

## FIRST RECORD OF THE DOUBLEBAR SEABREAM, *ACANTHOPAGRUS BIFASCIATUS* (ACTINOPTERYGII: PERCIFORMES: SPARIDAE), IN THE AEGEAN SEA

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**Abstract.** The present paper reports the second record of a Lessepsian migrant, *Acanthopagrus bifasciatus* (Forsskål, 1775), in the Mediterranean Sea and first record from the Aegean Sea. The species is distinguished by the counts of 5½ scale rows between the fifth dorsal-fin spine and lateral line, dorsal and caudal fins yellow, without a dense black margin of dorsal-fin or narrow black edge along rear margin of caudal fin which is being diagnostic characters of this species.

**Keywords:** Sparidae, Lessepsian, *Acanthopagrus*, Mediterranean Sea, Aegean Sea, first Aegean record, second Mediterranean record

### INTRODUCTION

The seabreams are one of the most common fish species that inhabit both tropical and temperate coastal waters throughout the world. Seabreams have importance to both commercial and recreational fisheries and are favoured food fish throughout their distribution range (Smale and Buxton 1985, Sommer et al. 1996).

The double bar seabream, *Acanthopagrus bifasciatus* (Forsskål, 1775), was described originally from the Red Sea. It is known in shallow coastal waters (2–20 m depth) associated with reefs in the Persian Gulf (Grandcourt et al. 2004) and the western Indian Ocean (Khalaf and Disi 1997). Apart from its natural distribution area, *A. bifasciatus* has also been reported from the Mediterranean Sea (Ben-Souissi et al. 2014).

The present paper reports a case of an ongoing alien introduction for the Mediterranean Sea and also the first alien sparid fish in the Aegean Sea.

### MATERIAL AND METHODS

A single specimen of *Acanthopagrus bifasciatus* was collected from Karaburun, Izmir Province, Turkey (38.629981°N, 026.524220°E) on 22 December 2018 (Fig. 1).

The fish was captured by a local fishing boat, with a trammel net at 3 m depth on a sandy/seagrass (*Posidonia oceanica*) bottom near a breakwater.

Morphological methods followed Iwatsuki and Heemstra (2011). The collected specimen was preserved

in 4% formalin and deposited in the Fish Collection Centre of the Izmir Katip Celebi University (IKC.PIS.1240).

### RESULTS

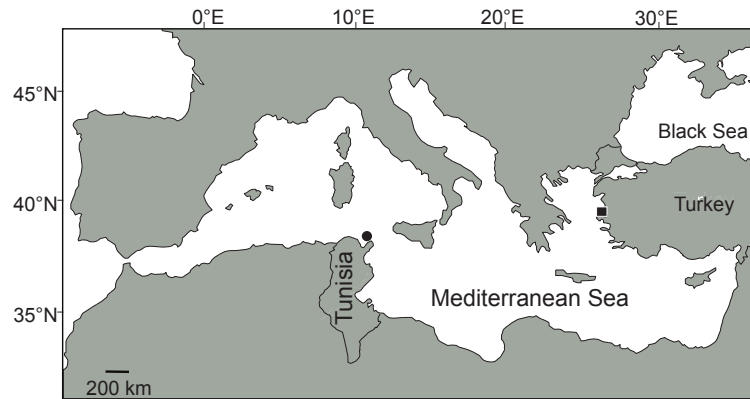
The measurements in absolute and relative values (% of standard length, SL) are given in Table 1.

**Description.** Body deep and compressed, lips thick, maxilla almost reaching to vertical at rear edge of pupil. Scale rows between fifth dorsal-fin spine and lateral line 5½; upper and lower jaw with 4 canine teeth. Upper jaw with 4 and lower jaw with 3 molar tooth rows. Head and body silvery; head with two vertical black bars across head and parallel to each other, first extending below angle of jaw, second wider, extending to lower edge of opercle. Silvery pigmentation between these two black bars. Infraorbital area orange and this pigmentation merging with superior part of snout. Dorsal, caudal, and pectoral fins vivid orange but hind margin of caudal fin with narrow black margin and spines of dorsal fin with tentative black pigmentation (Figs. 2A, 2B). Anal and pelvic fins blackish.

### DISCUSSION

*Acanthopagrus bifasciatus* and its closely related species *Acanthopagrus catenula* (Lacepède, 1801) originating from the Red Sea and the western Indian Ocean have been recognized as attractive species also because of their intensive coloration. The morphological similarities of these two species lead to the recognition of a single

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**Fig. 1.** Records of *Acanthopagrus bifasciatus* from the Mediterranean Sea; ■ Presently reported study, ● Ben-Souissi et al. (2014)

species (*A. bifasciatus*) with two different populations of until Iwatsuki and Heemstra (2011) assigned these populations to different valid species (*A. bifasciatus* and *A. catenula*). Although morphometric and meristic characters of these two species seem to overlap, *A. bifasciatus* can be distinguished from *A. catenula* with the counts of scale rows between the fifth dorsal-fin spine and lateral line (Iwatsuki and Heemstra 2011). Also, the dorsal fin of *A. bifasciatus* lacks a wide black margin and the caudal fin rear margin has a narrow black edge (Iwatsuki and Heemstra 2011). The measurements in absolute and relative values are in concordance with Iwatsuki and Heemstra (2011).

