

New occurrence data of four alien fishes (*Pisodonophis semicinctus*, *Pterois miles*, *Scarus ghobban* and *Parupeneus forsskali*) from the North Eastern Mediterranean (Yeşilovacık Bay, Turkey)

Deniz YAĞLIOĞLU^{1,2,*} and Deniz AYAS^{3,4}

1. Department of Biology, Faculty of Arts and Science, Düzce University, Duzce, Turkey.

2. Biodiversity Implementation and Research Center (DU-BIYOM), Düzce University, Düzce, Turkey.

3. Fisheries Faculty, Mersin University, Mersin, Turkey.

4. Ekosfer Environmental Consulting Limited, Mersin Technology Development Zone (Technoscope), Mersin, Turkey.

* Corresponding author, D. Yağlıoğlu, E-mail: denizyagliglu@duzce.edu.tr, denizyagliglu@gmail.com

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Abstract. On 20 December 2015, a four alien species (*Pisodonophis semicinctus*, *Pterois miles*, *Scarus ghobban* and *Parupeneus forsskali*) was captured by commercial bottom trawl fishery at a depth of 100 to 110 m from Yesilovacık Bay, Mersin, Turkey (North-Eastern Mediterranean). It is the first case of registration of these non-native species in Yesilovacık Bay. The occurrence of the four alien species was firstly reported from the NE Mediterranean coast of Turkey.

Key words: *Pisodonophis semicinctus*, *Pterois miles*, *Scarus ghobban*, *Parupeneus forsskali*, alien fishes, Turkey.

The lionfish *Pterois miles* (Bennett, 1828), parrotfish *Scarus ghobban* (Forsskål, 1775) and goatfish *Parupeneus forsskali* (Fourmanoir & Guézé, 1976) are lessepsian migrant species that penetrated into the Mediterranean Sea from the Indian Ocean by through of the Suez Canal (Bariche et al. 2013, Turan et al. 2014a, Gurlek et al. 2016, Turan & Öztürk, 2015). However, the snake eel *Pisodonophis semicinctus* (Richardson, 1848) is an Atlantic species (Bodilis et al. 2012). On 20 December 2015, four alien species were captured by commercial bottom trawl fishery at a depth of 100 to 110 m from Yesilovacık Bay, Mersin, Turkey (North Eastern Mediterranean) (36° 08' 645" - N 33° 40' 378" E to 36° 07' 680 N - 33° 33' 761" E). The occurrence of the four alien species (Fig. 1) was reported from the NE Mediterranean coast of Turkey. Observations of species in the Mediterranean Sea are given in Table 1 and the map of current and previous records are given in Fig. 2.

The tropical Atlantic-originated snake eel, *Pisodonophis semicinctus* (Actinopteri: Anguilliformes: Ophichthidae) was recorded for the first time in the Mediterranean Sea in 1957 from Cherchell (Algeria) (Dieuziede & Roland, 1958), and later the species was observed in 1980 from Cassis (France) by Escoubet et al. (1981). *P. semicinctus* was recorded in 2001 by Ragonese & Giusto (2000) and in 1998 and 2000 by Bradai et al. (2004) from Tunisia. This species was reported in 1997 by Insacco & Zava (1999), in 1998 by Serena (2001), in 2000 and 2001, by Cantone et al. (2003) from Italia. Lately *P. semicinctus* was recorded in 2008 in North of Corsica (France) (Bodilis et al. 2012) and in June 2009 in Ekincik Bay (Mugla, Turkey) (Bilecenoglu et al. 2009) (Fig. 2). Although *P. semicinctus*, has undoubtedly formed a well-established population in the western Mediterranean Sea, up to now no specimens have been reported in the eastern side of Mediterranean coast of Turkey. In the present paper, we report for the first time *P. semicinctus* from the Yesilovacık Bay, Turkey (North-Eastern Mediterranean), for the second time from marine waters of Turkey (Fig. 1, Table 1).

The lessepsian lionfish *P. miles* (Actinopteri: Scorpaeniformes: Scorpaenidae) is commonly native found in the Indian Ocean and Red Sea (Froese & Pauly 2016). Lionfishes commonly inhabit in reefs (Green & Cote 2009, Kulbicki et al. 2012). The first record of the *P. miles* from the Mediterra-

nean coast was Haifa Bay in 1991 (Golani & Sonin 1992) with single specimen. Thereafter, it was recorded by Bariche et al.



Figure 1. *Pisodonophis semicinctus* (A), *Pterois miles* (B), *Scarus ghobban* (C), *Parupeneus forsskali* (D) from Yeşilovacık Bay, Mersin. (Photos by D. Ayas).

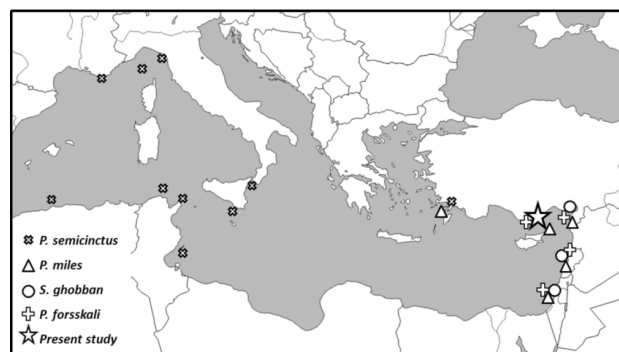


Figure 2. Current and previous records of *P. semicinctus*, *P. miles*, *S. ghobban* and *P. forsskali* in the Mediterranean Sea.

