

**CONFIRMED OCCURRENCE OF MOONTAIL BULLSEYE, *PRIACANTHUS HAMRUR*  
(ACTINOPTERYGII: PERCIFORMES: PRIACANTHIDAE),  
IN THE MEDITERRANEAN SEA WITH FIRST RECORD OFF THE COAST OF TURKEY**

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**Abstract.** A new Lessepsian migrant, moontail bullseye, *Priacanthus hamrur* (Forsskål, 1775), is recorded for the second time from the Mediterranean Sea, and for the first time from Turkey. A single male specimen of *P. hamrur* was caught at a depth of about 30 m, off the Konacık harbour (Arsuz coast, Gulf of Iskenderun, Turkey) on 18 December 2017, by a longline. The present paper reports the confirmed record of *P. hamrur* in the eastern Mediterranean with the first record off the coast of Turkey. This species is probably a Red Sea immigrant entering the Mediterranean Sea through the Suez Canal. With the present report, the number of priacanthid species reported in the Mediterranean Sea has reached four.

**Keywords:** Priacanthidae, confirmed record, Lessepsian migrant, Mediterranean Sea

## INTRODUCTION

Since the opening of the Suez Canal in 1869, it has provided a significant pathway for the introduction of many alien species into the Mediterranean Sea (Zenetos et al. 2012, Katsanevakis et al. 2014). This “invasion corridor” undoubtedly facilitated the introduction (passage) of alien fish species from the Suez Canal into Turkey marine waters. Therefore, several alien fish species have been reported in the marine waters of Turkey (Erguden et al. 2017, Gürlek et al. 2017).

The family Priacanthidae is a relatively small taxon with 19 species accommodated within four genera (in Indo-Pacific region with 15 species and four species in the Atlantic) (Starnes 1988, Iwatsuki et al. 2012, Bineesh et al. 2016). This epibenthic predatory fish occurs primarily in rocky or coral habitats at depths from 8 to 250 m (Starnes 1988, Lieske and Myers 1994).

The family Priacanthidae is represented in the Red Sea by one genus and three species: *Priacanthus blochii* Bleeker, 1853, *Priacanthus hamrur* (Forsskål, 1775), and *Priacanthus sagittarius* Starnes, 1988 (see Goren and Dor 1994, Randall 1994, Starnes 1988). However, the genus *Priacanthus* Oken, 1817 is represented in the Mediterranean Sea by four species: the Atlantic bigeye, *Priacanthus arenatus* Cuvier, 1829, known from the western and northern Mediterranean Sea (Froese and Pauly 2018), the moontail bullseye, *P. hamrur*, the

Indo-Pacific arrow bulleye, *P. sagittarius*, and the arrow bullseye, *Priacanthus prolixus* Starnes, 1988, found in eastern Mediterranean (Goren et al. 2010, Golani et al. 2011, Farrag et al. 2016, Gürlek et al. 2017).

The moontail bullseye, *Priacanthus hamrur*, belongs to the family Priacanthidae that is represented by the genus *Priacanthus* which consists of 12 valid species globally (Froese and Pauly 2018). *Priacanthus hamrur* has a wide Indo-West Pacific distribution from the Red Sea and southern Africa to French Polynesia, north to southern Japan, to southern Australia. (Fricke 1999).

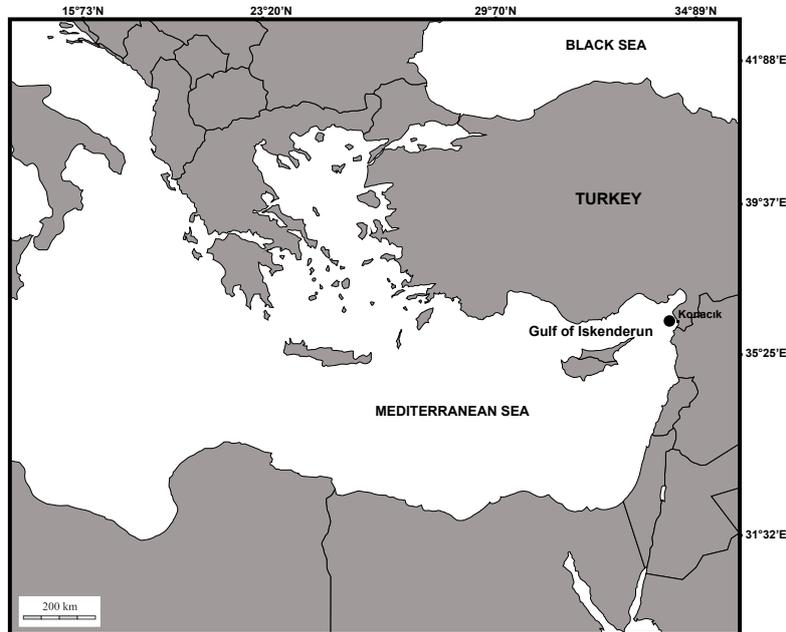
In 1980, a specimen identified as *Priacanthus hamrur* was collected off Mahdia, Tunisia (Abdelmoleh 1981). Upon this record, the presence of this species in the Mediterranean was mentioned in checklists provided by Bradai (2004) and Golani and Bogorodsky (2010). To date, *P. hamrur* has not been recorded from the eastern Mediterranean Sea, Turkey. Thus, the present paper confirms the occurrence of *P. hamrur* in the Mediterranean Sea with the first record off the coast of Turkey.

