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FIRST SUBSTANTIATED RECORD OF MEDITERRANEAN SPEARFISH *TETRAPTURUS BELONE* (ISTIOPHORIDAE) FROM THE SYRIAN COAST

SUMMARY

Investigations conducted off the coast of Syria (eastern Mediterranean Sea) allowed capturing on 6 November 2022 of a specimen of Mediterranean spearfish *Tetrapturus belone* Rafinesque, 1810, constituting the first record of the species in the area. The studied specimen measured 1100 mm in total length (TL), its total body weight was 2015 g. It is described in the present paper including morphometric measurements and meristic counts. Its distribution in the Syrian marine waters and in the Mediterranean Sea is discussed and commented.

INTRODUCTION

Mediterranean spearfish, *Tetrapturus belone* Rafinesque, 1810 is a marine and bathypelagic fast swimmer endemic to the Mediterranean Sea, more common in central parts around the Italian Seas (NAKAMURA, 1986). Large specimens are captured in the Straits of Messina in August and September (TORTONESE, 1975). *T. belone* is known in the Adriatic Sea where but rather reported as a rare species (DULCIC and SOLDI, 2004). Eastward, *Tetrapturus belone* is found in some regions of the north-eastern Aegean Sea (AKYOL, 2020). It is also recorded in the Levant Basin from Turkiye (BILECENOGLU *et al.*, 2014) and Lebanon (BARICHE and FRICKE, 2020). The species was not recorded to date in the Black Sea (BILECENOGLU *et al.*, 2014; AKYOL, 2020).

The Mediterranean spearfish has been declared as "Least Concern (LC)" species by IUCN, but little is known about its biology and ecology (COLLETTE

and HEESSEN, 2015). ROMEO *et al.* (2009) noted that *T. belone* feeds on fish. In the present paper, we report a record of the rare *T. belone* from the Syrian coast, where the species was previously unknown (SAAD, 2005; ALI, 2018)

MATERIAL AND METHODS

A specimen of *Tetrapturus belone* was caught by longline on 6 November 2022, from the Syrian coast, off Baniyas city, $35^{\circ}06'14.4''\text{N}$ $35^{\circ}53'08.0''\text{E}$ (Fig. 1). This specimen was measured to the nearest millimetre and weighed to the nearest gram. Morphometric measurements are included in Tab. 1 together with percentages of total length, meristic counts and total body weight. The specimen was preserved in 10 % buffered formalin and deposited in the Ichthyological Collection of the Marine Sciences Laboratory, Faculty of Agriculture, Tishreen University with reference MSL 17/2022.

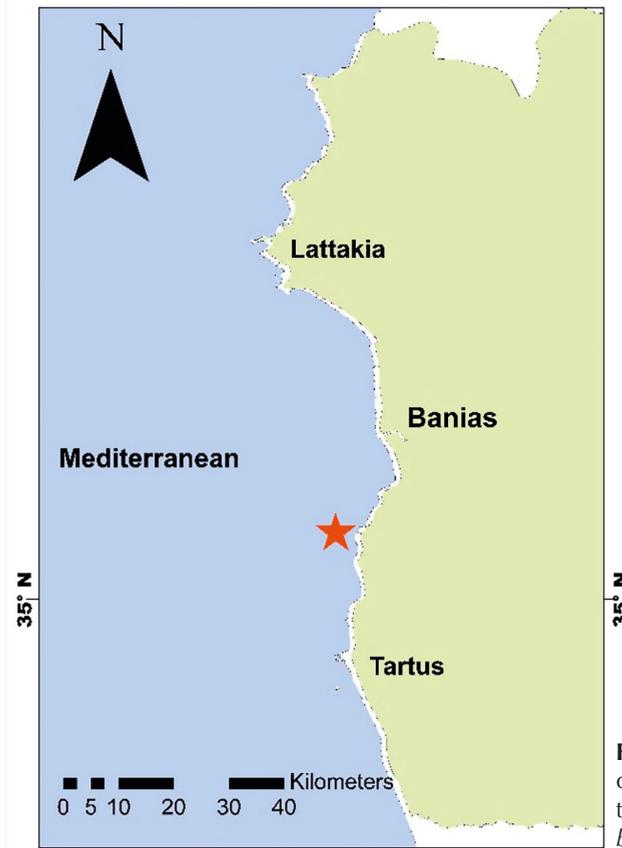


Fig. 1 - Map of the Syrian coast indicating the capture site of *Tetrapturus belone* (red star).