Table 1. Observations of species in the Mediterranean Sea. Sampling year, record location, total length (mm), depth (m) and references are given in columns for all species.

Species	Year	Record Location	Total length (mm)	Depth(m)	Reference
<i>P. semicinctus</i>	1957	Cherchell (Algeria)	812	17	Dieuziede & Roland 1958
	1980	Cassis (France)	ca. 1 m	20–30	Escoubet et al. 1981
	1991	Cap Bon (Tunisia)	800	30	Ragonese & Giusto 2000
	1997	Southern coast of Sicily (Italy)	705	30	Insacco & Zava 1999
	1998	Gulf of Gabe's (Tunisia)	786	15	Bradai et al. 2004
	1998	South of Livorno (Tyrrhenian Sea, Italy)	940	15	Serena 2001
	2000	Gulf of Tunis (Tunisia)	550	-	Bradai et al. 2004
	2000	Cyclops Islands (Italy)	-	-	Cantone et al. 2003
	2001	Cyclops Islands (Italy)	-	-	Cantone et al. 2003
	2008	North of Corsica (France)	430	25	Bodilis et al. 2012
	2009	Ekincik Bay (Turkey)	860	18	Bilecenoglu et al. 2009
2015	Yeşilovacık Bay Mersin (Turkey)	920	100-110	Present study	
<i>P. miles</i>	1991	Herzliya (Israel)	328	35	Golani & Sonin 1992
	2013	Lebanon	209-148	30	Bariche et al. 2013
	2013	Cyprus	-	-	see Oray et al. 2015
	2014	Iskenderun Bay (Turkey)	276	25	Turan et al. 2014
	2015	Cyprus	373	40	Oray et al. 2015
	2015	Kallithea, (Aegean Sea Greece)	-	7	Crocetta et al. 2015
	2015	Yeşilovacık Bay (Turkey)	250	100-110	Present study
<i>S. ghobban</i>	2001	Shiqmona coast (Israel)	505	12	Goren and Aronov 2002
	2004	Beirut (Lebanon)	218	31	Bariche and Saad 2005
	2013	Iskenderun Bay (Turkey)	560	6	Turan et al. 2014
	2015	Yeşilovacık Bay (Turkey)	330	100-110	Present study
<i>P. forsskali</i>	2000	Taşucu, Mersin (Turkey)	150	-	Cinar et al. 2006
	2004	Mersin (Turkey)	-	-	Cinar et al. 2006
	2012	Beirut, Lebanon	209	40	Bariche et al. 2013
	2013	Haifa (Israel)	174	45	Sonin et al. 2013
	2015	Iskenderun Bay (Turkey)	231	30	Gurlek et al. 2016
	2015	Yeşilovacık Bay (Turkey)	190	100-110	Present study

(2013) in coast of Lebanon (two specimens) and in the Iskenderun Bay and Dalyan, North Eastern Mediterranean Sea and Aegean Sea by Turan et al. (2014a) and Turan & Öztürk (2015) which is the first record for Turkish marine ichthyofauna and in Cyprus in 2013 and 2015 (Oray et al. 2015). *P. miles* was first reported from the Aegean Sea in 2015 (Crocetta et al. 2015). With the present record (Fig. 1), there would be five records of *P. miles* from the Mediterranean Sea basin as shown in Figure 2. Besides, the present paper is the second record of *P. miles* from Turkish marine waters (Table 1).

The lessepsian parrotfish *S. ghobban* (Actinopteri: Perciformes: Scaridae) was first reported from the Shiqmona coast (Israel) in the Mediterranean by Goren & Aronov (2002). Later *S. ghobban* was recorded in 2004 from Beirut (Lebanon) by Bariche & Saad (2005) and in 2014 from Iskenderun Bay (Turkey) by Turan et al. 2014b. (Fig. 2) Thus *S. ghobban* is reported in this study (Figure 1) for the fourth time from the Mediterranean Sea, for the second time Turkish coasts (Table 1). These records have shown the northward spread of *S. ghobban* in the Mediterranean Sea and, furthermore, lessepsian species are tending to colonize more in the northern side of the Mediterranean Sea (Ben Rais Lasram et al. 2008).

The Red Sea goatfish, lessepsian *P. forsskali* (Actinopteri: Perciformes: Mullidae) is widely distributed throughout the Red Sea and Gulf of Aden region (Randall 1983, Ben-Tuvia & Kissil 1988, Randall 2004). The lessepsian *P. forsskali* was observed for the first time in the Mediterranean Sea in 2000

from Mersin (Turkey), and four years later again observed in Tasucu in 2004 (Cinar et al. 2006). Later *P. forsskali* was reported in 2012 from the Beirut, Lebanon, by Bariche et al. (2013), Sonin et al. (2013) was reported in 2012 from Haifa Bay, Israel. Recently first captured data for the Turkish marine waters of *P. forsskali* was reported in March 2015 from Iskenderun Bay, Turkey by Gurlek et al. (2016). With the present record (Fig. 1), there would be six records of *P. forsskali* from the Mediterranean basin as shown in Table 1. and Fig. 2. However, this report is third in Mersin coast, sixth in the Mediterranean (Table 1). Therefore, *P. forsskali* is probably established in the eastern Mediterranean. The newly established species such as *P. forsskali* within the coastal ecosystem, and the competition and its interactions with other fish species should also be investigated.

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