022; Froese & Pauly, 2024).

Remarks. Twenty species belong to the *Ambassis* genus (Nelson *et al*., 2016; Froese & Pauly, 2024); seven species of *Ambassis* occur in brackish to marine waters of the Western Indian Ocean, of which two species, *A. dussumieri* Cuvier, 1828 and *A. urotaenia* Bleeker 1852, are present in the Red Sea (Anderson &

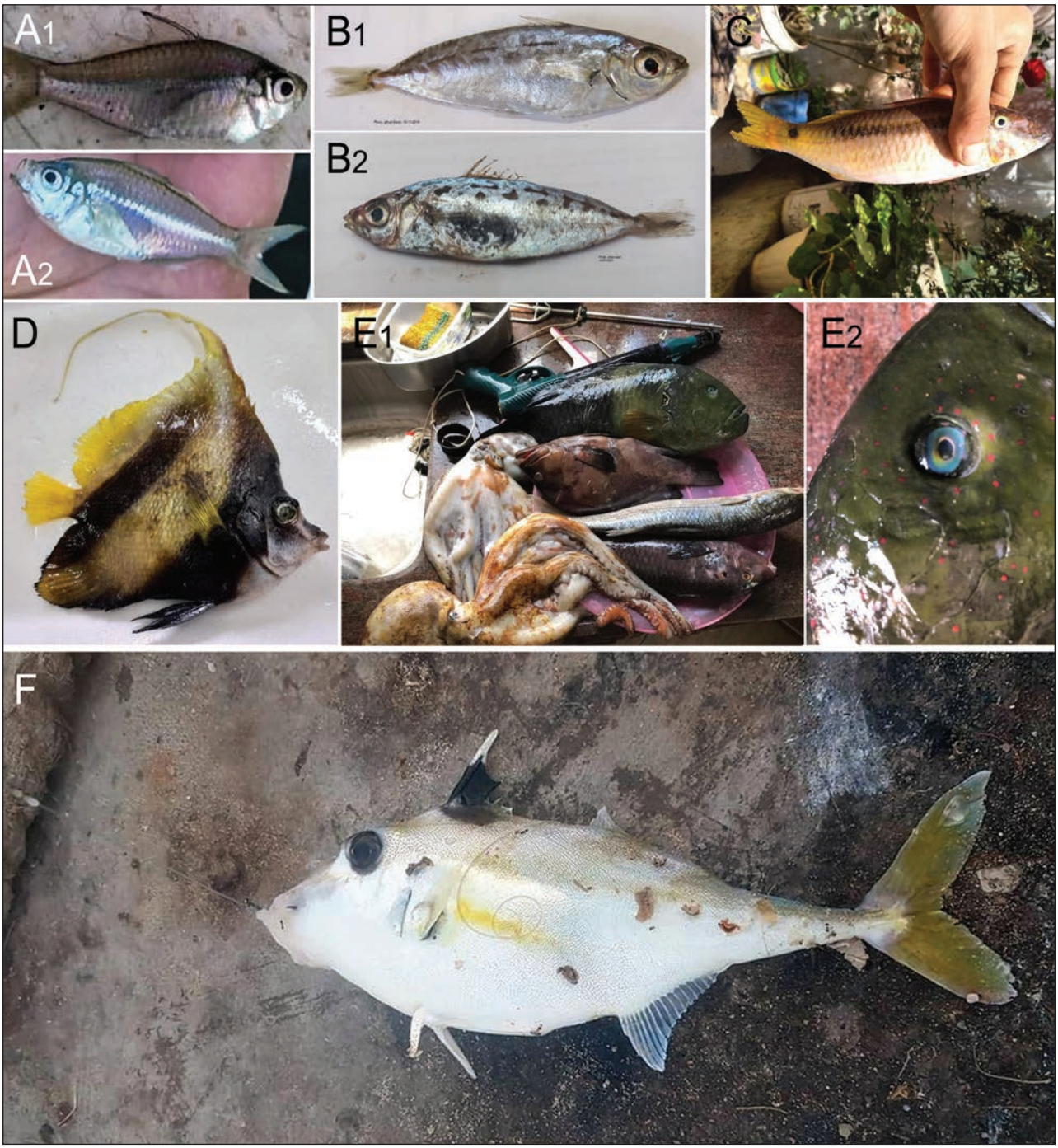

Fig. 1: Non-indigenous fishes from the Gaza Strip waters, Palestine. A1-A2: *Ambassis* ***sp. (Photo A1: Abdullah Jaber; Photo A2: Mahmoud Ahmed Jafeer); B1-B2:*** *Equulites* ***cf.*** *popei* ***(Photos B1, B2: Jehad Y. Salah); C:*** *Parupeneus forsskali****; D:*** *Heniochus intermedius* ***(Photo: Jehad Y. Salah); E1:*** *Cheilinus lunulatus* ***among a spear fishing catch and E2: detail of the red spots on its head (Photos E1, E2: Mohammad Al Nahhal); F:*** *Triacanthus* ***cf.*** *biaculeatus.*

Sl. 1: Tujerodne vrste rib iz voda ob Gazi (Palestina). A1-A2: *Ambassis* ***sp. (Foto A1: Abdullah Jaber; Foto A2: Mahmoud Ahmed Jafeer); B1-B2:*** *Equulites* ***cf.*** *popei* ***(Fotografiji B1, B2: Jehad Y. Salah); C:*** *Parupeneus forsskali****; D:*** *Heniochus intermedius* ***(Foto: Jehad Y. Salah); E1:*** *Cheilinus lunulatus* ***med ulovljenimi ribami s podvodno puško in E2: detajl rdečih peg na njeni glavi (Fotografiji E1, E2: Mohammad Al Nahhal); F:*** *Triacanthus* ***cf.*** *biaculeatus.*

Heemstra, 2003; Golani & Fricke, 2018). Very recently, in October 2021, the tropical schooling Malabar glassy perchlet *A. dussumieri* was recorded for the first time in the Mediterranean from an artificial bay of a power plant in Tel Aviv, Israel, by Stern *et al*. (2022), who discussed the potential invasiveness of the species in the basin.

