

## SPECIES

## To Cite:

Ibrahim A, Alshawy F, Hussein C. Pencil cardinal *Epigonus denticulatus* Dieuzeide 1950, a western Mediterranean fish: Newly recorded from the Syrian marine waters (Eastern Mediterranean). *Species* 2023; 24: e25s1025  
doi: <https://doi.org/10.54905/diss/v24i73/e25s1025>

## Author Affiliation:

Department of Fisheries Resource, High Institute of Marine Research, Tishreen University, Lattakia - Syria

## Corresponding author

Department of Fisheries at High Institute of Marine Research, Tishreen University, Lattakia  
Syria  
Email: [falshawy@gmail.com](mailto:falshawy@gmail.com)

## Peer-Review History

Received: 22 January 2023  
Reviewed & Revised: 24/January/2023 to 20/March/2023  
Accepted: 21 March 2023  
Published: 24 March 2023

## Peer-Review Model

External peer-review was done through double-blind method.

## Species

pISSN 2319–5746; eISSN 2319–5754



© The Author(s) 2023. Open Access. This article is licensed under a [Creative Commons Attribution License 4.0 \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>.

# Pencil cardinal *Epigonus denticulatus* Dieuzeide 1950, a western Mediterranean fish: Newly recorded from the Syrian marine waters (Eastern Mediterranean)

Amir Ibrahim, Firas Alshawy\*, Chirine Hussein

## ABSTRACT

Due to its location between the continents of the ancient world, Mediterranean Sea is exposed to various climatic conditions, which play a role in the differences in biodiversity between the western, central and eastern Mediterranean. The family Epigonidae spread in the Indian, Pacific and Atlantic oceans, *Epigonus denticulatus* is one of the Epigonidae spread in the western Mediterranean and was not record before in the eastern Mediterranean except for the Turkish coasts. In this paper, we present the species *Epigonus denticulatus* as the first record in the Syrian marine waters, which has the possibility of spreading towards the south in the eastern Mediterranean.

**Keywords:** Mediterranean, Epigonidae, *Epigonus denticulatus*, Syrian marine waters

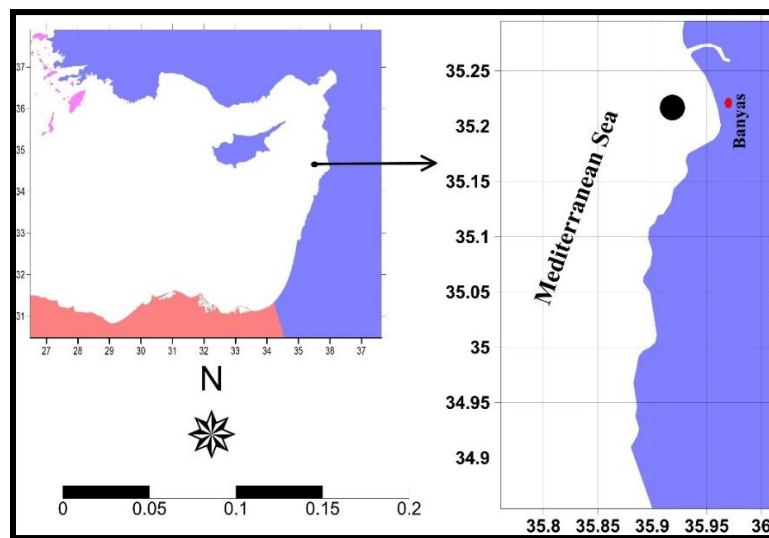
## 1. INTRODUCTION

Due to its location between the continents of the ancient world, Mediterranean Sea is exposed to various climatic conditions, which play a role in the differences in biodiversity between the western, central and eastern Mediterranean (Thiébaud and Moatti, 2016). These conditions may direct some species to spread throughout the Mediterranean, while limiting others from spreading; leading some species to exist in a specific part of the Mediterranean (Anna et al., 2017). This gives a logical explanation for the existence of specific species in the western Mediterranean and not in the eastern Mediterranean. When these conditions change, it may help marine biota to spread and begin the journey of expansion within the Mediterranean (Zittis et al., 2022). The family Epigonidae spread in the Indian Pacific and Atlantic oceans and differ from the Apogonids biologically and environmentally. Its individuals usually have 25 backbones, the snout is clearly enlarged, the anal and dorsal fins have scales (Froese and Pauly, 2023). Epigonidae is represented in the Mediterranean by five species (*Epigonus*

*constanciae*, *E. denticulatus*, *E. telescopus*, *Microichthys coccoi* and *M. sanzoi*) (Froese and Pauly, 2023). In the Syrian marine waters, just one species, *Epigonus constanciae* was recorded in 1994 (Ali, 2018). *Epigonus denticulatus* is one of the Epigonidae spread in the western Mediterranean and was not record before in the eastern Mediterranean except for the Turkish coasts (Bilecenoğlu et al., 2002). In this paper, we present the species *Epigonus denticulatus* as the first record in the Syrian marine waters, which has the possibility of spreading towards the south in the eastern Mediterranean.

