



## New distribution of the smith's cardinal fish *Jaydia smithi* Kotthaus, 1970 (pisces: apogonidae) in the Syrian Marine Waters (Eastern Mediterranean)

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### Article History

Received: 07 November 2019

Accepted: 24 December 2019

Published: January 2020

### Citation

Amir Ibrahim, Firas Alshawy, Chirine Hussein. New distribution of the smith's cardinal fish *Jaydia smithi* Kotthaus, 1970 (pisces: apogonidae) in the Syrian Marine Waters (Eastern Mediterranean). *Species*, 2020, 21(67), 43-47

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### General Note

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### ABSTRACT

The eastern part of the Mediterranean is suffering from environmental and human stresses; therefore, tropical marine species continued to invade the Mediterranean, relying on the human-paved path, which has been routed by environmental changes. Apogonidae family has about 320 small fish species, eight of them are found in the Mediterranean Sea. This paper shows that new individuals of *Jaydia smithi* is an Apogonidae species, had been recorded at Banyas coast- Syria 2019; about 40 km south.

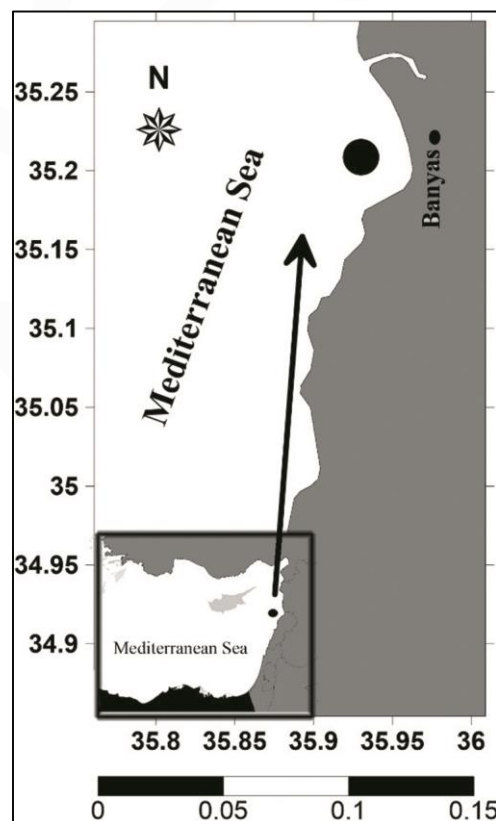
**Keywords:** *Jaydia smithi*, Apogonidae, Mediterranean, Syrian marine water

## 1. INTRODUCTION

The eastern part of the Mediterranean is suffering from environmental and human stresses; surface currents carry high concentration of pollutants to this area (Danovaro, 2003), and global warming makes the conditions converge with those in tropical waters (Ibrahim, 2008, Lelieveld et al., 2012). In addition, urban violations and human activities have brought about changes in biodiversity, since the opening of Suez Canal (Ibrahim, 2009, Mannino et al., 2017). Therefore, tropical marine species continued to invade the Mediterranean, relying on the human-paved path, which has been routed by environmental changes (Vallerga et al., 2003, Katsanevakis et al., 2014a). Accordingly, the Mediterranean environment has become more able to accommodate new species (Hallom et al., 2014, Alshawy et al., 2019a, c) which exerted more pressure on native biota through the competition for habitat and food (Katsanevakis et al., 2014b, Hussein et al., 2019, Ibrahim et al., 2019). This may lead to disappearance of native species from the area (Ibrahim et al., 2002, Alshawy et al., 2019d). Some fish species that have arrived in the Mediterranean Sea are establishing themselves and become invasive, depending on the availability of food and habitat. Apogonidae family has about 320 small fish species, eight of them are found in the Mediterranean Sea (Froese and Pauly, 2019). *Jaydia smithi* is an Apogonidae species which invaded the Mediterranean Sea from the Indo-Pacific Ocean and Red Sea through the Suez Canal and recorded for the first time in 2008 in the eastern Mediterranean (Golani et al., 2008) and in 2016 at Lattakia coast- Syria (Alshawy et al., 2017). This paper shows that new individuals of *Jaydia smithi* had been recorded at Banyas coast- Syria 2019; about 40 km south.