LEIOGNATHIDAE

Equulites cf. *popei* (Whitley, 1932)

Two specimens of approximately 80 mm in total length were caught with trammel net in the waters off Gaza Strip, at about 20-30 m of depth, one on 10 November 2016 and one on 10 July 2023, respectively (Fig. 1B1, B2). Body elongate, slender and moderately compressed; snout sharp and pointed; protractile mouth. Colour: body silvery, upper sides characterized by dark linear patches along lateral line and other irregular patches. The specimens belonged evidently to the *Equulites elongatus* group and they were assigned to *Equulites* cf. *popei* following Golani *et al*. (2011), Sakinan *et al*. (2017) and Suzuki & Kimura (2017, 2024).

Remarks. The Pope's ponyfish *E. popei* is distributed in the Indo-West Pacific, including the Red Sea up to the Gulf of Suez (Golani & Fricke, 2018). In the Mediterranean Sea, *E. popei* has been recorded for the first time as *E. elongatus*, in 2011 off the Israel coasts (Golani *et al*., 2011). Later the species has spread in the waters of the Levantine Sea, in the regions of Mersin, Antalya and Iskenderun, Turkey (Yokeş, 2015; Irmak *et al*., 2015; Mavruk *et al*., 2019; Ergüden *et al*., 2019), Lebanon (Gerovasileiou *et al*., 2017) and Syria (Ibrahim *et al*. 2020). The species is considered a Lessepsian migrant as the former colonizer *Equulites klunzingeri* (Steindachner, 1898) (Golani, 2021). In 2016, another Leiognathidae new to the Mediterranean Sea, *Leiognathus berbis* Valenciennes, 1835, was reported from the Syrian waters (Alshawy *et al*., 2016), but later it was considered a misidentification and excluded from the list of the non-indigenous species of the basin (Zenetos *et al*., 2022). Recently, in 2021, the ponyfish *Equulites leuciscus* (Günther, 1860) was recorded for the first time in the Levantine Sea waters, at Antalya, Turkey (Kebapcioglu & Cinbilgel, 2022). Noteworthy is that *E. leuciscus* is listed among the marine bony fishes of the Gaza waters, Palestine, in the study conducted between 2017 and 2018 by Abu Amra (2018), however this record has not been validated.

MULLIDAE

Parupeneus forsskali (Fourmanoir & Guézé, 1976)

On 14 May 2022 a specimen of about 180 mm of total length (Fig. 1C) was caught off the Gaza Port with trammel net at 8-10 m of depth. The specimen was identified as *P. forsskali* for the characteristic black stripe running from the snout through eye and along lateral line to below the end of second dorsal fin and also for the black spot on each side of the caudal peduncle.

Remarks. The natural range of *P. forsskali* is the northwestern Indian Ocean, including the Red Sea up to the Gulf of Suez (Golani & Fricke, 2018). The Red Sea goatfish has been observed in the Mediterranean waters since 2000 and later in 2004, in Mersin, Turkey (Çinar *et al*., 2006). Recorded successively from Lebanon (Bariche et al., 2013), Israel (Sonin *et al*., 2013), Syria (Ali *et al*., 2016), Greece and Cyprus (Vagenas *et al*., 2024a), *P. forsskali* is now established, and sometimes abundant, in many eastern Mediterranean regions (Vagenas *et al*., 2024b). The species is considered a Lessepsian migrant (Golani, 2021). It is possible that the photo of a damaged mullid reported as *Upeneus niebuhri* Guézé, 1976 by Abu Amra (2018) corresponds to a *P. forsskali* specimen.

CHAETODONTIDAE

Heniochus intermedius Steindachner, 1893

On 14 February 2023, a specimen of about 100 mm of total length, was caught with gillnet on a mixed bottom of sand and rocks in the waters off the Gaza Strip at about 10 m of depth (Fig. 1D). Body disc-shaped and compressed; head small and concave in its dorsal profile; snout elongated; caudal fin truncate. Colour: body yellow-whitish; two broad black bands, one covering the eye, the operculum and extending ventrally and to the base of the dorsal fin, the other extending diagonally in the posterior part of the body; anterior and posterior part of dorsal fin, the pectoral and caudal fins yellow; posterior and anterior part of anal and the pelvic fins black. In this case, the characteristic body shape and the colour pattern of the specimen allowed identifying it with certainty as *H. intermedius* (Khalaf & Disi, 1997; Debelius, 2011; Bariche, 2012).

Remarks. The natural range of *H. intermedius* is the northwestern Indian Ocean and the Red Sea; thus it is considered a Lessepsian migrant into the Mediterranean (Khalaf & Disi, 1997; Golani & Fricke, 2018). The Red Sea bannerfish *H. intermedius* was recorded for the first time in the basin in 2002, off Mersin, Turkey (Gökoğlu *et al*. 2003), and later in Lebanon (Bariche, 2012), Israel (Tsadok *et al*. 2015), Malta (Evans *et al*., 2015), Cyprus (Bariche *et al*., 2020), Egypt (Al Mabruk *et al*. 2021) and Syria (Ibrahim *et al*., 2022; Saad *et al*., 2022).

