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SHORT COMMUNICATION

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New locality record for *Fistularia petimba* Lacepède, 1803 from the Northeastern Mediterranean Sea (Mersin Bay)

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ABSTRACT

Fistularia petimba distributes in tropical and subtropical waters of Atlantic and Indo-Pacific. In this research, two individuals belonging to *F. petimba* were caught in a trawl operation carried out in Mersin Bay in May 2018. Necessary morphometric measurements were taken to prevent misconceptions in the identification of the species and it was determined that morphometric measurements in the captured individuals were consistent with the measurements of the specimens in the previous studies. It is believed that *F. petimba* entered the Northeastern Mediterranean Sea from the Red Sea. This species is posing a threat to the Mediterranean ecosystem as a predator and its invasion capacity is discussed..

K E Y W O R D S: *Fistularia petimba*, North-Eastern Mediterranean Sea, Mersin Bay, Turkey

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1. Introduction

F. petimba, is a species belonging to the monotypic Fistulariidae family of the Syngnathiformes. Fritzsche (1976) reported the existence of four identified species of this genus as *F. tabacaria*, *F. commersonii*, *F. corneta* and *F. petimba*. Stern et al. (2017) reported the presence of six species in this genus as *F. petimba, F. serrata, F. immaculata*, *F. villosa, F. starksi*, and *F. rubra*. Goren and Dor (1994) reported that only *F. petimba* and *F. commersonii* distribute in the Red Sea.

The common characteristic features defined for these species are that they have a long elongated body; the presence of serrated structures on snout, preorbital and postorbital; the back part of the body is brown and lighter on the sides; on the abdomen is a whitish gray color (Stern et al., 2017).

It has been reported that there are errors in the identification of species belonging to this genus in the literature (Fritzsche, 1976; Burgess et al., 1979; Corsini et al., 2002; Yasemi, 2012; Stern et al., 2017). Cornet fish species belonging to the genus Fistularia are similar in terms of both genetic and morphological characters, and have also similarities with their biological and habitat preferences (Yasemi, 2012; Stern et al., 2017). In order to minimize these taxonomic errors, appropriate morphometric measurements and genetic research were conducted. Characteristics of *F. petimba* distinguishes it from other species: the presence of bony constricted structures embedded in the skin along the lateral line and the midline of its back; the frequency of these plates; red and orange coloration (Fritzsche, 1976; Golani, 2000; Stern et al., 2017). It does not have spin bony plaques elongated along the midline of the back of the *F. commersonii*. The posterior lateral line is bony, and there are blue dots on the back and on the side (Pais et al., 2007).

The distribution areas for taxonomic differentiation of the species were also examined. *F. petimba* is similar to *F. corneta* in terms of distribution areas. However, the distribution of *F. corneta* is known to be limited to tropical Pasific (Fritzsche, 1976). In addition, *F. petimba* was reported to be coexist with *F. commersonii* in the Eastern Mediterranean Sea (Stern et al., 2017). *F. petimba* has a wide distribution in Atlantic, Indo-West Pacific and Red Sea (Weber & DeBeaufer, 1922; Dor, 1984; Baron and Sande, 2007). The first records of the species in the Eastern Mediterranean Sea were recorded from the Gulf of Antalya in 2016, and from the Gulf of Iskenderun in 2017 (Ünlüoglu et al., 2018) and from the coasts of Israel (Stern et al., 2017).

F. petimba is located between the depths of 10-200 m of the water column (May & Maxwell, 1986). It was reported that the species had been caught with gill net from 7 m depth (Baron and Sande, 2007), with bottom trawl net from 60 m depht (Thangavelu et al., 2009), and with two boat pelagic trawl from 150 m depth (Yasemi, 2012). The known maximum total length of the species was reported to be 200 cm, generally 180 cm (Sanches, 1991; Figueiredo et al., 2002). On the other hand, Fritzsche (1976) stated that there were individuals 100 cm and smaller.

