



## First Report of *Pempheris rhomboidea* (Perciformes: Pempheridae) Beneath Offshore Sea-Cages in the Aegean Sea

Okan Akyol<sup>1,\*</sup>, F. Ozan Düzbastılar<sup>1</sup>, Tevfik Ceyhan<sup>1</sup>

<sup>1</sup> Ege University Faculty of Fisheries, 35440 Urla, Izmir, Turkey

\* Corresponding Author: Tel.: +90.232 7521162; Fax: +90.232 3883685;  
E-mail: okan.akyol@ege.edu.tr

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### Abstract

Two groups of *Pempheris rhomboidea* were reported for the first time under a sea-cage farm in the south-eastern Aegean Sea in January and June 2016. This ichthyological note reports on the occurrence of schools of this Lessepsian fish beneath an offshore sea-cage, at 50 m depth during daytime as a solitary species.

**Keywords:** Sweeper, *Pempheris rhomboidea*, Lessepsian, sea-cage farms, Aegean Sea.

### Introduction

Fish farms with floating cages act as fish aggregating devices (FADs). Many studies on fish assemblages around sea-cage farms in the Mediterranean have shown that various wild fish such as clupeids, sparids, mugilids and carangids commonly concentrate around the fish farms (Arechavala-Lopez et al., 2014). Determination of wild fish diversity around sea-cages in the Mediterranean has been mostly documented from the western basin (Valle et al., 2007; Fernandez-Jover et al., 2008; Bacher and Gordo, 2016) and no Lessepsian fish have been yet recorded in their proximity. On the other hand, given the high number of non-indigenous species in the eastern Mediterranean Sea, there is a higher potential for the occurrence of Lessepsian fish under and/or around sea-cage farms in this marine region.

### Materials and Methods

On 29 January 2016 and 29 June 2016, a total of 18 and 22 specimens of *Pempheris rhomboidea* Kossmann and Räuber, 1877 were observed respectively, during scuba dives beneath the main plastic float of a seabass cage (Figure 1). The cage (coordinates: 37°16.586 N - 27°25.189 E) was located 3 km away from the coast and at a depth of 50 m in Kazıklı cove of Güllük Bay, south-eastern Aegean Sea.

### Results and Discussion

Previous reports of *Pempheris vanicolensis* as the only Lessepsian immigrant of this genus in the Mediterranean Sea were suggested to be misidentifications of *P. mangula* (Froese and Pauly, 2016). Koeda et al. (2014) recognized four species of the genus *Pempheris* (*P. adusta*, *P. mangula*, *P. nesogallica*, and *P. tominagai* as a new species) for the Red Sea, and *P. mangula* was distinguished from other three species by its huge eye, deep body, blackish tip of the dorsal fin, and pored lateral line scales 49-60. However, Randall et al. (2014) concluded that *P. mangula* is a species from the east coast of India (type locality Visakhapatnam, not found in western India), clearly distinct in both gill-raker counts and a 1.1% divergence in the mtDNA sequence (COI) from its Red Sea relative *P. rhomboidea*. Recently, Azzurro et al. (2015) proved that the Mediterranean records of *Pempheris* are now recognized as *P. rhomboidea* based on molecular evidence. Moreover, there is a consensus among the senior scientists on the confusing of *Pempheris* species in the Mediterranean, and they consider the *Pempheris* in the Mediterranean as *P. rhomboidea* (see, European Alien Species Information Network, EASIN). According to FishBase, *P. mangula* (i.e. *P. rhomboidea*) lives solitary in caves or under large overhanging corals to about 20 m depth (Froese and Pauly, 2016). It is a nocturnal species, forming large hovering aggregations in caves, grottos and shady undercuts during the day; whereas at night, they feed



**Figure 1.** *Pempheris rhomboidea* school beneath a sea-cage in the south-eastern Aegean Sea (Underwater photograph: F. Ozan Düzbastılar).

on zooplankton in open waters (Golani et al., 2006).

Bilecenoğlu and Taşkavak (1999) reported that a school of this species (as *P. vanicolensis*) was observed in a cave of the coast of Antalya, Turkey and even though, the divers forced them to leave the cave during daytime, the schools tended to stay inside. In a recent study, *P. rhomboidea* was observed in small mixed schools along with *Sargocentron rubrum* and *Apogon imberbis* in small caves of Kastelorizo Island (Greece), close to Kaş, southern Turkey (Gerovasileiou et al. 2016).

The present study reports on the occurrence of *P. rhomboidea* beneath offshore sea-cages in the south-eastern Aegean Sea for the first time. At the same time, this record points out the potential ecological changes to wild fish assemblages around sea-cage farms due to fish invasions from the Indo-Pacific via the Suez Canal.

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