LABRIDAE

Cheilinus lunulatus (Forsskål, 1775)

A labrid specimen of about 300 mm in total length was captured on 16 May 2022 at east of the Gaza Port with speargun at 16-22 m of depth (Fig. 1E1, E2). Body blackish with a broad green bar across in abdominal region; each scale of body with a vertical pale line; head green, shading to blackish posteriorly, with small orange-red spots and opercular flap black with

a whitish mark; dorsal fin blackish, pectoral fin bright yellow, shading to hyaline distally. The specimen was assigned to *C. lunulatus* following the description of the terminal male phase colour of the species given by Gomon & Randall (1984).

Remarks. The Broomtail wrasse *C. lunulatus* occurs in the northwestern Indian Ocean and the Red Sea (Golani & Fricke, 2018). The occurrence of this species in the Mediterranean waters is here reported for the first time and monitoring of its eventual spreading in the eastern part of the basin is recommended.

TRIACANTHIDAE

Triacanthus cf. *biaculeatus* (Bloch, 1786)

On 22 April 2021, a specimen of approximately 180 mm of total length was fished with simple line, on sandy bottom in shallow waters off the Gaza Strip (Fig. 1F).

The following meristic and morphological characteristics are visible in Fig. 1F: 5 dorsal fin spines, the second shorter than the length of the first, and 17 anal fin rays. Body deep and compressed; mouth small, terminal; outline of head between the first dorsal-fin spine and eyes almost straight, slightly concave from eye to mouth; gill opening a relatively short vertical slit in front of pectoral fin base; caudal fin forked with internal margins of lobes slightly rounded. Approximate proportions obtained from Fig. 1F: head length 23.7, distance from eye to upper end of gill opening 7.8, eye diameter 5.1, preorbital length 14.2, postorbital 5.1, body depth 37.5, all as % of standard length. Colour: lightly silver creamy; a yellow longitudinal strip at midside of body, behind the pectoral fin; dark posterior of eye and under the eye; black membrane between the first and third spines of dorsal fin a, the remaining paler; first dorsal fin spine white toward the tip; region around the base of first dorsal fin dark; caudal fin yellowish with bluish edges and inner margins; second dorsal, pectoral and anal fins pale.

Seven species in four genera are recognized in the Family Triacanthidae all over the world (Nelson et al., 2016), of which the genus *Triacanthus* includes two species, *Triacanthus biaculeatus* (Bloch, 1786) and *Triacanthus nieuhofii* Bleeker, 1852 (Matsuura, 2015; Froese & Pauly, 2024). These two species differ mainly for the coloration of spinous dorsal fin and the outline of the head. In *T. biaculeatus* the spiny dorsal-fin membrane is dark between first and third spines, and usually equally dark between third and fifth, while the outline of head from base of first dorsal-fin spine to above eye is slightly convex or almost straight; in *T. nieuhofii* the spiny dorsal-fin membrane is very dark between first and second spines, slightly to much less darker between second and third spines, and pale between third and fifth spines, while the outline of head between base of first dorsal-fin spine and eyes somewhat convex in front of spine and then straight or slightly concave over eye (Hutchins, 1984; Matsuura, 2001; Psomadakis *et al*., 2015; Ghazi *et al*., 2018; Goutham-Bharathi *et al*., 2024). The body shape and the general aspect as well as the body proportions of the *Triacanthus* from Gaza approached the descriptions of *T. biaculeatus* (Matsuura, 2001; Karna *et al*., 2018; Goutham-Bharathi *et al*., 2024), but, since the colour of spinous dorsal fin and the outline of head are not clearly discernible in Fig. 1F, the specimen is prudently assigned to *T.* cf. *biaculeatus*.

Remarks. The Short-nosed tripodfish *T. biaculeatus* is widespread in the Indo-West Pacific area from the Persian Gulf, Gulf of Oman, Arabian Sea, Bay of Bengal, and Japan, China, South China Sea including Gulf of Thailand, Indonesia, northern Australia; the Silver tripodfish *T. nieuhofii* is reported from the Arabian Sea, Bay of Bengal, Andaman Sea, Indonesia, South China Sea to northern Australia (Matsuura, 2015; Mohanty *et al*., 2018; Eagderi *et al*., 2019; Froese & Pauly, 2024). The above two *Triacanthus* spp. have not been recorded among the ichthyofauna of the Gulf of Aqaba and the Red Sea (Sanzo 1930; Khalaf & Disi, 1997; Golani & Fricke, 2018), up to 2023, when the occurrence of *T. biaculeatus* has been documented for the first time in the southeastern waters of the Red Sea (Goutham-Bharathi *et al*., 2024). Both *Triacanthus* spp. are small benthic fish, found on sandy or muddy flat bottoms in coastal waters to 60 m, *T. biaculeatus* also in estuarine waters and in mangrove systems at juvenile stages; they feed on benthic invertebrates (Krishnamurthy & Prince Jeyaseelan, 1981; Hutchins, 1984; Matsuura, 2001). Both triacanthid species are sold fresh in markets. The Short-nosed tripodfish *T. biaculeatus* is listed among the commercially important marine ornamental fishes from Persian Gulf and Indian Ocean waters (Jayasankar 1998; Hosseinzadeh Sahafi, 2000; Mahapatra & Lakra, 2015). It is the first time that a species of Triacanthidae is reported from the Mediterranean Sea.