The number and arrangement of molariform teeth both on the upper and lower jaw are similar in descriptions of these two species but, smaller incisor teeth at the front of the upper jaw is another diagnostic character of *A. bifasciatus* (see Iwatsuki and Heemstra 2011). In addition, Iwatsuki and Heemstra (2011) remarked that the outer molar teeth rows of both jaws extend to the rear end of the jaws in *A. bifasciatus*. In our specimen, the incisor teeth at the front of the upper jaw are very conspicuous which is consistent with the observation of Iwatsuki and Heemstra (2011) and middle rows of the molar teeth of both jaws extend to the rear end of the jaws (Figs. 3A, 3B).

Marine species could be introduced in several ways such as movements through corridors, transfer on drifting logs, and by anthropogenic means such as the introduction of species by ballast water or release of aquarium specimens (Spanier and Galil 1991). Furthermore, some benthic and small size fishes could migrate from the Red Sea and could be overlooked due to their small size and morphological similarities with the native species (Engin et al. 2017, Seyhan et al. 2017). Some authors emphasize that although ballast water could be an important cause of transferring small-size invertebrates, plankton or algae, it is not suitable for adult fishes (Lockett and Gomon 2001, Molnar et al. 2008). On the contrary, shipping activities, oil platforms, or similar structures, could act as artificial habitats and serve as shelter and even spawning substrate that moving slowly through the ocean especially for reef-associated fishes (Jørgensen et al. 2002, Galil

2006, Atchison et al. 2008, Yeo et al. 2010, Macreadie et al. 2011, Friedlander et al. 2014). Similarly, the species *A. bifasciatus*, was recorded from Tunisia eleven years ago as a result of shipping activities or marine traffic (Ben-Souissi et al. 2014) and up to date, no further record has been made which could be another indication of unintentional human activities.

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**Table 1**Proportional measurements with meristic characters of *Acanthopagrus bifasciatus* from Karaburun, İzmir, Turkey, compared with the literature

Morphometric characters	Holotype	Presently reported study	Iwatsuki and Heemstra 2011	
			Range	Mean
n		1	37	
Total length [mm]	—	335	—	
Standard length [mm]	111	282	27–362	
<b>%SL</b>				
Body depth at anal fin	44	35.0	33–43	38
Maximum body depth	45	44.2	38–51	46
Head length	30	29.8	32–40	36
Body width	—	16.4	11–20	15
Snout length	11	7.5	9–16	12
Orbit diameter	6	6.3	7–16	13
Interorbital width	—	10.5	8–13	9
Caudal peduncle depth	13	11.4	11–14	13
Caudal peduncle length	19	17.6	14–21	18
Predorsal length	42	41.0	42–50	46
Preanal length	72	71.4	63–73	69
Prepelvic length	—	36.3	37–47	40
Dorsal fin base length	56	52.9	47–62	55
Anal fin base length	17	17.3	16–27	20
Pectoral fin length	—	36.0	32–44	38
First dorsal fin spine length	6	4.4	4–9	7
Second dorsal fin spine length	9	8.9	9–19	13
Third dorsal fin spine length	13	12.2	13–20	17
Fourth dorsal fin spine length	13	12.4	14–21	18
Fifth dorsal fin spine length	12	11.7	13–20	17
Sixth dorsal fin spine length	12	10.7	13–20	17
Last dorsal fin spine length	9	9.5	9–16	12
First anal fin spine length	6	4.0	3–8	6
Second anal fin spine length	18	13.5	13–23	19
Third anal fin spine length	12	10.3	11–18	15
First anal fin ray length	—	10.4	11–19	16
<b>Meristic characters</b>				
Dorsal fin rays	XI, —	XI, 12	XI–XII, 12	
Anal fin rays	III, 10	III, 11	III, 10–11	
Pelvic fin rays	—	I, 5	I, 5	
Pectoral fin rays	—	14	14–15	
Scale No.: 5thDFS–LL	5½	5½	5½–6½	
Pored lateral line scales	48	49	47–51	
Scales above and below LL	—, 12	5½, 12	5½–6½, 10–14	

