www.trjfas.org
ISSN 1303-2712
Turkish Journal of Fisheries and Aquatic Sciences 17: 449-450 (2017) DOI: 10.4194/1303-2712-v17_2_25

SHORT PAPER

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

Okan Akyol[1,*], F. Ozan Düzbastılar[1], Tevfik Ceyhan[1]

[1] 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

Received 15 July 2016
Accepted 04 August 2016

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 Gordoa, 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 point outs the potential ecological changes to wild fish assemblages around sea-cage farms due to fish invasions from the Indo-Pacific via the Suez Canal.

Acknowledgements

This study was funded by Turkish Scientific and Technological Research Council (TUBITAK Project No. 114Y584), and the authors thank the anonymous reviewer for his insightful comments which led to a much improved manuscript.

References

Arechavala-Lopez, P., Izquierdo-Gomez, D. and Sanchez-Jerez, P. 2014. First report of a swordfish (*Xiphias gladius* Linnaeus, 1758) beneath open-sea farming cages in the Western Mediterranean Sea. Mediterranean Marine Science, 15:72-73. Doi: 10.12681/mms.503

Azzurro, E., Goren, M., Diamant, A., Galil, B. and Bernardi, G. 2015. Establishing the identity and assessing the dynamics of invasion in the Mediterranean Sea by the dusky sweeper, *Pempheris rhomboidea* Kossmann & Räuber, 1877 (Pempheridae, Perciformes). Biol. Invasions, 17: 815-826. Doi: 10.1007/s10530-014-0836-5

Bacher, K. and Gordoa, A. 2016. Does marine fish farming affect local small-scale fishery catches? A case study in the NW Mediterranean Sea. Aquaculture Research, 47: 2444-2454. Doi: 10.1111/are.12692

Bilecenoğlu, M. and Taşkavak, E. 1999. Some observations on the habitat of the Red Sea immigrant sweeper, Pempheris vanicolensis, on the Mediterranean coast of Turkey. Zoology in the Middle East, 17:67-70.

Fernandez-Jover, D., Sanchez-Jerez, P., Bayle-Sempere, J.T., Valle, C. and Dempster, T. 2008. Seasonal patterns and diets of wild fish assemblages associated with Mediterranean coastal fish farms. ICES Journal of Marine Science, 65: 1153-1160.

Froese, R. and Pauly, D. 2016. FishBase. World Wide Web electronic publication [version 01/2016], http://www.fishbase.org (accessed date: 13 July 2016).

Gerovasileiou, V., Voultsiadou, E., Issaris, E. and Zenetos, A. 2016. Alien biodiversity in Mediterranean marine caves. Marine Ecology, 37: 239-256. Doi: 10.1111/maec.12268

Golani, D., Öztürk, B. and Başusta, N. 2006. Fishes of the eastern Mediterranean. Turkish Marine Research Foundation (Publication No. 24), Istanbul, Turkey.

Koeda, K., Yoshino, T., Imai, H. and Tachihara, K. 2014. A review of the genus *Pempheris* (Perciformes, Pempheridae) of the Red Sea, with description of a new species. Zootaxa, 3793(3): 301-330. Doi: 10.11646/zootaxa.3793.3.1

Randall, J.E., Victor, B.C., Alpermann, T.J., Bogorodsky, S.V., Mal, A.O., Satapoomin, U. and Bineesh, K.K. 2014. Rebuttal to Koeda et al. (2014) on the Red Sea fishes of the perciform genus *Pempheris*. Zootaxa, 3887: 377-392. Doi: 10.11646/zootaxa.3887.3.5

Valle, C., Bayle-Sempere, J.T., Dempster, T., Sanchez-Jerez, P. and Giménez-Casalduero, F. 2007. Temporal variability of wild fish assemblages associated with a sea-cage fish farm in the south-western Mediterranean Sea. Estuarine, Coastal and Shelf Science, 72: 299-307. Doi: 10.1016/j.ecss.2006.10.019