



- SHORT COMMUNICATION -

First Record of *Pomacanthus imperator* (Bloch, 1787) from Turkish Marine Waters

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Abstract

A single specimen of *Pomacanthus imperator* (312 mm in total length and 1020 g in weight) was caught by a spear at a depth of 10 m on 28 April 2019 from Iskenderun Bay (Konacık, Arsuz coast), Turkey. All measurements, counts, morphological description and colors of *P. imperator* specimen caught agree with the previous descriptions for this species. In this paper, the occurrence of *P. imperator* is reported for the first time from Iskenderun Bay in Turkish Marine waters. This species is probably a Red Sea immigrant entered into the Mediterranean Sea through Suez Canal.

Keywords:

Pomacanthus imperator, Eastern Mediterranean, Lessepsian migration

Article history:

Received 10 June 2019, Accepted 16 October 2019, Available online 30 October 2019

Introduction

The family Pomacanthidae contains about 90 species in 8 genera (Alwany et al., 2009; Fricke et al., 2019) that inhabit tropical and subtropical waters around the world. These fishes are commonly known as angelfishes. The emperor angelfish, *Pomacanthus imperator* belongs to the Pomacanthidae family that is represented by *Pomacanthus* genus which consists of 13 species in the world (Froese & Pauly, 2019). The angelfishes are represented in the Mediterranean Sea by one genus and two species: *Pomacanthus imperator* (Bloch, 1787) and; *Pomacanthus maculosus* (Forsskål, 1775), both of which are considered as alien species in the Mediterranean Sea (Capapé et al., 2018, Rothman & Stern, 2019).

The emperor angelfish, *P. imperator* is widespread throughout the Indian Ocean and the western and central Pacific Ocean. This species occurs in the Red Sea from eastern Africa, Tuamotu Island (French Polynesia), Line Islands (Kiribati and USA) Hawaii, north to southern Japan and the Ogasawara Islands, south to the Great Barrier Reef, New Caledonia, and the Austral Islands (Randall, 2007).

To date, the numerous non-indigenous species in the Mediterranean are from the Red Sea entering through the Suez Canal (Gurlek et al., 2017; Erguden et al., 2017) and from the Atlantic Ocean, through Gibraltar or have been introduced as aquarium escapees or from ballast water (Golani et al., 2010). This biological invasion may well have facilitated fish species into Mediterranean Sea, including Turkish waters.

The emperor angelfish *P. imperator* was first recorded in the Mediterranean Sea from Haifa, Israel in December 2009 (Golani et al., 2010). As an indicator of northward extension, *P. imperator* was reported from Jableh (Capapé et al., 2018) and Lattakia (Saad et al., 2018) in Syrian waters.

The present study, reports the occurrence of *P. imperator* which represents the first record of this species of the family Pomacanthidae in the Iskenderun Bay coast of Turkey. On account of the pattern of coloration of *P. imperator*, it is named as Fenerbahçe instead of the emperor angelfish in Turkey. The record represents the third sighting of this species in the Levantine basin, up to now no species belonging to the family Pomacanthidae was recorded or documented in Eastern Mediterranean coast of Turkey.

Material and Methods

On 28 April 2019, one specimen of *P. imperator* was caught at 10m depth from a rocky bottom in the Konacık coast of the Iskenderun Bay, Turkey (Coordinate: 36°21'54"N, 35°49'13"E) refer to Figure. 1.

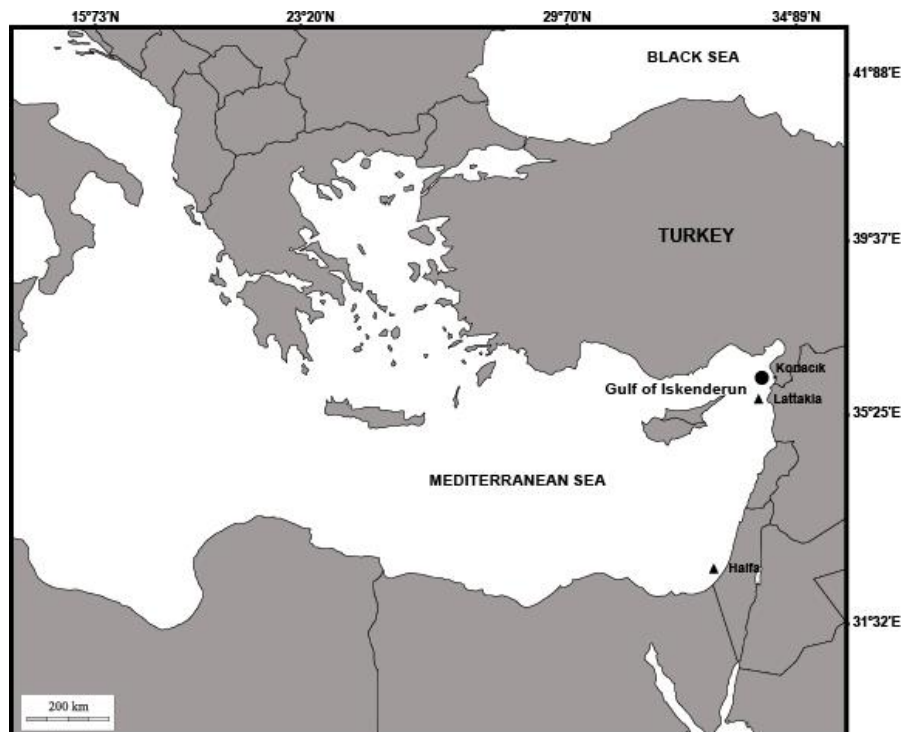


Figure 1. Map of the capture records from the Levantine coast of the Mediterranean for *Pomacanthus imperator*; previous record (▲) present recorded (●).

