



First Record of *Terapon jarbua* (Forsskål, 1775) in the Gaza Sea, Palestine

Jehad Y. Salah¹, Mohammed A. Aboutair², Maria Corsini-Foka^{3*} , Bruno Zava^{4,5} , Antonio Di Natale⁶ 

¹Department of Fisheries, General Directorate of Fisheries Gaza (DoF), Al Rasheed St. 191/1000, Gaza, Palestine.

²Department of Marine Environment, General Directorate of Fisheries Gaza (DoF), Al manar St. 3/49, Abasan alkabira, Khanyunis, Palestine. ³Institute of Oceanography, Hellenic Centre for Marine Research, Hydrobiological Station of Rhodes, Aquarium Square, 85100 Rhodes, Greece. ⁴Wilderness studi ambientali, via Cruillas 27, 90146 Palermo, Italy.

⁵Museo Civico di Storia Naturale di Comiso, Via degli Studi 9, 97013 Comiso (RG), Italy. ⁶Aquastudio Research Institute, Via Trapani 6, 98121 Messina, Italy.

Research Article

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Abstract

The occurrence of *Terapon jarbua* is documented for the first time in the waters off the Gaza Strip, Palestine, on the basis of a recent capture. The finding enriches knowledge of the distribution of this Lessepsian migrant in the eastern Levant and increases the number of non-indigenous fish species of Indo-Pacific/Red Sea origin recorded in the Gaza Sea to at least 44.

Keywords: *Terapontidae*, *Lessepsian migrants*, *first record*, *Palestine*, *Mediterranean Sea*.

Introduction

The Mediterranean Sea is a semi-enclosed basin that is significantly affected ecologically and socio-economically by the introduction and establishment of non-indigenous species (NIS), particularly Indo-Pacific/Red Sea species in its Eastern sub-region (Galil et al., 2017). Concerning

NIS fishes, to date about 120 species of Lessepsian migrants have been recorded in the Mediterranean, updating Golani (2025) with Ohayon et al. (2025), Corsini-Foka et al. (2025), Azzurro et al. (2026) and Hussein et al. (2026).

Four species of Terapontidae are known in the basin, all NIS, namely *Pelates quadrilineatus* (Bloch, 1790), *Terapon jarbua* (Forsskal, 1775), *Terapon puta* Cuvier, 1829 and *Terapon theraps* Cuvier, 1829 (Al Mabruk et al., 2021; Manaşırlı and Mavruk, 2021).

The Jarbua terapon *T. jarbua* has been reported in a few scattered records from the waters of Israel, from the Mediterranean waters of Egypt and from Libya (Ibrahim et al., 2023). In the present study, the occurrence of *T. jarbua* is documented for the first time in the waters off the Gaza Strip, Palestine, a region where studies on marine biota are extremely limited (Bariche et al., 2019; Abd Rabou et al., 2023, 2024). The finding increases knowledge of the distribution of this Lessepsian migrant fish, which, to date appears to be uncommon in the eastern Levant.

Material and Methods

A single specimen of a fish unknown to fisherman was caught on 5 September 2026 at about 10 m of depth, 500 m off the Al-Shati Camp area (coordinates 31°32'35"N, 34°26'49"E) (Figure 1), using gillnets, over a sandy seabed. The fish was photographed, selected measurements were taken to the nearest 1 mm, and some meristic counts were performed; to date it is preserved in a saline solution. The specimen was identified as *T. jarbua* following Fischer and Bianchi (1984), Golani and Appelbaum-Golani (2010) and Vari (2022).



Figure 1. Locations and dates of records of *Terapon jarbua* in the Mediterranean Sea. [Blue dots ●, previous published records: 2009, off Haifa, Israel (Golani and Appelbaum-Golani, 2010); 2020, off Alexandria, Egypt (Al Mabruk et al., 2021); 2020, off Al-Hamama, Libya (Ibrahim et al., 2023). Red dot ●, present study: 2026, Gaza Sea, Palestine].

Results and Discussion

The specimen of *T. jarbua* under study (Figure 2) weighed 210 g and had a total length of 243 mm, standard length of 197 mm, body depth of 57 mm (3.5 in SL) and head length of 60 mm (HL 3.3 in SL). The dorsal fin was XI, 9, the anal fin III, 7; the gill rakers on the first gill arch were 8 on the upper limb and 14 on the lower limb; 78 scales in lateral line; 13 rows of scales above the lateral line and 24 rows below it. The fish presented a body oblong, preopercle strongly serrate; lower opercular spine very long and strong, extending distinctly beyond the edge of opercular lobe; the spinous part of the dorsal fin strongly arched and deeply notched, with the first spine very short; caudal fin emarginate. Colour: body silvery-greyish dorsally and silvery white ventrally; head dusky dorsally; 4 downwardly curved longitudinal stripes on body, the two above black, the third brown reaching the base of caudal fin, the fourth orange. Spinous part of dorsal fin with a blackish large blotch on the upper portions of fin membranes between 3rd to 6th spines and posteriormost part dark distally; soft part of dorsal fin with membranes between first 3 rays tipped with black and membranes between 5th to 7th rays entirely black; caudal fin with black stripe across each lobe, and stripe on middle rays continuous with midlateral brown stripe on body, plus upper lobe dark distally; pectoral fin dark, pelvic and anal fins whitish.