DISCUSSION

As already mentioned, the lack of samples of the fishes from the waters off the Gaza Strip reported in the present study as well as the scarcity and the low quality of the available photographic material rendered in some cases arduous achieving species identification through a description of morphological and meristic characters, as for the glassfish *Ambassis* sp. In the case of the ponyfish a high similarity with *E. popei* was observed and it was consequently assigned to *E.* cf. *popei*, while the resemblance of the tripodfish to *T. biaculeatus* conduced to assign to *T.* cf. *biaculeatus* the specimen from Gaza. In the three remaining cases, those regarding the goatfish, the bannerfish and the wrasse, photos allowed their identification to species level respectively as *P. forsskali*, *H. intermedius* and *C. lunulatus*.

All the above six fishes are non-indigenous of Indo-West Pacific origin, with two of them, *C. lunulatus* and *T.* cf. *biaculeatus*, recorded here for the first time in the Mediterranean waters. Nevertheless, the eventual success of these two latter species as new entries into the basin needs validation through further records, being their findings based on single, casual observations.

The native range of the higher percentage of Lessepsian migrant fishes is the Indo-West Pacific Ocean and the Red Sea (Golani *et al*., 2020), a range that corresponds also to that of the Broomtail wrasse *C. lunulatus*. Consequently, its arrival from the Red Sea in the eastern Mediterranean, if confirmed, could be explained via the Lessepsian migration process through the Suez Canal corridor. On the other hand, for the two triacanthid species known, *T. biaculeatus* and *T. nieuhofii*, only *T. biaculeatus* has been recently detected in the southeastern Red Sea (Goutham-Bharathi *et al*., 2024). Other findings in the Mediterranean Sea will give the opportunity first of all to identify with accuracy the species under question and eventually postulate a pathway of introduction. As mentioned above, juveniles of *T. biaculeatus* occur also in estuarine waters. If the occurrence of *T. biaculeatus* will be ascertained, the Delta of Nile and the lagoons of Egypt, located not far, at west to the Gaza Strip waters, could provide suitable habitats for the juveniles of this species, as observed for other Indo-West Pacific/Red Sea non-indigenous fishes introduced to the Mediterranean (Kara & Quignard, 2018).

The NIS *P. forsskali*, *E.* cf. *popei* and *H. intermedius* from the Red Sea entered via the Suez Canal into the Mediterranean Sea. After their adaptation to the new Mediterranean environment and the establishment of a reproducing population, these Lessepsian migrant fishes have colonized the eastern waters of the basin, as mentioned in the respective Remarks given above. Although their presence was expected in the Gaza Sea, the documentation of their occurrence in this specific area under study fills a gap of knowledge regarding their successful establishment and spreading in the wider Levantine region.

Given that the first glassfish from Gaza, here reported as *Ambassis* sp., have been captured and photographed in winter 2021 and summer 2022 in the Gaza Port, there is a high probability that they are *A. dussumieri,* a species detected in October 2021 for the first time in a similar artificial habitat in the nearby Mediterranean waters of Israel (Stern *et al*., 2022). Its finding, if confirmed as *A. dussumieri*, could therefore support the existence of a large and established population of this schooling species in the eastern Levant, as forecasted by Stern *et al*. (2022).

Up to date, the NIS bony fishes of Indo-Pacific/Red Sea origin reported from the waters off the Gaza Strip, all considered Lessepsian migrants, approach a number of 40 species, approximately 30 % of the marine bony fishes reported in the fishery activities of the region (Liebmann, 1934; Haas & Steinitz, 1947; Abu Amra, 2018; Bariche *et al*., 2019; Abd Rabou *et al*., 2023). Taking into account that validation of at least five NIS fishes listed in Abu Amra (2018) is required, the number of Lessepsian migrant fishes detected in the restricted marine region under study is anyway high, being 39 % of the at least 106 Lessepsian fish species known in the whole eastern sector of the Mediterranean (Golani *et al*., 2020, 2021). Various Lessepsian fishes in fact give a large contribution to the marine fishery production along the 42 Km coastal waters of the Gaza Strip (Hussein *et al*., 2022).

The addition of the six NIS fishes reported here corroborates the importance of the Gaza Sea for documenting both the arrival of new Indo-Pacific/Red Sea NIS into the Mediterranean as well as the distribution expansion of already known NIS.

The present study underlines furthermore the usefulness of citizen scientists' observations for the improvement of biodiversity knowledge of the basin and the utility of social media and new technologies in the fast achievement of new information, especially in poorly known Mediterranean regions such as the waters off the Gaza Strip (Bariche *et al*., 2019; Abd Rabou *et al*., 2023) and the North African countries (Corsini-Foka & Zava, 2022). On the other hand, the data reported in the present study testify the limitedness of this type of diffusion, when new technologies are not appropriately used. In fact, the excessive importance given to the rapid dispersion of information, through social media and platforms, often predominates at the expense of the quality of the material supplied, material that in many cases appears insufficient to support a scientifically substantiate new knowledge. Therefore, this rapidly transmitted information is subjected to the risk to be likewise rapidly lost, due to the absence or scarcely accurate methodology in documenting the findings by citizen scientists and sensitized fishers, as discussed in Deidun *et al*. (2022).