## 2. MATERIALS AND METHODS

On 18-9- 2019, a field trip was performed in the marine waters facing Banyas city, Syria (N: 35°14'35.11", E: 35°55'12"; Fig.1). Fish samples were collected using fixed gillnet (18mm mesh size, 3 m height, 200 m length: with duplicates), with assistance of fishing boat (9.5m and 19HP). The fish specimens were identified according to Smith and Heemstra (1986) and Gon and Randall (2003). The morphometric measurements (length to the nearest mm, weight to the nearest g), and meristic counts were recorded. It was then photographed, preserved in 7% formaldehyde, and placed at the Biological Laboratory of the High Institute of Marine Research (Tishreen University-Lattakia, Syria) as a reference sample (unnumbered yet).



**Figure 1** A map showing the collection site of *J.smithi* specimen from Banyas coast – Syria.

### 3. RESULTS

Three specimen of *Jaydia smithi* were caught at ~30 m water depth off Banyas coast (Fig.2a). They have an ovate to elongate body with two separated dorsal fins. The mouth is clearly superior and the eyes are large. The snout is short, the caudal fin is rounded and the body is coloured yellowish brown. The first dorsal fin has a big dark spot on the top and the second has small black spots. The outer edges of the second dorsal and caudal fins are black (Fig.2b). The morphometric measurements are shown in Table (1) and the meristic formula is :D,VII+I+9;P,15;V,I+5;A,II+8;C,16. These features of *J.smithi* are in full agreement with Gon and Randall (2003).



**Figure 2** *Jaydia smithi* specimens caught on 18-9-2019 from Banyas coast-Syria.

**Table 1** Morphometric and biometric characteristics of *J.smithi* caught from Banyas coast-Syria.

Factors	Min	Max	SD
Total length	112	114	1.15
Standard length	93	96	1.7
Body depth	28	30	
Head length	25	25	
Eye diameter	7	8	0.5
1 <sup>st</sup> dorsal fin length	15	15	
2 <sup>nd</sup> dorsal fin length	19	19	
Pectoral fin length	18	18	
Pelvic fin length	20	20	
Anal fin length	18	18	
Caudal fin length	20	20	
Pre-dorsal length	34	35	0.5
Pre-pectoral length	36	37	0.5
Pre-pelvic length	36	37	0.5
Pre-anal length	30	30	
Total weight	23	28	2.6

### 4. DISCUSSION

*Jaydia smithi* had been recorded in 2016 at Lattakia coast (Alshawy et al., 2017), and now after three years, is recorded in Banyas coast, 40 km southwards, reflecting the distribution range enlargement. The previous disappearance of this species from Banyas coast may due to the use of inappropriate fishing gears or to fishermen ignorance to this small sized fish (12 cm; Smith and Heemstra, 1986). This new range of distribution of *J. smithi* enforces the evidence of the environmental changes in the Mediterranean Sea (Rac., 2009, Thiébault et al., 2016); making it more able to accommodate new tropical species (Ibrahim et al., 2010, Alshawy et al., 2019f). The occurrence of this fish species in the Syrian coast makes it necessary to assess the environmental

and economic impacts on the native fish populations (Britton et al., 2011, Alshawy et al., 2019b). Due to their small sizes (Carpenter and De Angelis, 2016), Apogonidae species are hardly caught by the usual fishing nets which facilitates their population enlargement. This makes such species dangerous in these new environments through exploiting the available food and habitats (Katsanevakis et al., 2014b). The Mediterranean Sea had received a number of new Apogonidae species in recent years (Ali et al., 2018; Alshawy et al., 2019b, e) which necessitates further studies to determine the resulting environmental impacts. This also calls for regional and international cooperation (Hussein et al., 2011) in order to develop a plan of action to mitigate the negative effects of these species in the Mediterranean Sea (Hussein et al., 2011b, a).

## 5. CONCLUSION

*Jaydia smithi* is a lessepsian fish already enlarged its distribution range in the Syrian coast (eastern Mediterranean). This seems to reflect the changes in the Mediterranean environment caused by climate changes, global warming and human activities, and may have serious consequences on the native fish populations.

### Acknowledgements

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

### Authors' contributions

All authors are equal in contributing to this work.

**Funding:** This study was funded by Tishreen University, Syria.

**Conflict of Interest:** The authors declare that there are no conflicts of interests.

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