## MATERIAL AND METHODS

A single specimen of *Priacanthus hamrur* was caught at a depth of 30 m off the Konacık harbour (Arsuz coast, Gulf of Iskenderun, eastern Mediterranean, Turkey) on 18 December 2017 by a longline (Fig. 1). The captured specimen was taken to the Laboratory of Molecular Ecology and Fisheries

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Genetics Laboratory, Iskenderun Technical University for further examination, where the main morphometric measurements were collected by means of a digital calliper, with the accuracy of 0.01 mm. The specimen was identified according to Starnes (1988). The collected specimen was preserved in 4% formalin and deposited in the Museum of the Faculty of Marine Sciences and Technology, Iskenderun Technical University, (Fig. 2) (MSM-PIS/2017-5).



**Fig. 1.** Map showing record location (●) of moontail bullseye, *Priacanthus hamrur* the Gulf of Iskenderun, Turkey (Eastern Mediterranean)



**Fig. 2.** Moontail bullseye, *Priacanthus hamrur* (Forsskål, 1775), captured in the Gulf of Iskenderun, Turkey (Eastern Mediterranean)

## RESULTS

The captured male specimen of moontail bullseye, *Priacanthus hamrur*, was 367-mm long (total length, TL) and weighed 760.59 g. The above-mentioned specimen had the following features: Dorsal fin rays X +13 anal fin rays III +15, pectoral fin rays 16, and caudal fin rays 20, Total number of gill rakers on anterior gill arch 26, 21 on lower limb and 5 upper limb of first arch, 80 in scales lateral line series, below lateral line 28, above lateral line 24, lateral line scales 70, vertical scale rows 48. Body depth at sixth dorsal-fin spine 2.6 times in standard length, SL. The body well compressed. Eyes are large. Mouth is oblique with a protruding lower jaw and mouth nearly vertical and snout long. Posterior and lower margins of preopercle finely serrated. Caudal fin emarginate. Distinguishing meristic and morphometric characteristics of the specimen are given in Table 1 and comparison other Mediterranean previous priacanthid records is presented in Table 2.

**Table 1**  
Morphometric and meristic measurements of *Priacanthus hamrur* captured in the Gulf of Iskenderun, Turkey (Eastern Mediterranean)

Morphometric characters [mm]	Value
Total length (TL)	367
Standard length (SL)	285
Head length (HL)	64.77
Head depth	60.03
Maximum body depth	109.30
Eye diameter	26.23
Inter-orbital width	19.48
Distance between orbit and upper lip	36.09
Distance between upper lip and dorsal fin	77.62
Pre-orbital length	14.73
Post-orbital length	43.56
Pre-dorsal fin length	69.56
Post-dorsal fin length	26.2
Pre-pelvic fin length	78.85
Pre-pectoral fin length	67.97
Pre-anal fin length	15.0
Caudal peduncle length	26.72
Upper jaw length	40.75
Anal fin length	117.21
Pelvic fin length	85.84
Pectoral fin length	43.13
<b>Meristic characters</b>	
Total number of gill rakers on 1st gill arch	26
Scales in lateral line series	80
Vertical scale row	48
Number of dorsal fin ray spines	X + 13
Number of anal spines	III + 15
Number of pelvic spines	I + 5
Number of pectoral rays	16
Number of caudal fin rays	20

The maximum body depth was measured at sixth dorsal fin spine.

**Colour (fresh specimen).** Body is pink to red with broad red bands. There is a row of 15 small dark spots along the lateral line. Fins are red to light pink. Pelvic fins are red with a black spot at the fin base. Caudal fin has a concave margin which may be lunate.

## DISCUSSION

In the present study, the moontail bullseye, *Priacanthus hamrur*, was identified according to Starnes (1988). All measurements and counts, the morphological description, and colour were consistent with the descriptions given by Starnes (1988) and Philip (1994). The moontail bullseye, *P. hamrur*, is closely related to the *Priacanthus meeki* Jenkins, 1903 and the Atlantic *P. arenatus*, with differences only in meristic counts and morphometry (Starnes 1988). *Priacanthus hamrur* by having capable of quickly altering to pinkish silver with six red bars on body and one extending ventrally from eyes and a black spot at base of first 3 pelvic rays (Randall et al. 1990). The low number of gill rakers (24–26) can distinguish it from its Atlantic congeneric *Priacanthus arenatus* (28–31). Besides, *P. hamrur* can be distinguished from *P. meeki* by the lateral series counts (79–96 for *P. hamrur*, 104–115 for *P. meeki*) and more compressed body (Starnes 1988, Motomura et al. 2001). In addition, the specimen of *P. hamrur* can be distinguished from other two priacanthid species *P. blochii*, and *P. sagittarius* differ from in the number of gill rakers (24–26 in *P. hamrur*; 17–22, in *P. blochii*; 19–21, in *P. sagittarius*) (Starnes 1988, Ramachandran and Varghese 2009).