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PRVO POJAVLJANJE VRST *CHEILINUS LUNULATUS* (LABRIDAE), *TRIACANTHUS* CF. *BIACULEATUS* (TRIACANTHIDAE) IN ŠE ŠTIRIH TUJERODNIH VRST V VODAH OB GAZI, PALESTINA

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POVZETEK

Avtorji poročajo o šestih tujerodnih vrstah indopacifiškega izvora, ki so jih potrdili v vodah ob Gazi (Palestina) na podlagi fotografij in podatkov na namenskih platformah iz obdobja 2016-2023, pridobljenih na podlagi ljubiteljske znanosti (entuziasti in ribiči). Dve vrsti, Cheilinus lunulatus *in* Triacanthus *cf*. biaculeatus*, sta bili v Sredozemskem morju najdeni prvič, štiri vrste* Ambassis *sp.,* Equulites *cf*. elongatus*,* Parupeneus forsskali *in* Heniochus intermedius *pa prvič v palestinskih vodah ob Gazi. Čeprav so podatki in material omejeni, dobljeni rezultati krepijo uporabno podporo ljubiteljske znanosti pri spremljanju vnosa in/ali širjenja tujerodnih vrst v bazenu vzhodnega Sredozemskega morja, ki se sooča z velikim vplivom bioinvazije.*

Ključne besede: Levantsko morje, Palestina, Gaza, tujerodne vrste, lesepska selitev, ljubiteljska znanost

REFERENCES

Abd Rabou, A.F.N, K.E. Elkahlout, K.J. Elnabris, H.M. Shurrab, A.M. Almalfouh, A.F. Baroud, I.R. Alattili, R.M. Alamassi, M.A. Abd Rabou, O.A. Abd Rabou, J.Y. Salah, S.M. Awadalah, W.M. Saqallah & M.A. Aboutair (2023): Rare records of the exotic Reef Stonefish (*Synanceia verrucosa* Bloch and Schneider, 1801) in the Mediterranean waters of the Gaza Strip, Palestine. Int. J. Fauna Biol. Stud., 10(3), 24-28. https://doi.org/10.22271/23940522.2023.v10.i3a.963.

Abu Amra, H. (2018): A survey of marine bony fishes of the Gaza Strip, Palestine. Master BSc Thesis, Islamic University of Gaza, 110 pp.

Ali, M., Y. Diatta, H. Alkusairy, A. Saad & C. Capapé (2016): First Record of Red Sea Goatfish *Parupeneus forsskali* (Osteichthyes: Mullidae) from the Syrian Coast (Eastern Mediterranean). J. Ichthyol., 56 (4), 616-619. https://doi.org/10.1134/S0032945216040019.

Allen, G.R. (1999): Ambassidae. In: Carpenter, K.E. & V.H. Niem (eds.): FAO species identification guide for fishery purposes. The living marine resources ofthe Western Central Pacific. Volume 4. Bony fishes part 2 (Mugilidae to Carangidae). FAO, Rome, pp. 2433-2435.

Al Mabruk, S.A.A., A. Abdulghani, O.M. Nour, M. Adel, F. Crocetta, N. Doumpas, P. Kleitou & F. Tiralongo (2021): The role of social media in compensating for the lack of field studies: Five new fish species for Mediterranean Egypt. J. Fish Biol., 99, 673-678. http://dx.doi.org/10.1111/jfb.14721.

Alshawy, F., M. Lahlah & C. Hussein (2016): First record of the Berber ponyfish *Leiognathus berbis* Valenciennes, 1835 (Osteichthyes: Leiognathidae) from Syrian marine waters (Eastern Mediterranean). Mar. Biodivers. Rec., 9, 98. https://doi.org/10.1186/s41200-016-0099-1.

Anderson, M.E. & P.C. Heemstra (2003): Review of the Glassfishes (Perciformes: Ambassidae) of the Western Indian Ocean. Cybium, 27(3), 199-209. https://doi.org/10.26028/cybium/2004-273-003.

Bariche, M. (2012): Recent evidence on the presence of *Heniochus intermedius* (Teleostei: Chaetodontidae) and *Platycephalus indicus* (Teleostei: Platycephalidae) in the Mediterranean Sea. BioInvasions Rec., 1(1), 53-57. http://dx.doi.org/10.3391/bir.2012.1.1.12.

Bariche, M., M. Bilecenoglu & E. Azzurro (2013): Confirmed presence of the Red Sea goatfish *Parupeneus forsskali* (Fourmanoir & Guézé, 1976) in the Mediterranean Sea. BioInvasions Rec., 2(2), 173-175. https://doi.org/10.3391/bir.2013.2.2.15.

Bariche, M., N. Sayar & P. Balistreri (2019): Records of two non-indigenous fish species *Synanceia verrucosa* Bloch and Schneider, 1801 and *Acanthurus sohal* (Forsskål, 1775) from the Gaza strip (eastern Mediterranean Sea). BioInvasions Rec., 8(3), 699-705. https://doi.org/10.3391/bir.2019.8.3.27.

Bariche, M., S.A. Al-Mabruk, M.A. Ateş, A. Büyük, F. Crocetta, M. Dritsas, D. Edde, A. Fortič, E. Gavriil, V. Gerovasileiou, M. Gökoğlu, F.M. Huseyinoglu, P.K. Karachle, P. Kleitou, T. Terbiyik Kurt, J. Langeneck, C. Lardicci, L. Lipej, C. Pavloudi, M. Pinna, J. Rizgalla, M. Rüştü Özen, F. Sedano, E. Taşkin, G. Yildiz & F. Zangaro (2020): New Alien Mediterranean Biodiversity Records (March 2020). Mediterr. Mar. Sci., 21(1), 129-145. https://doi.org/10.12681/mms.21987.

