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FIRST SUBSTANTIATED RECORD OF THE TWOBAR SEABREAM, *Acanthopagrus bifasciatus* (TELEOSTEI: SPARIDAE), IN THE SYRIAN MARINE WATERS (EASTERN MEDITERRANEAN SEA)

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AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

On 3th July 2022, a single individual of the non-indigenous fish *Acanthopagrus bifasciatus*, 330 mm total length and 490g of body weight, were fished from the coastal waters off Banias, Syria. It was sampled with spear at 7-8 m depth. The record of *A. bifasciatus* is the first occurrence for the marine Syrian waters and the fifth for the entire Mediterranean Sea. The species is distinguished by dorsal and caudal fins yellow, without a dense black margin of dorsal-fin or narrow black edge along rear margin of caudal fin which is being diagnostic characters of this species.

Keywords: First record; non-indigenous fish; lessepsian migrants; Syria; Mediterranean Sea.

1. INTRODUCTION

"The Sparidae family (seabreams) are common coastal fish species inhabiting tropical and temperate waters throughout the world" [1], "that includes 148 species worldwide belonging to 37 genus" [2]. "In the Syrian marine water (Eastern Mediterranean), seabreams are represented by 25 and six species of native and exotic origin, respectively" [3-9]. "The exotic origin species comprise two Atlantic fishes" (*Pagellus bellotti* [10] and *Pagellus bogaraveo* [7]; "three Red Sea species, which are well established in the Eastern Mediterranean (i.e. *Crenidens crenidens*; *Rhabdosargus haffara"* [3]; *Rhabdosargus sarba* [6] and *Pagrus major*, an occasional aquaculture escapee [8] (Fig. 1). "The twobar seabream, *Acanthopagrus bifasciatus* (Forsskål 1775) is a tropical coastal fish species distributed throughout the Red Sea and the western Indian Ocean" [11] "Its conspicuous coloration easily distinguishes *A. bifasciatus* from other fish species" [12,13].

The present work describes the first record of *Acanthopagrus bifasciatus* in the Syrian marine waters and discusses the introduction pathway of this recently introduced non-indigenous fish in the local area and the Mediterranean Sea.

2. MATERIALS AND METHODS

"On July 3th, 2022, a specimen *of Acanthopagrus bifasciatus*, total length 330 mm, weight 490 g, was caught by sniper at a depth of 7-8 m, at the Banias coast, Syria (N: 35°7'17.0.5", E: 35°54'14.73") (Figs. 1 & 2), on sandy bottom. In this case, a

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fisherman informed directly one of the authors (MSL) about the capture of an unknown fish providing a photo (Fig. 3). The specimens were identified following" [11,13-15].

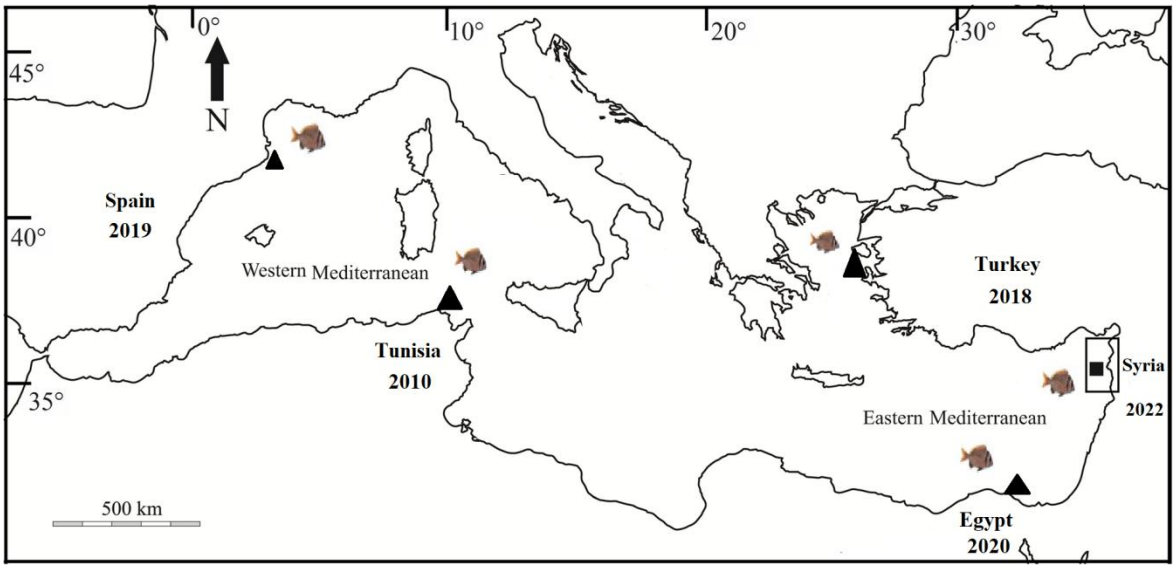

Fig. 1. Map of the Mediterranean Sea showing the locations of *Acanthopagrus bifasciatus* (▲: present study; ■: previous studies)

