



Additional record of *Priacanthus sagittarius* Starnes, 1988 from the Northeastern Mediterranean coast of Turkey

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Abstract

A single specimen of *Priacanthus sagittarius* Starnes, 1988, has been collected in the Mersin Bay (off Yeşilovacık, Turkey) at a depth of 90 m in November 2022. The presence of *P. sagittarius* in the Mediterranean coast of Turkey is evidently due to migration from the Red Sea through the Suez Canal. This species appears to spread rapidly and easily established in the Eastern Mediterranean Sea. Besides, this ichthyological note is important and represents the third successive record from Turkish waters in the Northeastern Mediterranean Sea. The present study will be useful in the field of fisheries scientists and, at the same time, contribute to fisheries management.

1. Introduction

The genus *Priacanthus* Oken 1817 is represented by 12 valid species worldwide (Froese and Pauly 2022). This genus is comprised of four species in the Mediterranean, namely, Atlantic bigeye *Priacanthus arenatus* Cuvier, 1829, moontail bullseye *Priacanthus hamrur* (Forsskål, 1775), elongate bulleye *Priacanthus prolixus* Starnes, 1988 and arrow bulleye *Priacanthus sagittarius* Starnes, 1988 (Quignard and Tomasini 2010; Goren et al. 2010; Gürlek et al. 2017; Ergüden et al. 2018). However, another species is known to occur in the Red Sea: paeony bulleye *Priacanthus blochii* Bleeker, 1853; it has not been recorded in the Mediterranean waters (Gürlek et al. 2021).

The arrow bulleye, *Priacanthus sagittarius* is distributed from the Indo-west Pacific to the

Mediterranean (Froese and Pauly 2022). It is a demersal marine fish species for the Mediterranean waters. This species is usually found in sheltered reefs, caves or rocky areas (Kuitert and Tonzuka 2001).

Priacanthus sagittarius in the Mediterranean coast of Turkey is evidently due to migration from the Red Sea through the Suez Canal. This species has rapidly reached to eastern Levantine coast of the Mediterranean since the first recorded from Israel in 2010 (Goren et al. 2010), and then the second record again in the Israel coast (Haifa) (Golani et al. 2011). Then several specimens were reported from Israel and Lebanon waters (Golani et al. 2021).

In recent years, *P. sagittarius* has been distributed in the Mediterranean waters, especially in Egyptian and Syrian waters (Farrag et al. 2016; Alshawy et al. 2019).

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Although *P. sagittarius* was previously recorded in the southeastern Mediterranean coast of Turkey, a misidentification of this species was probably made by Yapıcı and Hasbek (2018) based on photographic analysis. Later Ergüden et al. (2018) stated in the study that the misidentified of this species and, it was identified as *P. hamrur* from İskenderun Bay.

In the Turkish seas, Gökoglu and Teker (2018) first recorded of *P. sagittarius* from off the Tasucu coast (Mersin). Then Gürlek et al. (2021) reported a single specimen from the Konacık beach (İskenderun Bay).

In the present paper, we report the third occurrence of *P. sagittarius* from the N.E. Mediterranean waters of Turkey (Yesilovacık, Mersin Bay). The current record indicates a westward migration of *Pricanthus* species in the Mediterranean Sea coast of Turkey.

2. Method

On 09 July 2022, a single specimen of *P. sagittarius* was captured by a commercial trawler at a depth of 90 m off Yesilovacık (36°06'084"N, 33°37'133"E), a locality situated 30 km northwest of Silifke (Fig. 1). The *P. sagittarius* specimen was brought aboard, photographed and identified. The identification of the present specimen (Fig. 2) agrees with the description given by (Starnes 1988; Goren et al. 2010; Golani et al. 2011).