Çinar, M.E., M. Bilecenoglu, B. Ozturk & A. Can (2006): New records of alien species on the Levantine coast of Turkey. Aquat. Invasions, 1(2), 84-90. https://doi.org/10.3391/ai.2006.1.2.6.

Corsini-Foka, M. & B. Zava (2022): Second occurrence of *Siganus javus* (Linnaeus, 1766) in the Mediterranean waters. Ann. Ser. Hist. Nat., 32(2), 287-292. https://doi.org/10.19233/ASHN.2022.29.

Debelius, H. (2011): Red Sea reef guide. IKAN-unterwasserarchiv, Frankfurt, Germany, 321 pp.

Deidun, A., B. Zava & M. Corsini-Foka (2022): Distribution extension of *Lutjanus argentimaculatus* (Forsskål, 1775) (Lutjanidae) and *Psenes pellucidus* Lütken, 1880 (Nomeidae) to the waters of Malta, central Mediterranean Sea. Annales, Ser. Hist. Nat., 32(1), 49-58. http://dx.doi.org/10.19233/ASHN.2022.06.

Eagderi, S., R. Fricke, H.R. Esmaeili & P. Jalili P. (2019): Annotated checklist of the fishes of the Persian Gulf: Diversity and conservation status. Iran. J. Ichthyol., 6(Suppl. 1), 1-171.

Ergüden, D., M. Gürlek, A. Uyan, S.A. Doğdu & C. Turan (2019): Range expansion of *Equulites popei* (Whitley 1932) along the Mediterranean Coast of Turkey. J. Anatol. Environ. Animal Sci., 4(3), 371-375. https://doi.org/10.35229/jaes.592050.

Evans, J., R. Tonna & P.J. Schembri (2015): Portent or accident? Two new records of thermophilic fish from the central Mediterranean. BioInvasions Rec., 4(4), 299-304. http://dx.doi.org/10.3391/bir.2015.4.4.12.

Froese, R. & D. Pauly (eds.) (2024): FishBase. World Wide Web electronic publication. www.fishbase.org (02/2024) (Accessed on 9/3/2024).

Galanidi, M., M. Aissi, M. Ali, A. Bakalem, M. Bariche, A.G. Bartolo, H. Bazairi, S. Beqiraj, M. Bilecenoglu, G. Bitar, et al. (2023): Validated Inventories of Non-Indigenous Species (NIS) for the Mediterranean Sea as Tools for Regional Policy and Patterns of NIS Spread. Diversity, 15(9), 962. https://doi.org/10.3390/d15090962.

Galil, B.S. (2023): A Sea, a Canal, a Disaster: The Suez Canal and the Transformation of the Mediterranean Biota. In: Lutmar, C. & Z. Rubinovitz (eds.): The Suez Canal: Past Lessons and Future Challenges. Palgrave Studies in Maritime Politics and Security, pp. 199-215. https://doi.org/10.1007/978-3-031-15670-0_10.

Gerovasileiou, V., E.H.Kh. Akel, O. Akyol, G. Alongi, F. Azevedo, N. Babali, R. Bakiu, M. Bariche, A. Bennoui, L. Castriota, C.C. Chintiroglou, F. Crocetta, A. Deidun, S. Galinou-Mitsoudi, A. Giovos, M. Gökoğlu, A. Golemaj, L. Hadjioannou, J. Hartingerova, G. Insacco, S. Katsanevakis, P. Kleitou, J. Korun, L. Lipej, N. Michailidis, A. Mouzai Tifoura, P. Ovalis, S. Petović, S. Piraino, S.I. Rizkalla, M. Rousou, I. Savva, H. Şen, A. Spinelli, K.G. Vougioukalou, E. Xharahi, B. Zava & A. Zenetos (2017): New Mediterranean Biodiversity Records (July, 2017). Mediterr. Mar. Sci., 18(2), 355-384. https://doi.org/10.12681/mms.13771.

Ghazi, A.H.H., A.J. Al-Faisal & M.A.A. Alfaris (2018): On the occurrence of the short-nosed tripod fish *Triacanthus biaculeatus* (Bloch, 1786) in the North of Basrah, Southern Iraq. Mesopotamian Journal of Marine Science, 33(2), 99-104. https://doi.org/10.58629/mjms.v33i2.54.

Gökoğlu, M., T. Bodur & T. Kaya (2003): First record of the Red Sea bannerfish (*Heniochus intermedius* Steindachner, 1893) from the Mediterranean Sea. Isr. J. Zool., 49(4), 324-325.

Golani, D. (2021): An updated Checklist of the Mediterranean fishes of Israel, with illustrations of recently recorded species and delineation of Lessepsian migrants. Zootaxa, 4956(1), 1-108. https://doi.org/10.11646/zootaxa.4956.1.1.

Golani, D. & R. Fricke R. (2018): Checklist of the Red Sea Fishes with delineation of the Gulf of Suez, Gulf of Aqaba, endemism and Lessepsian migrants. Zootaxa, 4509(1), 1-215. https://doi.org/10.11646/zootaxa.4509.1.1.

Golani, D., R. Fricke & B. Appelbaum-Golani (2011): First record of the Indo-Pacific Slender Ponyfish (*Equulites elomgatus*) in the Mediterranean (Perciformes: Leiognathidae). Aquat. Invasions, 6 (Suppl. 1), S75-S77. https://doi.org/10.3391/ai.2011.6.S1.017.