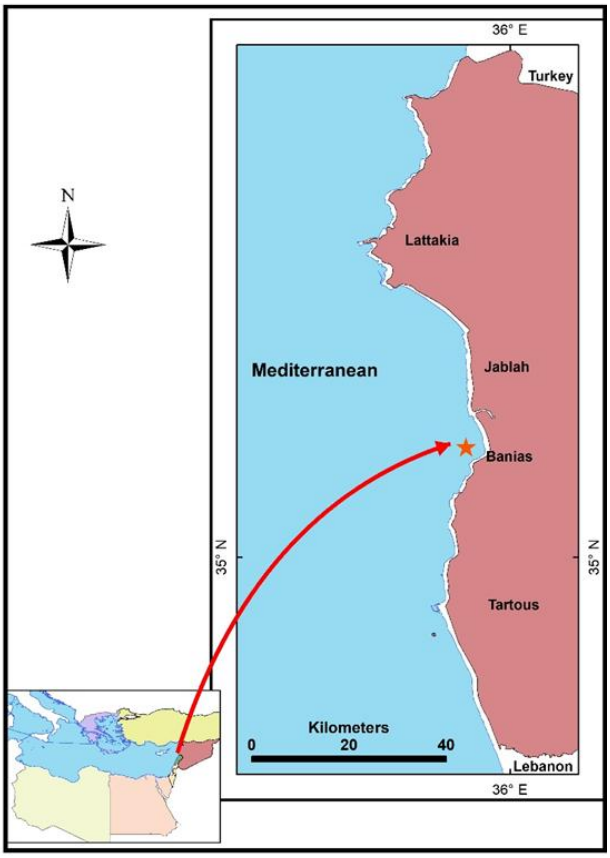

Fig. 2. Specimen catching location of *Acanthopagrus bifasciatus* on the Syrian coast (star) opposite the Banias city

Fig. 3. The specimen of *Acanthopagrus bifasciatus* captured in the Banias coast, Syria. Scale bar= 50 mm. Photo by Ghadeer Hamdan

3. RESULTS

The specimen, identified as *Acanthopagrus bifasciatus*, measured 300 mm TL and weighed 490.0 g TW. It displayed two black bars on its head; a bright orange spot from the upper jaw up to the forehead; and bright orange dorsal, caudal, and pectoral fins, the first two of which lack black margins. The following values were obtained using the meristic formula: D, XI + 12; A, III + 10; P, 15; V, I + 5; pored lateral line scales, N = 49.

4. DISCUSSION

"All the examined traits of the 330 mm LT *A. bifasciatus* are in agreement with the previous descriptions of this species" [12,15,17,18]. "In both the Red Sea and Indian Ocean, *A. bifasciatus* occurs in sympatry with the dark-finned black porgy *A. berda*. The latter can easily be distinguished from *A. bifasciatus* since it shows no black bars on the head" [13]. Another species morphologically similar to *A. bifasciatus* is *A. catenula*. At present, no species belonging to the genus *Acanthopagrus* have so far been reported from the Syrian coast. The twobar seabream is a common species in the Red Sea and it could have entered the Mediterranean Sea through the Suez Canal, as well as - at least - another 110 teleosts recorded to date in this basin.

The new observation of *A. bifasciatus* in Syria represents evidence of the 5th occurrence of this species in the entire Mediterranean Sea (Fig. 1) and adds a non-indigenous species to the 25 native and 6 no indigenous sparids that occur in the Syrian marine waters [8]. Our findings reinforce the importance of engaging local fishers in the detection of non-indigenous species, a practice that has recently proven to be very effective as a complementary tool in coastal and port surveys [19].

"The finding of *A. bifasciatus* reported in the present study from Syria and the recent one from Egypt and Turkey, possibly supports an introduction via the Suez Canal and the spreading of an apparently limited population along the Levantine coasts" [15]. "However, the species is easily distinguishable from the other native sparids and, up to date, no other intermediate Mediterranean records of the species northward of the Suez Canal were reported. The association between these three records will be confirmed by further findings in the Levantine Sea waters. Linking the present twobar seabream Syrian finding with the previous ones from Tunisia" [15] and Spain [20] appears more difficult.

Obtaining more than 4 individuals of this species with a length of more than 30 cm, in widespread areas of the Mediterranean: Tunisia [15], Spain [20],Turkey [16], Egypt [18], and Syria [present study] indicates that the species has become established in the Mediterranean and breeding in the new environment.

"The warming of the Mediterranean waters due to climate chang"e [21] and "the successive enlargements of the Suez Canal accompanied by the intensification of maritime traffic through it" [22] could facilitate new introductions of non-indigenous tropical and subtropical biota from the Red Sea. Because of the direction of the main Atlantic-Mediterranean sea current coming from the west along the southern coasts of the Mediterranean, passing in front of the confluence of the mouth of the Suez Canal in the Mediterranean, far from the Port Said area. As a result of the (Coriolis phenomenon), the eastern coasts of the Mediterranean and southern Turkey, especially the coasts of the Levant, are the

hot spot for the first appearance of Lessepsian migratory species.

The results of previous studies on the diet of *Acanthopagrus bifasciatus* in the Red Sea have indicated that the *A. bifasciatus* is a carnivore, as the analysis of the contents of the digestive tubes showed the fish feed on a variety of food materials mainly Mollusks, crustaceans, fish scales, cnidarians, Echinodermata as well as food remains [23]. Accordingly, this migratory species is a strong competitor to the other local species of the sparrowy family, as its food depends on the prey we mentioned above, but on the other hand, the ability of *A. bifasciatus* to feed on a number of different trophic levels coupled with the potential for fast growth makes this species a promising candidate for commercial culture.

5. CONCLUSION

This specimen is the first recorded case for *Acanthopagrus bifasciatus* in the Levant basin and the fifth occurrence in the Mediterranean Sea. Waiting for the species to establish a larger population, which may take years. Based on the geographical locations dispersed throughout the Mediterranean, it is assumed that there are two ways for this species to reach the Mediterranean Sea, which are by transporting the larvae with ships' ballast water from its original areas of dispersal (for example, recording its presence near the port of Tunis and near Barcelona, and the second way is through the Suez Canal - Lessepsian migration- and its movement naturally with the main sea current towards the coasts of the Levant and recording its presence in Lebanon, Syria and Turkey.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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