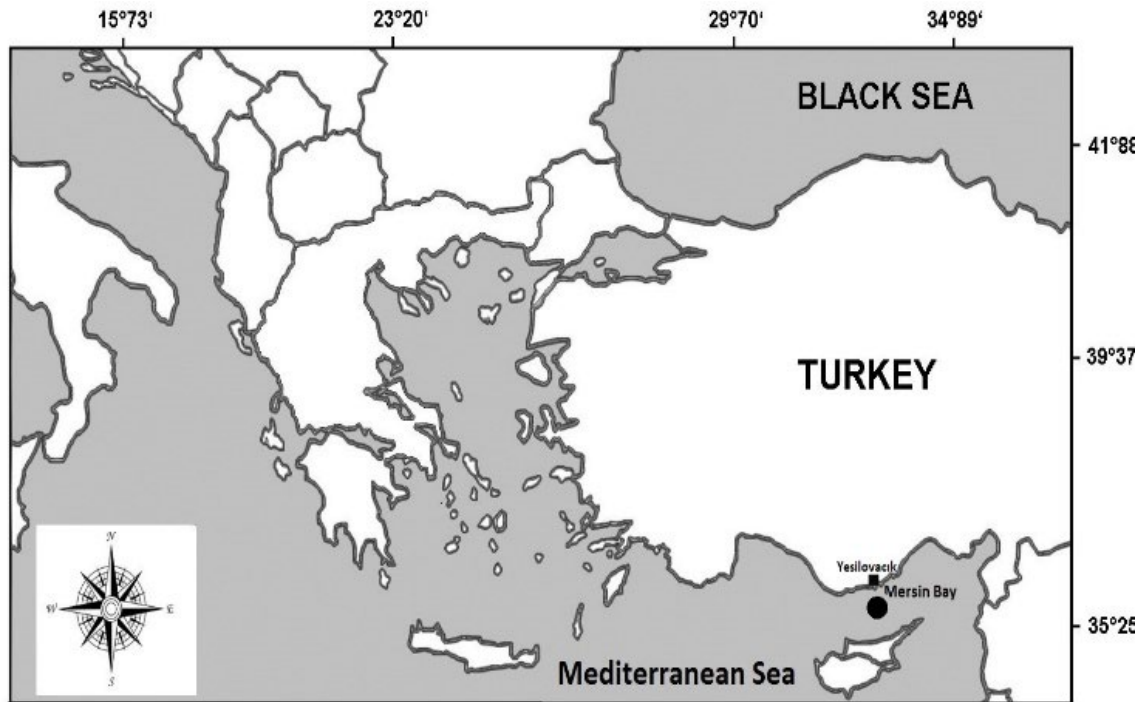


Figure 1. Map of the study area, indicating the capturing points (●) of *Pricanthus Sagittarius*



Figure 2. *Pricanthus sagittarius* from the North-Eastern Mediterranean coast of Turkey

3. Results

The Mediterranean specimen of *P. sagittarius* is described as follows: Dorsal fin ray, X+13; Anal fin ray, 13; Pectoral fin ray, 18; Caudal fin ray, 17.

The body is deep and strongly compressed, the head is large, dorsal fins are continuous. The eyes are enormous; the mouth is strongly oblique. The reoperculum margin is serrated, and the preopercular spine is short and broad. The caudal fin is emarginated (Goren et al. 2010; Golani et al. 2011).

Color (fresh specimen): The head and body are generally reddish silvery with grey mottling. The iris of the eye is pink to bright red. The dorsal, anal, and caudal fins are pink, and the margins of the dorsal, anal and caudal fins are dark and have a black mark at the pectoral fin base.

Table 1. Capture records of *Priacanthus sagittarius* from Mediterranean Sea covering the period 2009-2022

Author	N. of Samples	Record Date	Location/ Country	Gear	Depth (m)	Standard Length (mm)
Goren et al. (2010)	1	28.11.2009	Ashod, Israel	Trawl	40	114.0
Golani et al. (2011)	1	22.10.2010	Haifa Bay, Israel	Trawl	50	181.0
Farrag et al. (2016)	1	19.05.2015	Alexandria, Egypt	Trawl	35	108.0
Gökoğlu and Teker (2018)	1	27.11.2017	Tasucu, Turkey	Trawl	100	200.0
Alshawy et al. (2019)	1	15.03.2019	Banyas, Syria	Longline	100-125	154.0
Gürlek et al. (2021)	1	24.02.2021	Konacık, Turkey	Trawl	80	106.0
This study	1	09.11.2022	Yesilovacık, Mersin Bay, Turkey	Trawl	90	102.0

4. Discussion

To date, four species belonging to the genus *Priacanthus* are known from the Mediterranean. Goren et al. (2010) stated that *P. sagittarius* differs from other *Priacanthus* species, *P. arenatus* and *P. blochii*, *P. hamrur*. Although *P. sagittarius* resembles *P. blochii*, it differs from it by having pointed soft dorsal and anal fins and a black membrane between the first and second dorsal spine. At the same time, this species shows differences having the black blotch at the base of the pelvic fin and the long tenth dorsal spine, which is almost double the length of the second spine from the other three *Priacanthid* species.