## 2. MATERIAL AND METHODS

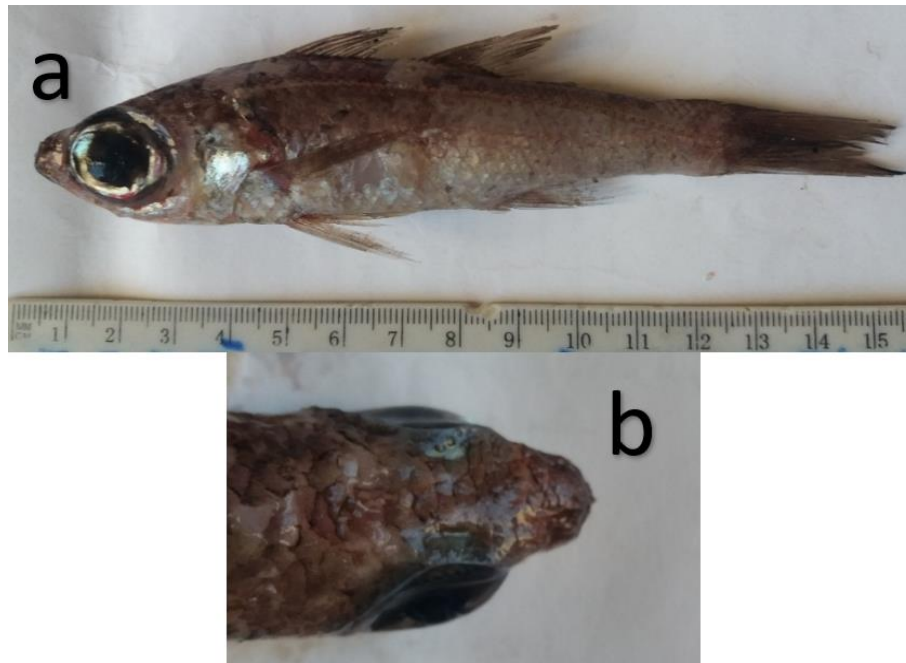
On 25 January 2023, a specimen of new fish was caught by using special gillnet (16mm openings), facing off Banyas city, Syria (N35°31'5.97", E35°42'48.57"; Figure 1). The specimen was identified according to Carpenter and De Angelis, (2016). The morphometric data and meristic counts were documented (length to the nearest mm, weight to the nearest g). The specimen was saved at the laboratory of fisheries resource (Tishreen University the High Institute of Marine Research - Lattakia, Syria), as a reference sample (HIMR-2023-A).



**Figure 1** The map of fishing area of *E. denticulatus* specimen from Banyas coast

## 3. RESULTS

A single specimen of the Pencil cardinal *Epigonus denticulatus* Dieuzeide, 1950 (Figure 2a) was caught at 320 m water depth off Banyas coast. It has an elongated and compressed body, with big eyes and short prominent snout (Figure 2b). The dorsal fin is divided into two parts, caudal peduncle elongated and the body is brownish to yellowish and covered with scales that are easy to scrape off. The meristic formula is: D, VII+10; A, II+8; P, 14; V, I+5; C, 20. These structures of *E. denticulatus* totally come to match with Carpenter and De Angelis, (2016). The morphometry scales were placed in Table (1).



**Figure 2** *Epigonus denticulatus*; a: General view of the specimen, b: Top view of the fish's head

**Table 1** Morphometric characteristics of *E. denticulatus* caught from Banyas coast, Syria.

Features	Morphometric measurement (mm or g)
Total length	154
Standard length	120
Head length	45
Eye diameter	8
Body depth	27
1 <sup>st</sup> dorsal fin length	15
2 <sup>nd</sup> dorsal fin length	13
Pectoral fin length	26
Pelvic fin length	23
Anal fin length	12
Caudal fin length	31
Pre-dorsal length	18
Pre-pectoral length	40
Pre-pelvic length	45
Pre-anal length	77
Total weight	31.17

#### 4. DISCUSSION

*Epigonus denticulatus* exists in the western Mediterranean and found in Turkish coast (Bilecenoglu et al., 2002), but was not recorded previously in most of the east coastline of the Mediterranean Sea (Ali, 2018, Froese and Pauly, 2023). This paper documents the spread of *E. denticulatus* from the western Mediterranean to the Syrian seashore (easterly Mediterranean). Consequently, recording this species in the Syrian waters may open the way for this species to spread along the southern part of the eastern Mediterranean Sea, especially that the marine environment of Mediterranean had been changed in recent years due to climate changes (Alshawy et al., 2019; Ibrahim et al., 2020b). Occurrence of *E. denticulatus* in the eastern Mediterranean may influence the native-fish species in the area (Ibrahim et al., 2020a). This requires to launching a local team work in order to monitor changes in fish fauna composition (Hussein et al., 2019; Gerovasileiou et al., 2022), especially under the increased number of marine biotas that are documented for the prime occurrence in the eastern Mediterranean (Ibrahim et al., 2020a; Ibrahim et al., 2019; Ibrahim, 2008; Ben Haj et al., 2009).