Golani, D., R. Fricke & B. Appelbaum-Golani (2020): Zoogeographic patterns of Red Sea fishes – are they correlated to success in colonization of the Mediterranean via the Suez Canal? Mar. Biol. Res., 16(10), 774-780. https://doi.org/10.1080/17451000.2021.1894340.

Golani, D., E. Azzurro, J. Dulčić, E. Massutí & L. Orsi-Relini (2021): Atlas of Exotic Fishes in the Mediterranean Sea, 2nd Edn. Briand, F. (ed.). CIESM Publishers, Paris, 365 pp.

Gomon, M.F. & J.E. Randall (1984): Labridae. In: Fischer, W. & G. Bianchi (eds.): FAO species identification sheets for fishery purposes. Western Indian Ocean (Fishing Area 51). Vol. 2. FAO, Rome, pages variables.

Goutham-Bharathi, M.P., T.K. Sirajudheen, R.G. Santucci, R. Fricke & M. Dimech (2024): First record of Triacanthidae Bleeker, 1859 (Actinopterygii: Tetraodontiformes) from the Red Sea. Acta Ichthyol. Piscat., 54, 21-25. https://doi.org/10.3897/aiep.54.115071.

Haas, G. & H. Steinitz (1947): Erythrean fishes on the Mediterranean coast of Palestine. Nature, 160, 28. https://doi.org/10.1038/160028b0.

Hosseinzadeh Sahafi, H. (2000): Identification of marine ornamental fishes in northern part of the Persian Gulf, Iran. Iran. J. Fish. Sci., 2(2), 21-36.

Hussein, D.M.A., M.C. Lucchetti, A.A. Zaqoot, J. Penca & M.A. Hussein (2022): Status of Fisheries in Gaza Strip: Past Trends and Challenges. Int. J. Euro-Mediterr. Stud., 15(2), 179-216. https://emuni.si/ISSN/2232-6022/15.179-216.pdf.

Hutchins, J.B. (1984): Triacanthidae. In: Fischer, W. & G. Bianchi (eds.): FAO species identification sheets for fishery purposes. Western Indian Ocean (Fishing Area 51). Vol. 4. FAO, Rome, pages variables.

Ibrahim, A., C. Hussein, F. Alshawy & A.A. Ahmad (2020): First Record of Pope's ponyfish *Equulites popei* (Whitley, 1932), (Osteichthyes: Leiognathidae) in the Syrian marine waters (Eastern Mediterranean). Journal of Wildlife and Biodiversity, 4(Special issue), 1-5. https://doi.org/10.22120/jwb.2020.123579.1127.

Ibrahim, A., C. Hussein, F. Alshawy, M. Badran, W. Ghanem, A.A. Ahmad & A. Saleh (2022): First Record of the Red Sea Bannerfish *Heniochus intermedius* Steindachner, 1893, (Chaetodontidae) in the Syrian Marine Waters (Eastern Mediterranean). Species, 23(72), 459-463.

Irmak, E., S. Engin, D. Seyhan & U. Özden **(2015):** First record of the Slender Pony Fish, *Equulites elongatus* (Günther, 1874) (Osteichthyes: Leiognathidae), from the Turkish coast of the Levantine Sea. Zool. Middle East, 61(4), 386-388. http://dx.doi.org/10.1080/09397140.2015.1101928.

Jayasankar, P. (1998): Ornamental fish culture and trade: current status and prospects. Fishing Chimes, 17(2), 9-13.

Kara, M.H. & J.-P. Quignard (2018): Fishes in Lagoons and Estuaries in the Mediterranean 1. Diversity, Bioecology and Exploitation. Gaill, F. (ed.). John Wiley & Sons, Inc., USA, 288 p. https://doi.org/10.1002/9781119452751.ch1.

Karna, S.K., L.A. Jawad & D.K. Sahoo (2018): Confirmation of the presence of the Silver Tripodfish, *Triacanthus nieuhofii* Bleeker, 1852 (Teleostei: Triacanthidae), from the East Coast of India, with a description of two deformed specimens. J. Ichthyol., 58(4), 587-593. https://doi.org/10.1134/S0032945218040082.

Kebapcioglu, T. & I. Cinbilgel (2022): First record of the Indo-Pacific whipfin ponyfish *Equulites leuciscus* (Günther, 1860) (Perciformes: Leiognathidae) in the Mediterranean. BioInvasions Rec., 11(2), 530-536. https://doi.org/10.3391/bir.2022.11.2.25.

Khalaf, M.A. & A.M. Disi (1997): Fishes of the Gulf of Aqaba. The Marine Science Station, Aqaba, Jordan, 252 pp.

Krishnamurthy, K. & M.J. Prince Jeyaseelan (1981): The early life history of fishes from Pichavaram mangrove ecosystem of India. Rapp. P.-v. Réun. Cons. int. Explor. Mer, 178, 416-423.

Liebmann, E. (1934): Contribution to the knowledge of Palestine sea fishes. Rapp. P.-v. Réun. Cons. int. Explor. Mer, 8, 317-327.

Mahapatra, B.K. & W.S. Lakra (2015): Marine ornamental fish biodiversity of West Bengal. Int. J. Sci. Res., 4(8), 249-252.

Matsuura, K. (2001): Triacanthidae. Triplespines. In: Carpenter, K.E. & V. Niem (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 6. Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles. FAO, Rome, pp. 3905-3910.

Matsuura, K. (2015): Taxonomy and systematics of tetraodontiform fishes: a review focusing primarily on progress in the period from 1980 to 2014. Ichthyol. Res., 62, 72-113. https://doi.org/10.1007/s10228-014-0444-5.