Tab. 1 - Morphometric measurements in mm and as a percentage of total length (%TL), meristic counts and weight in grams recorded the specimen of *Tetrapturus belone* caught south of Baniyas city, (ref. MSL 17/2022).

Reference	MSL 17/2022	
Morphometric measurements	mm	% TL
Total length	1100	100
Standard length	945	85.9
Body depth	110	10
Head length	284	25.8
Eye diameter	20	1.8
Snout length	175	15.9
Dorsal fin height	115	10.4
Dorsal fin height at the mide of the body	80	7.2
Body depth at the mide of the body	75	6.8
First anal fin height	55	5
Distance between the anus and anal fin origin	85	7.7
Pelvic fin height	165	15
Pectoral fin height	87	7.9
Pre-dorsal length	246	22.3
Pre-pectoral length	290	26.3
Pre-pelvic length	295	26.8
Pre-anal length	360	32.7
Meristic counts		
First dorsal fin	43	
Second dorsal fin	6	
First anal fin	11	
Second anal fin	7	
Pectoral fin	18	
Total body weight (g)	2105	

RESULTS AND DISCUSSION

The present specimen (MSL 17/2022) measured 1100 mm in total length (TL) and weighed 2105g. It was identified as *Tetrapturus belone* via the combination of main morphological characters: body elongate and fairly com-

pressed, bill rather short and slender, round in cross section; nape almost straight; right and left branchiostegal membranes completely united to each other, but free from isthmus, no gillrakers, both jaws and palatines (roof of mouth) with small, file-like teeth, two dorsal fins, first dorsal fin base long, extending from above posterior margin of preopercle to just in front of second dorsal fin origin; second dorsal fin with 6 rays; two anal fins, the second very similar in size and shape to the second dorsal fin; pectoral fins short, adpressible against sides of body, their upper margins curved, lower margins nearly straight and tips pointed, pelvic fins long and slender, slightly shorter than twice the pectoral fin length and depressible into deep ventral grooves, caudal peduncle well compressed laterally and slightly depressed dorsoventrally, with strong double keels on each side and a shallow notch on both, the dorsal and ventral surfaces; anus located far anterior to first anal fin origin, lateral line single and obvious, colour of the body dark bluish grey to nearly black dorsally and silvery white ventrally (Fig. 2).

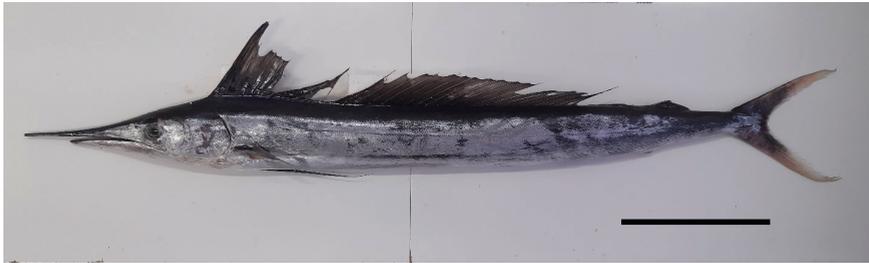


Fig. 2 - Specimen of *Tetraodon belone* caught south of Baniyas city, (ref. MSL 17/2022) with scale bar = 200mm.