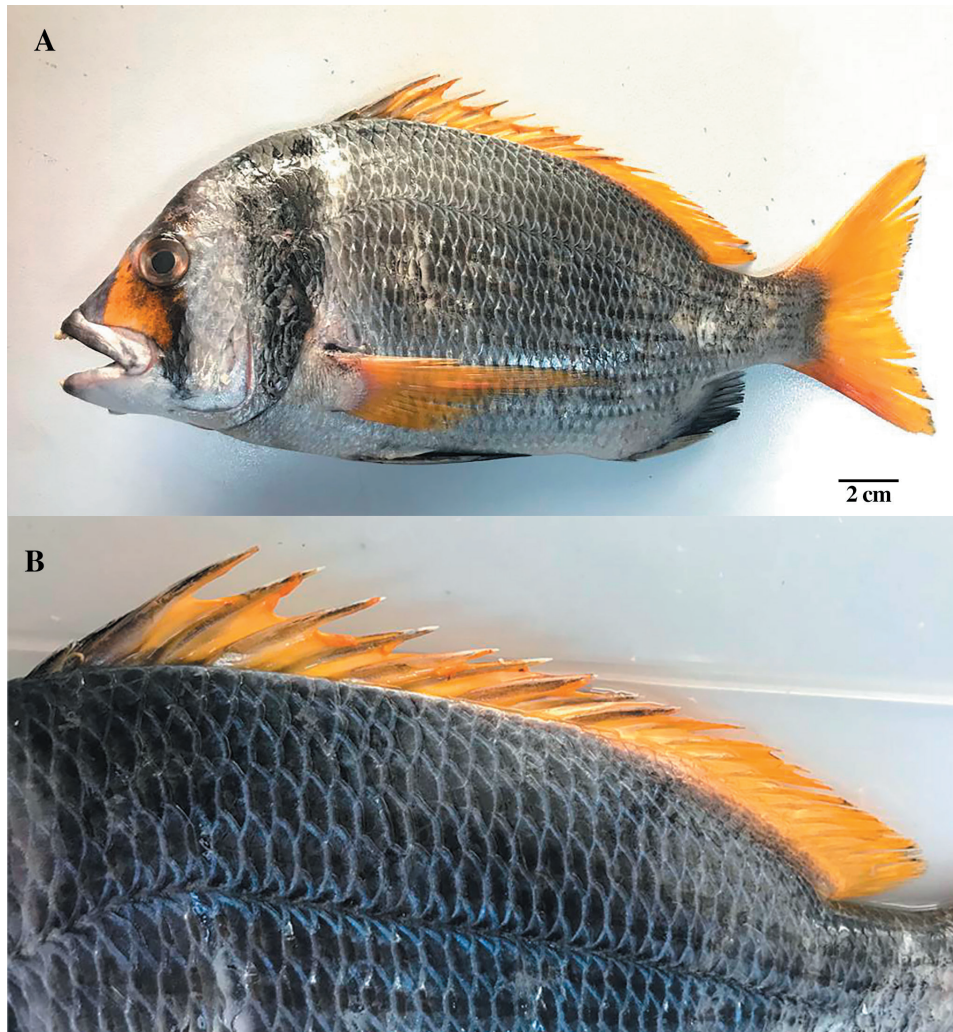
Holotype: ZMUC P.50557 (the values provided by Iwatsuki and Heemstra (2011); *n* = number of specimens examined, Scale No.: 5thDFS–LL = Number of scales between 5th dorsal fin spine base and the lateral line, LL = lateral line.

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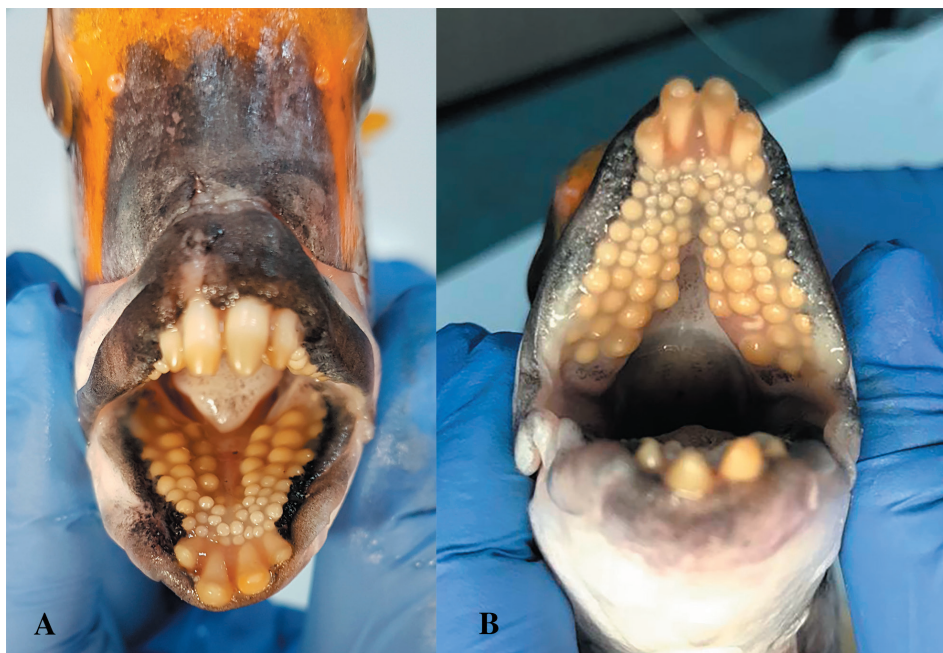
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**Fig. 2.** *Acanthopagrus bifasciatus* from Karaburun/İzmir; live coloration of entire fish (A); dorsal fin coloration (B)



**Fig. 3.** *Acanthopagrus bifasciatus* from Karaburun/İzmir; arrangement of the teeth on the lower jaw (A), arrangement of the teeth on the upper jaw (B)

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