They are carnivores and feed on species of economic importance. That is why; *F. petimba* belonging to the genus Fistularia are known as Lessepsian invasive predator for Mediterranean marine ecosystem (Corsini et al., 2002). *F. commersonii* has been reported to constitute a population in the Mediterranean in the last 10 years (Azzurro et al., 2013). The migration of cornet fish species to the Mediterranean is a major threat to the Mediterranean marine ecosystem and its economy (Psomadakis et al., 2009).

In this study, the first record of *F. petimba* in Mersin Bay demonstrated with morphological data, which was compared with previous records about the species.

2. Materials and Methods

Two specimens of *F. petimba* Lacepède, 1803 were caught by a trawl operation at a depth of 150 m on 10 May 2018 in the Büyükeceli Coast (Mersin Bay) (coordinate: 36°07'23.3"N, 33°28'04.6"E). These specimens were preserved in 4% formalin and were deposited in the Museum of the Systematic,

Faculty of Fisheries, Mersin University, (catalogue number: MEUFC-18-11-062). This species belongs to Fistulariidae family of Syngnathiformes. Morphometric and meristic characters of these specimens are given in Table 1 and sampling point of the species in the Mediterranean Sea is presented in Map (Figure 1). Photographs of caught specimens are shown in Figures 2.

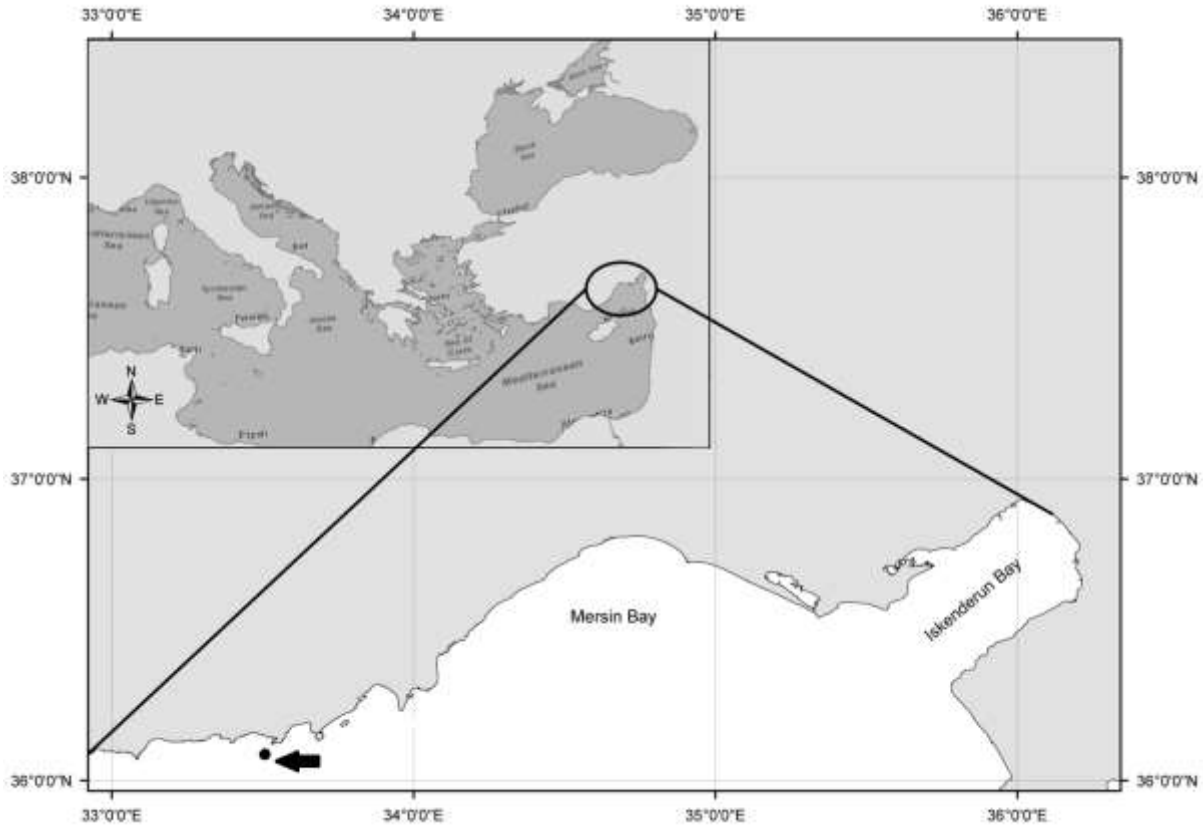

Figure 1. The black point indicates the location where the specimens was caught

Figure 2. Specimens of *F. petimba* caught from Mersin Bay

3. Results

In this study carried out in Mersin Bay were caught two specimens of *F. petimba* (Lacepède, 1803) by a trawl operation at a depth of 150 m. Some morphometric measurements of caught specimens were made and comparison with earlier researches presented in Table 1.

The total lengths with filament of the individuals, which were captured in the study, were in similar sizes (68.5 cm and 63.3 cm). Individuals reflect the general characteristic of the species. Colors are white on the abdomen and red on the back. There

are bony structures embedded in the skin in front and behind the lateral line and dorsal fin.

4. Discussion