General morphology, morphometric measurements, meristic counts and colour are in agreement with TORTONESE (1975), NAKAMURA (1985, 1986) and SOLDI and DULCIC (2004) confirming the identification of the present specimen (Tab. 1). Therefore, the species could be included in the ichthyofauna from the Syrian waters constituting also the first substantiated record. The distribution range of *T. belone* likely expand towards northern and eastern latitudes due to the global warming of the Mediterranean waters (FRANCOUR *et al.*, 1994). *T. belone* is sporadically caught at present in the eastern Mediterranean. However, an increase of captures will become furtherly more frequent in the region, it could be a suitable hypothesis and consequently the establishment of a viable population could not be totally ruled out. The presence of the species in the Syrian waters points out the biological richness of the area but also could be explained by the use of modern fishing methods facilitating captures of such species.

REFERENCES

- AKYOL O., 2020 - Additional record of Mediterranean spearfish, *Tetrapturus belone* Rafinesque, 1810 (Istiophoridae) from Izmir Bay (northern Aegean Sea). *COMU Journal of Marine Science and Fisheries* **3**(2): 146-148, DOI: 10.46384/jmsf.814214
- ALI M., 2018 - An updated checklist of marine fishes from Syria with an emphasis on alien species. *Mediterranean Marine Science*, **19**(2):388-393, DOI: <http://dx.doi.org/10.12681/mms.15850>
- BARICHE M., FRICKE R., 2020 - The marine ichthyofauna of Lebanon: an annotated checklist, history, biogeography, and conservation status. *Zootaxa* **4775**(1): 1-157, DOI: [org/10.11646/zootaxa.4775.1](https://doi.org/10.11646/zootaxa.4775.1)
- BILECENOGLU M., KAYA M., CIHANGIR B., ÇIÇEK E., 2014 - An updated check list of the marine fishes of Turkey. *Turkish Journal of Zoology*, **38**: 901-929, DOI: 10.3906/zoo-1405-60
- COLLETTE B., HEESSEN H., 2015 - *Tetrapturus belone*. The IUCN Red List of Threatened Species 2015:e.T170334A48680954. Accessed:20 January 2023.
- DULCIC J., SOLDI A., 2004 - The Mediterranean spearfish, *Tetrapturus belone* Rafinesque, 1810, in the Adriatic waters: new records and a review of Adriatic records. *Annales, Series Historia Naturalis* **4**(1): 45-48.
- FRANCOUR P., BOUDOURESQUE C.F., HARMELIN J.G., HARMELIN-VIVIEN L., QUIGNARD J-P., 1994 - Are the Mediterranean waters becoming warmer? *Marine Pollution Bulletin* **28**(4): 523-526.
- NAKAMURA I., 1985 - FAO species catalogue. Vol. 5. Billfishes of the world. An annotated and illustrated catalogue of marlins, sailfishes, spearfishes and swordfishes known to date. FAO Fish. Synop. FAO, Rome: 125(5): 65p.
- NAKAMURA I., 1986 - Istiophoridae. In: *Fishes of the north-eastern Atlantic and the Mediterranean*. WHITEHEAD P.J.P., M.-L. BAUCHOT, J.-C. HUREAU, J. NIELSEN AND E. TORTONESE, (Eds.), Paris, UNESCO, Vol. II: 1000-1007.
- ROMEO T., CONSOLI P., CASTRIOTA L., ANDALORO F., 2009 - An evaluation of resource partitioning between two billfish, *Tetrapturus belone* and *Xiphias gladius*, in the central Mediterranean Sea. *Journal of the Marine Biological Association of the United Kingdom* **89**(4): 849-855, DOI: 10.1017/S00253115408002087
- SAAD A., 2005 - Check-list of bony fish collected from the coast of Syria. *Turkish Journal of Fisheries and Aquatic Sciences* **5**(2): 99-106.
- TORTONESE E 1975 - *Fauna d'Italia, Vol. XI. Osteichthyes (Pesci ossei)*. Parte seconda. Calderini, Bologna: 636 pp.