Priacanthus sagittarius is a solitary species, usually seen alone or in small groups (Froese and Pauly 2023). It feeds on small fish, and large invertebrates (Golani et al. 2021). *P. sagittarius* is usually occur in the size range of 15 to 30 cm (Golani et al. 2021). The recorded maximum length (SL) is 35 cm for this species (Kuitert and Tonozuka, 2001). *P. sagittarius* is usually found at depths of 15-350 m (IUCN 2023). However, the single specimen reported in this study was observed at 90 m depth. This depth range is in accordance with the literature (Goldshmidt 1996).

This study gives a new location record of *P. sagittarius* from the Northeastern Mediterranean, Turkey. The finding of a third specimen in Turkey's North-eastern Mediterranean Sea coast in less than a year and a half after its previous record suggests that this species has probably been an established population in the same region. This observation indicates that the habitat of this geographic area is more efficient for its reproduction and spread. Golani (1998) reported that most alien fish species are characterized by their high mobility and high rate of reproduction in the Mediterranean Sea.

The data presented here are essential in terms of the current status of the alien species, possible population establishment, and biodiversity in the region. The historical captured record of the species in the Mediterranean Sea is documented in Table 1.

Since the role of this newly established alien species in the coastal ecosystem currently constitutes a limited population, the impact of this species on local populations needs to be investigated in the next few years.

5. Conclusion

Monitoring coastal habitats and biodiversity is important, as monitoring studies increasingly contribute to the discovery of new alien fish species, especially using long-term monitoring for timely assessment and management due to marine environment changes. Thus, further research is required to reveal details about the habitat requirements for establishing new alien species in the region. Besides the present study will be useful in the field of fisheries scientists and, at the same time, contribute to fisheries management.

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Author contributions

Deniz Ergüden (DE): Investigation, data analysis, writing, sample design and methodology. Deniz Ayas (DA): Data collection, data curation and editing. Sibel Alagöz Ergüden (SAE): Investigation, validation, supervision and final editing.

Conflicts of interest

The authors declare that for this article they have no actual, potential, or perceived conflict of interest.

Statement of Research and Publication Ethics

For this type of study formal consent is not required.