## 5. CONCLUSION

*Epigonus denticulatus* species from western Mediterranean, had been documented for the first one in the Syrian seashore of the eastern Mediterranean. This species is expected to increase its distribution range in the area. The increased number of marine organisms documented for the first time in the eastern Mediterranean calls for the necessity of establishment of regional cooperation network in order to monitor changes in fish fauna composition.

### Acknowledgements

The authors thank Tishreen University and the High Institute of Marine Research (Lattakia) who provided the financial and logistic supports to this work.

### Authors' contributions

All authors have equal participation in this work.

### Informed consent

Not applicable.

### Ethical approval

The Animal ethical guidelines are followed in the study for species observation & identification. The specimen was saved at the laboratory of fisheries resource (Tishreen University the High Institute of Marine Research - Lattakia, Syria), as a reference sample (HIMR-2023-A).

### Conflicts of interests

The authors declare that there are no conflicts of interests.

### Funding

Tishreen University

### Data and materials availability

All data associated with this study are present in the paper.

## REFERENCES AND NOTES

1. Ali MF. An updated Checklist of the Marine fishes from Syria with emphasis on alien species. *Mediterr Mar Sci* 2018; 19:388-393.
2. Alshawy F, Ibrahim A, Hussein C, Lahlah M. New Distribution of the Serpent Eel *Ophisurus serpens* (Linnaeus, 1758) in Eastern Mediterranean: First Record from the Syrian Marine Waters. *SSRG Int J Agric Env Sci* 2019; 6:50-52.
3. Anna MM, Paolo B, Alan D. The Marine Biodiversity of the Mediterranean Sea in a Changing Climate: The Impact of Biological Invasions. In: Borna FB (ed.) *Mediterranean Identities*. Rijeka: Intech Open 2017.
4. Ben Haj S, Cebrian D, Limam A, Grimes S, Halim Y, Bitar G, Bazairi H, Ibrahim A, Romdhane MS Ed. Sub-regional report on vulnerability and impacts of climate change on marine and coastal biological diversity in the Mediterranean, Arab Countries. *UNEP-MAP RAC/SPA* 2009.
5. Bilecenoğlu M, Taskavak E, Mater S, Kaya M. Checklist of the marine fishes of Turkey (*Zootaxa* 113). Published by Magnolia Press, New Zealand 2002; 194.
6. Carpenter KE, De Angelis N. The living marine resources of the eastern central atlantic Bony fishes (Perciformes to Tetradontiformes) and Sea turtles, *FAO Rome* 2016; 4(2).
7. Froese R, Pauly D. Fishbase. [www.fishbase.in](http://www.fishbase.in). 2022, [www.fishbase.in](http://www.fishbase.in) 2023.
8. Gerovasileiou V, Bancila RI, Katsanevakis S, Zenetos A. Introduced species in Mediterranean marine caves: An increasing but neglected threat. *Mediterr Mar Sci* 2022; 23:995-1005.
9. Hussein C, Ibrahim A, Alshawy F. First record of Red cornetfish, *Fistularia petimba* Lacepède, 1803 (Actinopterygii: Fistulariidae) from the Syrian coast. *Int J Aquat Biol* 2019; 7:17 5-179.
10. Ibrahim A. Vulnerability Assessment and Possible Adaptation Measures of the Syrian Coastal Areas to

- Climate Changes; the National Communication Report to UNFCCC, UNDP 2008.
11. Ibrahim A, Alshawy F, Hussein C. Stonefish *Synanceia verrucosa* Bloch & Schneider, 1801 (Actinopterygii: Synanceiidae): The first record in the Syrian coast and the fourth in the Mediterranean. *Int J Aquat Biol* 2019; 7:383-386.
  12. Ibrahim A, Alshawy F, Hussein C. Confirmation records and new distribution of the red cornet fish *fistularia petimba lacepède*, 1803 (Actinopterygii: Fistulariidae) in the Syrian Marine Waters (Eastern Mediterranean). *Sp* 2020a; 21:95-100.
  13. Ibrahim A, Hussein C, Alshawy F, Alcheikh Ahmad A. First Record of Pope's ponyfish *Equulites popei* (Whitley, 1932), (Osteichthyes: Leiognathidae) in the Syrian Marine Waters (Eastern Mediterranean). *J Wildl Biodivers* 2020b.
  14. Thiebault S, Moatti JP. The Mediterranean region under climate change: A scientific update, Marseille: IRD Éditions/ AllEnvi 2016.
  15. Zittis G, Almazroui M, Alpert P, Ciais P, Cramer W, Dahdal Y, Fnais M, Francis D, Hadjinicolaou P, Howari F, Jrrar A, Kaskaoutis DG, Kulmala M, Lazoglou G, Mihalopoulos N, Lin X, Rudich Y, Sciare J, Stenchikov G, Xoplaki E, Lelieveld J. Climate Change and Weather Extremes in the Eastern Mediterranean and Middle East 2022; 60:e2021RG000762.