Two individuals belonging to *F. petimba* were captured from Mersin Bay in 2018 by means of commercial trawler boat. The length of these individuals was 68.5 and 63.5 cm in this study. Two individuals in every bay were caught in a previously study conducted in the Gulf of Iskenderun and Antalya by Ünlüoglu et al., (2018). In the literature, it is reported that the maximum total length of this species is 200 cm (Sanches, 1991) and generally 180 cm (Figueiredo et al., 2002). According to Fritzsche (1976), this species usually has 100 cm and smaller individuals. It was reported that the mean total length of the individuals was 65.9 cm. The mean total length reported by Fritzsche (1976) was similar to our findings (68.5 cm and 63.3 cm) and was similar to the lengths (50.5-63.3 cm) of individuals captured from the Gulf of Iskenderun by Ünlüoglu et al., (2018). In the literature, the first maturation length of the species cannot be reached (Psomadakis et al., 2009). For this reason, it is not known whether individuals, which were caught from the Northeast Mediterranean, are adults.

Morphometric measurements in the captured individuals were consistent with the measurements of the specimens in the studies performed in the Northeast Mediterranean (Table 1). The length of the individuals caught in this study carried out in the Mersin Bay and the length of the individuals captured from the Gulf of Iskenderun by Ünlüoğlu et al., (2018) are similar while the individuals caught in the Antalya Gulf by Ünlüoğlu et al., (2018) are smaller the specimen from Mersin Bay. The small specimens of *F. petimba* caught from Northeastern Mediterranean suggests that the species may have formed a population. Similarly, the knowledge that *F. commersonii* has formed the population in the Mediterranean in the last 10 years (Azzurro et al., 2013) reinforces this possibility. The total length (152.5 cm) of the individual caught in the Oman Sea (Yasemi, 2012) is seen to be more than 2 times the total length of the individuals captured in the Northeast Mediterranean. The fact that this species migrated to the Northeast Mediterranean from the Red Sea, the presence of smaller individuals in the Mediterranean region supports the hypothesis that the species constitutes a population in this region.

In the literature, it is reported that there are 4-6 species belonging to this family (Fritzsche, 1976; Stern et al., 2017). However, only *F. commersonii* and *F. petimba* are recorded from the Red Sea (Goren & Dor, 1994). In the researches carried out in the Northeast Mediterranean, there were no species records other than these two species (Golani, 2000; Rafrafi-Nouira et al., 2011; Yasemi, 2012; Ünlüoğlu et al., 2018). Therefore, other species belonging to this genus may also occur in the Lessepsian migration to the Northeastern Mediterranean Sea.