It was photographed upon capture and transported to the laboratory for more detailed examination. Morphometric measurements of the specimen were taken to the nearest 0.1 mm using

digital calipers and weighed to the nearest gram (g) using precision scales. The specimen was deposited in the Museum of the Marine Sciences and Technology Faculty, Iskenderun Technical University and received the catalogue number MSM-PIS 2019-1. Distribution of the *P. imperator* in the Red Sea and Mediterranean Sea has given previous capture records and present report from Iskenderun Bay in the Figure 2.



Figure 2. The emperor angelfish *Pomacanthus imperator* from Iskenderun Bay, Eastern Mediterranean coast of Turkey.

The single specimen of *P. imperator* was 312 mm in total length (TL) and weighed 1020 g. The specimen of *P. imperator* had the following diagnostic characters: Dorsal fin rays XIV 18, pectoral fin rays 17, anal fin rays III 21, pelvic fin rays I 5, caudal fin rays 18. The measurements were determined as body depth (55.57% of SL), head length (25.57% of SL), pre-dorsal length (30.03% of SL), pre-anal length (56.87% of SL), pre-ventral (56.87% of SL). Eye diameter (17.90%), interorbital length (48.50%), pre-orbital length (45.97%) and post-orbital length (59.40%) were calculated as the percentage of head length.

Results

The body is oval-shaped and compressed, body and head are covered with small ctenoid scales extending to the membrane of the median and pectoral fins. The posterior edge of the dorsal, anal and caudal fins are rounded. The anterior teeth in both jaws are the longest, progressively decreasing in length toward the mouth opening and there are no teeth on the vomer or palatine. It has short gill rakers, six on the upper limb of the first arch and 13 on the lower limb. The posterior edge of preoperculum is very finely serrated. A long and stout spine is found at the lower angle of the preoperculum (Golani et al., 2010). As indicated by

Golani et al. (2010) the second and third rays of the pectoral fin are the longest and the first pelvic fin ray is elongated.

Colour of fresh specimens: Body and most of the dorsal fin with slightly diagonal alternating stripes of yellow and grey. In the back of head and chest there is a dark black coloration and the snout and cheeks are pale grey. Greenish-grey with light blue margin forehead extending to the preopercular spine base. Black mask with bluish margin on the eye. Rear of head and chest are dark black. Snout and cheek are pale grey. Anal fin is brown-black with curved blue stripes. Caudal fin is yellow. Pectoral fin is dark black. Pelvic fin is with a bluish-grey membrane and orange rays.

Discussion

The emperor angelfish occurs on coral reefs or rocky habitat in the Indo-Pacific Ocean. Juveniles are often seen under ledges or in holes of outer lagoon patch reefs. Large adults inhabit ledges and caves in areas of rich coral growth on clear lagoon, channel, or seaward reefs (Anderson & Hafiz, 1987; Pyle, 2001). The emperor angelfish inhabit outer coral reef or rocky habitat at depths of 5-60 m (Golani et al., 2010). It is mainly solitary and can grow up to 40 cm long (standard length) for male specimen (Sommer et al., 1996). It feeds on sponges, other encrusting organism and tunicates (Anderson & Hafiz, 1987; Pyle, 2001).

Angelfishes of the genus *Pomacanthus* are known for their dramatic colour changes with growth. This species is frequently exported through the aquarium trade (Pyle, 2001). The juvenile emperor angelfish is dark blue-black with a white ring on the rear of the body. This is surrounded by incomplete circles of blue and white (Heemstra & Heemstra, 2004; Fricke, 2008). However adult emperor angelfish have diagonal yellow and purplish-blue stripes on the body, and a curved black bar covering the eye (Golani et al., 2010).

In the present study, all measurements, counts and morphological characters agree with those of Golani et al. (2010), Capapé et al. (2018) and Saad (2018). Genetic confirmation of this species in Israel coast was also given by Rothman & Stern in Stern et al. (2019). This species is relatively easy to identify and is distinguished from other angelfishes by the uniformly diagonal yellow and purplish-blue stripes on the body, and a curved black bar covering the eye.

The Mediterranean Sea is a dynamical ecosystem where the species diversity changes continually due to the invasion of alien species. Most new fish species are from the Red Sea and entered the Mediterranean through the Suez Canal, and/or this species have entered from the Atlantic Ocean, naturally expanding their distribution via Gibraltar (Zenetos et al., 2012). However, other means of introduction, such as release from a private aquaria (Zenetos et al., 2016) or larval transport by ship ballast water, cannot be ruled out.

To date, the present finding from Iskenderun Bay is a first report of single specimen of the emperor angelfish in the eastern Mediterranean coast of Turkey and new contribution to the check list of the alien species of Turkey (Turan et al., 2018). With only three records until recently, *P. imperator* was considered unestablished, possibly an outcome of an aquarium release (Golani et al., 2010; Zenetos et al., 2016; Capapé et al., 2018; Saad et al., 2018). On the other hand, Considering the recent study by Rothman & Stern (2019) and present study, it appears that *P.*

imperator is a Red Sea immigrant entered into the Mediterranean Sea through Suez Canal and established its population in the Mediterranean.

The mainly cause of occurrence of this species in the region could be attributed to the changes in environmental factors such as an increase in sea water temperature in the Mediterranean Sea (Turan et al., 2016). On the other hand, studies should be conducted to monitor its ecological impact in the Mediterranean.

Acknowledgment

The authors would like to thank Mr. Isa Turan for providing the specimen of *Pomacanthus imperator*. The study was supported by the Ministry of Agriculture and Rural Affairs Turkey (TAGEM-16/AR-GE/21) coded project.

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