Mavruk, S., O. Güven, K. Gökdağ & M. Bariche (2019): Westward spreading of the Pope's ponyfish *Equulites popei* in the Mediterranean: new occurrences from Antalya Bay with emphasis on its abundance and distribution. J. Black Sea Mediterr. Environ., 25(3), 259-265.

Mohanty, S.R., A. Mohapatra & S.S. Mishra (2018): First Record of *Triacanthus nieuhofii* Bleeker, 1852 (Tetraodontiformes: Triacanthidae) from Northern East Coast of India. Rec. Zool. Surv. India, 118(3), 310-313. https://doi.org/10.26515/rzsi/v118/i3/2018/118502.

Nelson, J.S., T.C. Grande & M.V.H. Wilson (2016): Fishes of the World (5th Edition). John Wiley and Sons Inc., Hoboken, New Jersey, 707 pp.

Pocock, M.J.O., T. Adriaens, S. Bertolino, R. Eschen, F. Essl, P.E. Hulme, J.M. Jeschke, H. E. Roy, H. Teixeira & M. de Groot (2024): Citizen science is a vital partnership for invasive alien species management and research. iScience, 27, 108623. https://doi.org/10.1016/j.isci.2023.108623.

Psomadakis, P.N., H.B. Osmany & M. Moazzam (2015): Field identification guide to the living marine resources of Pakistan. FAO Species Identification Guide for Fishery Purposes. FAO, Rome, 386 p., 42 colour plates. (Available at: FAO species identification guide for fishery purposes. http://agris.fao.org/agris-search/search.do?recordID=XF2016038532).

Saad, A., M. Masri, A. Soliman & L. Khrema (2022): First Occurrence of *Heniochus intermedius* Steindachner, 1893 in the Syrian marine waters (Levantine Basin). Asian J. Fish. Aquat. Res., 19(5), 14-18. https://doi.org/10.9734/ajfar/2022/v20i130486.

Sakinan, S., A. Karahan & M. Ok (2017): Integration of DNA barcoding for the initial recordings of Lessepsian fishes: a case study of the Indo-Pacific slender ponyfish *Equulites elongatus*. J. Fish Biol., 90, 1054-1061. https://doi.org/10.1111/jfb.13207.

Sanzo, L. (1930): Plectognati. Ricerche biologiche su materiali raccolti dal Prof. L. Sanzo nella Campagna Idrografica nel Mar Rosso della R. N. Ammiraglio Magnaghi 1923-1924. VII. Mem. R. Com. Talassogr. Ital., 167, 119 pp.

Sonin, O., P. Salameh, D. Edelist & D. Golani (2013): First record of the Red Sea Goatfish, *Parupeneus forsskali* (Perciformes, Mullidae) from the Mediterranean coast of Israel. Mar. Biodivers. Rec., 6, e105. https://doi.org/10.1017/S1755267213000791.

Stern, N., K. Gayer & A. Morov (2022): A transparent invasion: a first Mediterranean record and an established population of the glassfish *Ambassis dussumieri* Cuvier 1828. Mediterr. Mar. Sci., 23(1), 191-195. https://doi.org/10.12681/mms.28769.

Suzuki, H. & S. Kimura (2017): Taxonomic revision of the *Equulites elongatus* (Günther 1874) species group (Perciformes: Leiognathidae) with the description of a new species. Ichthyol. Res., 64, 339-352. https://doi.org/10.1007/s10228-017-0572-9.

Suzuki, H. & S. Kimura (2024): Taxonomic revision of the genus *Equulites* Fowler 1904 (Acanthuriformes: Leiognathidae). Ichthyol. Res., 71, 213-259. https://doi.org/10.1007/s10228-023-00935-z.

Tsadok, R., E. Shemesh, Y. Popovich, Y. Sabag, D. Golani & D. Chernov (2015): New record and occurrence of the Red Sea Bannerfish, *Heniochus intermedius* (Actinopterygii: Perciformes: Chaetodontidae), in the Mediterranean. Acta Ichthyol. Piscat., 45 (3), 331-333. https://doi.org/10.3750/AIP2015.45.3.14.

Vagenas, G., P.K. Karachle, A. Oikonomou, M.T. Stoumboudi & A. Zenetos (2024a): Decoding the spread of non-indigenous fishes in the Mediterranean Sea. Sci. Rep., 14(1), 6669. https://doi.org/10.1038/s41598-024-57109-8.

Vagenas, G., A. Dogrammatzi, G. Kondylatos & P.K. Karachle (2024b): On the biology of the alien Red Sea goatfish, *Parupeneus forsskali* (Fourmanoir & Guézé, 1976) in the Aegean Sea, eastern Mediterranean. Mar. Biol. Res., 19(10), 564-573. https://doi.org/10.1080/17451000.2023.2299978.

Yokeş, M.B. (2015): First record of the Indo-Pacific slender ponyfish *Equulites elongatus* (Günther, 1874) (Perciformes: Leiognathidae) from Turkey. BioInvasions Rec., 4(4), 305-308. http://dx.doi.org/10.3391/bir.2015.4.4.13.

Zenetos, A., P.G. Albano, E. López Garcia, N. Stern, K. Tsiamis & M. Galanidi (2022): Established non-indigenous species increased by 40% in 11 years in the Mediterranean Sea. Mediterr. Mar. Sci., 23(1), 196-212. https://doi.org/10.12681/mms.2910v6.