Table 1. Comparison of some metric measurements of *F. petimba* with previous findings

(cm)	Present study		Yasemi, 2012	Ünlüoğlu et al., 2018			
				Antalya Bay		İskenderun Bay	
	First	Second		First	Second	First	Second
Total length with filament	68.5	63.3	152.5	-	46.0	50.5	63.3
Total length without filament	51.3	46.5	131.0	39.8	35.1	43.5	47.4
Fork length	49.5	45.5	127.4	38.9	34.2	42.4	46.0
Standard length	45.9	44.2	123.3	38.3	33.5	41.9	45.3
Opercular length	3.40	3.00	11.0	-	-	-	-
Head length	19.3	16.5	45.6	14.25	12.75	15.42	16.60
Pro-orbital snout length	13.7	12.0	32.7	11.20	10.46	12.01	13.16
Post- orbital length	2.80	2.30	8.20	2.12	1.97	2.35	2.49
Horizontal eye diameter	1.40	1.20	4.50	1.22	0.98	1.24	1.30
Inter orbital length	1.40	1.20	4.40	0.47	0.40	0.54	0.53
Pre-dorsal length	40.7	37.0	101.6	31.5	27.2	35.0	37.2
Dorsal base length	2.30	1.75	6.50	1.37	1.33	1.80	2.095
Pre- anal length	40.7	37.0	102.7	31.4	27.0	35.0	37.2
Anal base length	2.0	1.55	5.80	1.37	1.43	1.55	1.75
Upper jaw length	0.95	0.75	5.70	1.26	1.24	1.27	1.50
Lower jaw length	1.50	1.25	6.60	0.87	1.30	1.45	1.65
Pectoral fin length	2.30	1.85	6.20	1.59	1.78	1.94	2.33
Pelvic fin length	1.00	0.85	3.40	0.81	0.77	0.84	1.15
Body depth	1.30	1.20	7.20	0.97	0.98	1.15	1.62
Body width	2.25	1.85	8.70	1.50	1.47	1.83	2.17

There are records of *F. petimba* from the Oman Sea (Yasemi, 2012) to Red Sea (Dor, 1984), in the Israel waters (Stern et al., 2017), from the Mersin Bay (in this study) to the Gulf of Iskenderun and Antalya (Ünlüoğlu et al., 2018), from the Mediterranean (Cárdenas & Berastegui 1997) and Atlantic waters (Bañón & Sande 2008) of Spain to the Azores islands (Azevedo et al. 2004). These records show the migration route of *F. petimba* and the presence of individuals of different sizes in the migrated regions supports the claim that the species establishes the population.

F. petimba and *F. commersonii*, which entered through the Suez Canal from the Red Sea to the Northeast Mediterranean, were reported to be carnivorous species and fed on species of economic importance such as *Spicara smaris* and *Mullus surmuletus* (Corsini et al., 2002). In addition, it has been reported that *F. commersonii* has rapidly established a population within the last 10 years. For this reason, these species were called Lessepsian

invasive predators (Azzurro et al., 2013; Corsini et al., 2002). The proliferation of these species in the Northeast Mediterranean will adversely affect the Mediterranean ecosystem and will pose a potential threat to commercial fishing. At the depths of *F. petimba*, commercial fishing is carried out and economic species distribute at the same depths. Besides, we know that the establishment of a new population of Lessepsian invasive predator such as *F. petimba* may vary depending on the breeding success of the species, or it may vary depending on the arrival of its predator or on the arrival of another Lessepsian species.

5. Conclusion

It is stated that the species has a high probability of forming a population in the Mediterranean Sea and that they feed on fish species of economic importance by the researchers in the studies which *F. petimba* is reported. This species, which is known to have high reproductive success, is a potential hazard for the ecological balance as well as economically affecting commercial fishing. Therefore, monitoring the density of this species, determining the population dynamics, reflecting the current situation, increasing the number of studies to be carried out for this purpose is very important in terms of monitoring the ecological balance.

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