Moreover, *Priacanthus hamrur* is almost identical in appearance to the *P. prolixus*. The characteristic differences between the two species are the total number of gill rakers (24–26 for *P. hamrur*, 29–31 for *P. prolixus*), and much more elongated body structure (body depth at sixth dorsal fin spine about 2.6 to 2.8 times in standard length for *P. hamrur*, body depth at sixth dorsal fin spine 3 or more times in standard length for *P. prolixus* (see Philip 1994, Gürlek et al. 2017).

Bineesh et al. (2016) reported in a recent phylogenetic study using two (16s rRNA, and COI) mtDNA segments that the closest genetic similarity was observed between *P. hamrur* and *P. prolixus* from Indian samples. However, the above-mentioned authors suggested that a more detailed analysis with wide geographical sampling would reveal the true extent of speciation in this priacanthid species.

*Priacanthus hamrur* is a common inhabitant of reef slopes. *Priacanthus hamrur* is a nocturnal species living in tropical marine waters on outer slopes and in lagoons at depths of 8 to 250 meters. The moontail bullseye, can sometimes form schools in oceans (Kuitert and Tonozuka 2001). It feeds on small fishes, crustaceans, and other small invertebrates (Fischer et al. 1990). Male *P. hamrur* can reach a maximum length (TL) of 45 cm, but they commonly reach 40 cm (Bouhleb 1988, Froese and Pauly 2018).

The presently reported study, *P. hamrur* is reported for the first time from the Mediterranean Sea. The occurrence of this species in the Mediterranean Sea is most probably due to migration from the Red Sea via the Suez Canal.

Table 2

A comparison of morphometric measurements and meristic counts of *Priacanthus hamrur* captured in the Gulf of Iskenderun, Turkey (Eastern Mediterranean) with closely related priacanthid species

Measurements	<i>P. hamrur</i> <i>n</i> = 1	<i>P. hamrur</i> <i>n</i> > 1 Philip 1994		<i>P. sagittarius</i> <i>n</i> = 1	<i>P. proluxus</i> <i>n</i> = 1
	This study	Mean	Range	Goren et al. 2010	Gürlek et al. 2017
Head length [%SL]	22.7	31	27.9–33.7	32.0	31.7
Eye diameter [%HL]	40.4	13.7	11.3–16	48.0	29.6
Inter-orbital width [%HL]	30.0	7.7	6.3–8.9	26.0	21.9
Body depth [%SL]	38.3	37	33.2–40.2	—	27.2
Height of caudal peduncle [%SL]	9.4	8.6	6.8–9.9	—	—
Distance between orbit and upper lip [%HL]	12.6	—	—	9.0	20.7
Distance between upper lip to origin dorsal fin [%SL]	27.2	—	—	28.0	25.3
Distance between upper lip to origin of anal fin [%SL]	50.5	—	—	53.0	51.5
Length of the longest pectoral fin ray [%SL]	15.4	15.3	13.0–16.5	15.0	16.4
Length of the longest pelvic fin ray [%SL]	31.3	28.8	26.0–32.2	32.0	24.3
Length of the 1st dorsal spine of dorsal fin [%SL]	5.1	—	—	10.0	5.9
Length of the 2nd dorsal spine of dorsal fin [%SL]	7.5	—	—	11.0	8.1
Length of the 10th dorsal spine of dorsal fin [%SL]	12.9	—	—	21.0	13.0
Length of 1st spine of anal fin [%SL]	6.0	—	—	13.0	8.6
Length of 2nd spine of anal fin [%SL]	9.1	—	—	15.0	10.1
Length of 3rd spine of anal fin [%SL]	11.3	—	—	20.0	11.1
<b>Counts</b>					
Dorsal fin ray	X +13	X + 13–15		X +13	X +14
Pectoral fin ray	16	18–19		19	20
Anal fin ray	III +15	III +14–15		III +14	III +14
Lateral line scale	70	79.6	70–90	—	77
Scales in line series	80	87.4	79–76	75	87
Vertical scale row	48	53.6	48–57	46	46
Gill rakers	26	24–26		18	29

However, the captured single specimen of *P. hamrur* do not necessarily indicate an existence of an established population in the Mediterranean Sea and with the present report, the number of priacanthid species reported in the Mediterranean Sea has reached four.

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