Figure 2. The fresh specimen of *Terapon jarbua* caught in September 2026 in the Palestinian waters off the Gaza Strip. (Black bar= 100 mm)

The above reported characters of the examined specimen, including dorsal-fin formula XI, 9; anal-fin formula III, 7; 13 scale rows above lateral line; 8+14 gill rakers; opercular spine; dark longitudinal curved body stripes; and caudal-fin colour pattern, were useful diagnostic features that allowed its identification as *T. jarbua* and its differentiation from the Terapontidae reported in the Mediterranean, in particular from the congeneric *T. puta* and *T. theraps* (Table 1) (Fischer and Bianchi, 1984; Vari, 2022).

Table 1. Main diagnostic characters of the four Terapontidae species recorded to date in the Mediterranean (Fischer and Bianchi, 1984; Vari, 2022).

Characters	<i>Pelates quadrilineatus</i>	<i>Terapon jarbua</i>	<i>Terapon puta</i>	<i>Terapon theraps</i>
Dorsal fin	XII-XIII, 8-11	XI-XII, 9-11	XI-XII, 9-11	XI-XII, 9-11
Anal fin	III, 9-11	III, 7-10	III, 8-9	III, 7-9
GR (upper / lower)	16–18/23–28	6-8/14-17	7-9/18-24	6-8/14-17
LL	66-75	75-100	70-85	46-56
Scales above / below LL	9-11/19-23	13-17/19-24	10-13/22-24	6-8/14-16
Post-temporal bone	Not exposed	Exposed and serrate	Exposed and serrate	Exposed and serrate
Lower opercular spine	Short	Long	Long	Long
Longitudinal body stripes	4-6 straight	3-4 curving	3-4 straight	3-4 straight
Blotch on spinous dorsal	Sometimes present	Present	Present	Present
Stripes on caudal fin	No	Dark bar across each lobe, and on middle rays; upper lobe dark distally.	Two dark stripes on each lobe, a dark stripe through middle rays.	Upper lobe with a dark bar and distal blotch, dark stripe through middle rays, 2 dark stripes on lower lobe.

GR, gill rakers; LL, lateral line

The Lessepsian migrant *T. jarbua* reaches 350 mm in total length, commonly 200-270 mm, and lives in coastal, brackish and fresh waters; it feeds on invertebrates and smaller fishes, and it is caught with a variety of inshore fishing gear, including gillnets, traps, handlines and bottom trawls (Vari, 2022).

Among the Terapontidae found in the Mediterranean, two species, *T. puta* and *P. quadrilineatus*, were both first recorded in the Bardawil lagoon in the 1970s and have established populations, while the occurrence of *T. theraps* and *T. jarbua* is considered casual (Golani et al., 2021; Zenetos et al., 2022). The Small-scaled terapon, *T. puta*, is abundant and marketable in Egyptian waters, in particular in the northern lagoons (Halim and Rizkalla, 2011; El-Aiatt and Shalloof, 2019), while the Fourlined terapon *P. quadrilineatus* is regularly fished in the southeastern waters of Türkiye (Mavruk et al., 2017; Ergüden et al., 2018). The species *T. jarbua* was detected for the first time in 2009 south of Haifa, Israel (Golani and Appelbaum-Golani, 2010) and to date it appears to be scarcely recorded in the basin, as shown in Figure 1.

The record of the Lessepsian migrant *T. jarbua* from the waters of the Gaza Strip, as described in the present study, provides valuable information on the distribution of this fish in the eastern Levant. Although the present finding confirms the occurrence of *T. jarbua* in the Gaza Strip,

a single specimen is insufficient to determine whether the species has established a local population. Further monitoring and repeated observations are required to assess its establishment status.

The finding reported in this study increases to at least 44 the number of NIS bony fishes of Indo-Pacific/Red Sea origin (all Lessepsian migrants, see Golani and Fricke, 2018) reported from the restricted marine region off the Gaza Strip, representing 31 % of the known bony fish detected in fishery activities (Abd Rabou et al., 2023, 2024; Salah et al., 2024) and 37 % of the approximately 120 species of Lessepsian migrant fish species that have been recorded in the Mediterranean.

Conclusion

This study presents the first documented occurrence of the Jarbua terapon (*Terapon jarbua*) in the waters off the Gaza Strip, Palestine, located in proximity to the Suez Canal, enhancing our understanding of the distribution of this Lessepsian migrant, which has been rarely recorded in the eastern Mediterranean Sea.

Author Contributions

JYS, MAA contributed to investigation and data collection; JYS, MAA, MCF, BZ, ADN equally contributed to the research, data analysis and interpretation, and to writing the original draft. All authors reviewed and approved the final version of the manuscript, accepted full responsibility for its content, and agreed on the order of authorship.

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Conflict of Interest Statement

The author declares that for this article there are no conflicts of interest.

Ethical Approval Statement

Authors declare that the results of the study do not involve human and/or animal rights.

Data Availability Statement

The data used in the present study are available upon request from the corresponding author.

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