References

- Alshawy, F. A., Ibrahim, A., Hussein, C. & Lahlah, M. (2019). First record of arrow bulleye, *Priacanthus sagittarius* Starnes, 1988 from the Syrian marine waters (Eastern Mediterranean). *FishTaxa*, 4(2), 21-24.
- Chartosia, D. Anastasiadis, H. Bazairi, F. Crocetta, A. Deidun, M. Despalatović, V. Di Martino, N. Dimitriou, B. Dragičević, J. Dulčić, F. Durucan, D. Hasbek, V. Ketsilis-Rinis, P. Kleitou, L. Lipej, A. Macali, A. Marchini, M. Ousselam, S. Piraino, B. Stancanelli, M. Theodosiou, F. Tiralongo, V. Todorova, D. Trkov and S. Yapici (eds.) New Mediterranean Biodiversity Records (July 2018). *Mediterranean Marine Science*, Vol 19(2), Crete, Greece.
- Ergüden, D., Gurlek, M. & Turan, C. (2018). Confirmed occurrence of moontail bullseye *Priacanthus hamrur* (Forsskal, 1775) in the Mediterranean Sea with first record off the coast of Turkey. *Acta Ichthyologica et Piscatoria*, 48(4), 387-391. <http://dx.doi.org/10.3750/AIEP/0241>
- Farrag, M. M. S., Jawad, L. A. & Elhaweet, E. A. A. K. (2016). Occurrence of the arrow bulleye *Priacanthus sagittarius* (Teleostei: Priacanthidae) in the Egyptian coast of the Mediterranean Sea. *Marine Biodiversity Records*, 9(6), 1-4. <http://dx.doi.org/10.1186/s41200-016-0010-0>
- Froese, R. & Pauly, D. (Editors) (2022). FishBase. World Wide Web electronic publication. www.fishbase.org, version (08/2022).
- Gökoğlu, M. & Teker, S. (2018). Spread of the arrow bulleye *Priacanthus sagittarius* Starnes, 1988 in the Mediterranean Sea. *Acta Aquatica: Aquatic Sciences Journal*, 5(1), 1-3.
- Golani, D. (1998). Impact of Red Sea Fish migrants through the Suez Canal on the Aquatic Environment of the Eastern Mediterranean. *Bulletin of Yale School of Forestry and Environmental Studies*, 103, 375-387.
- Golani, D., Azurro, E., Dulcic, J., Massuti, E. & Orsi-Relini, L. (2021). Atlas of Exotic Fishes in the Mediterranean Sea. 2th Edition. (F. Briand ed.). *CIESM Publishers*, Monaco, Paris.
- Golani, D., Sonin, O. & Edelist, D. (2011). Second records of the Lessepsian fish migrants *Priacanthus sagittarius* and *Platax teira* and distribution extension of *Tylerius spinosissimus* in the Mediterranean. *Aquatic Invasions*, 6(1), S7-S11. <http://dx.doi.org/10.3391/ai.2011.6.S1.002>
- Goldshmidt, O., Galil, B., Golani, D., Lazar, B., Erez, J. & Baranes, A. (1996). Food selection and habitat preferences in deep-sea fishes of the northern Red Sea. F. Uiblein, J. Ott and M. Stachowitsch (eds.) Deep-sea and extreme shallow-water habitat: affinities and adaptations. *Biosystematics and Ecology Series*, 11, 271-298.
- Goren, M., Stern, N., Galil, B. S. & Diamant, A. (2010). First record of the Indo-Pacific arrow bulleye *Priacanthus sagittarius* Starnes, 1988 in the Mediterranean. *Aquatic Invasions*, 5 (Supplement 1), S45-S47. <http://dx.doi.org/10.3391/ai.2010.5.S1.011>
- Gürlek, M., Ergüden, D. & Turan, C. (2017). First record of elongate bulleye *Priacanthus prolixus* in the Mediterranean Sea. *Natural and Engineering Sciences*, 2(1), 44-47. <http://dx.doi.org/10.28978/nesciences.292356>.
- Gürlek, M., Ergüden, D. & Turan, C. (2021). Range extension of *Priacanthus sagittarius* Starnes, 1988 southeastern Mediterranean coast of Turkey. *COMU Journal of Marine Sciences and Fisheries*, 4(2), 235-239. doi: 10.46384/jmsf.1018275
- IUCN (2023). The IUCN Red List of Threatened Species. (Version 2022-2). <https://www.iucnredlist.org>
- Kuiter, R. H. & Tono-zuka, T. (2001). Pictorial guide to Indonesian reef fishes. Part 1. *Eels- Snappers, Muraenidae - Lutjanidae*. Zoonetics, Australia. 1-302.
- Quignard, J. P. & Tomasini, J. A. (2000). Mediterranean fish biodiversity. *Biologia Marina Mediterranea*, 7(3), 1-66.
- Starnes, W. C. (1988). Revision, phylogeny and biogeographic comments on the circumtropical marine percoid fish family Priacanthidae. *Bulletin of Marine Science*, 43(2), 117-203.
- Yapıcı, S. & Hasbek, D. (2018). Further sightings of *Priacanthus sagittarius* in the Levantine coasts of Turkey. pp. 398-415. In N. Chartosia, D. Anastasiadis, H. Bazairi, F. Crocetta, A. Deidun, M. Despalatović, V. Di Martino, N. Dimitriou, B. Dragičević, J. Dulčić, F. Durucan, D. Hasbek, V. Ketsilis-Rinis, P. Kleitou, L. Lipej, A. Macali, A. Marchini, M. Ousselam, S. Piraino, B. Stancanelli, M. Theodosiou, F. Tiralongo, V. Todorova, D. Trkov and S. Yapici (eds.) New Mediterranean Biodiversity Records (July 2018). *Mediterranean Marine Science*, 19(2), Crete, Greece.



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