

New Distribution of *Pteragogus trispilus* Randall, 2013 (Actinopterygii: Labridae) in the Syrian Marine Waters (Eastern Mediterranean)

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Abstract

Marine biological systems undergo many stressors mainly due to climate change and human activities, which break the barriers between different water bodies and allow species to move into new environments. The Mediterranean Sea is being invaded by marine species, making it a biodiversity hotspot. Labridae species are found in the tropical and subtropical waters and is represented by 25 species in the Mediterranean Sea. *Pteragogustrispilus* Randall, 2013 had been recorded in the Mediterranean Sea in 1991 as Lessepsian species. In 2014, it had been reported mistakenly in the Syrian marine waters as *Pteragoguspelycus*, this report we confirm that *Pteragogustrispilus* exists in the marine water of Syria: It was recorded at Banyas coast, to the north of Tartous coast where it was first recorded.

Keywords: Mediterranean, Labridae, *Pteragogustrispilus*, Syrian marine waters, Lessepsian.

I. INTRODUCTION

Marine biological systems undergo many stressors mainly due to climate change and human activities [1, 2], which break the barriers between different water bodies and allow species to move into new environments [3]. For decades, the Mediterranean Sea is being invaded by marine species, from the Indo-Pacific Ocean via the Suez Canal or from the Atlantic Ocean via Gibraltar [4-6]. More than 100 Lessepsian species had interred the Mediterranean environment [7], making it a biodiversity hotspot [8, 9]. Labridae species are found in the tropical and subtropical waters and is represented by 25 species in the Mediterranean Sea, 11 of them had been recorded in the Syrian marine waters [10]. *Pteragogustrispilus* Randall, 2013 had been recorded in the Mediterranean Sea for the first time in 1991 at Haifa Bay [11] and in 2000 at Mersin Bay [12]. In 2014, it had been reported mistakenly in the Syrian marine waters as *Pteragoguspelycus* [13] and re-identified correctly by [14]. In this report we

confirm that *Pteragogustrispilus* exists in the marine water of Syria: It was recorded at Banyas coast, to the north of Tartous coast where it was first recorded.

II. MATERIALS AND METHODS

On 21/8/2019, 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, 3m height, 200m length: with duplicates), with assistance of fishing boat (9.5m, 19HP). The fish specimens were identified according to Randall (2013). The morphometric measurements (length to the nearest 0.1mm, weight to the nearest 0.1 g), and meristic counts were recorded. They were 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).

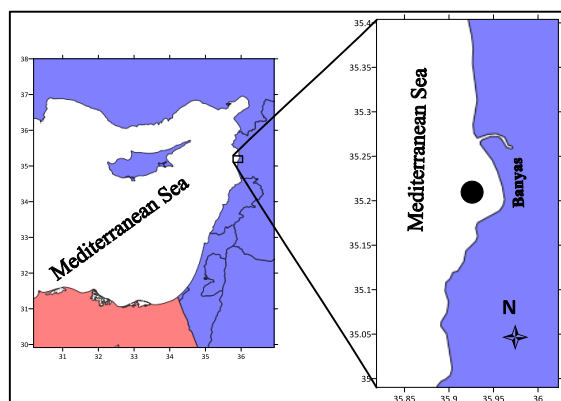


Fig.1 .A map showing the collection site of *P.trispilus*specimen from the Syrian marine waters.

III. RESULTS

Four specimens of *Pteragogustrispilus*(Fig.2) were caught from a depth of ~20-30 m off Banyas coastline. These individuals had the following diagnostic characteristics: the body is compressed, with a slight dorsal curvature compared to the straight abdominal side. The mouth is terminal, the caudal fin is rounded and the pelvic fin has a

distinctive long soft ray. The body is reddish brown on the dorsal side and orange brown on the abdominal side. The fins are light orange, the dorsal fin has four black spots on its first part, the operculum has a black spot surrounded by yellow



Fig 2. *P. trispilus* specimens, caught from Banyas coast-Syria.

Table 1. Morphometric measurements (mm or g, N=4) of *Pteragogustrispilus*, caught from Banyas coast-Syria.

Features	Min.	Max.	Mean	SD
Total length	88	97	94	4
Standard length	68	75	72	3
Body depth	25	28	26.8	1.5
Head length	21	25	23	1.6
Eye diameter	4	5	4.8	0.5
Dorsal fin length	37	44	40.5	3
Pectoral fin length	11	18	15.5	3
Pelvic fin length	14	19	16.8	2.2
Caudal fin length	23	24	23.8	0.5
Anal fin length	19	21	20.5	1
Pre-dorsal length	18	20	19.5	1
Pre-pectoral length	22	26	25	2
Pre-pelvic length	26	28	26.8	0.9
Pre-anal length	42	44	43.3	0.9
Total weight	8.2	10.3	9.3	0.9

IV. DISCUSSION

Pteragogustrispilus spreads in the tropical and subtropical waters, and was recorded in the Syrian marine water in 2014, but it was mistakenly identified as *P. pelycus* [13]; such misidentification had been corrected by [14]. This taxonomic error may come about because of the very high similarity in appearance between these two species. Randall (2013) presented the main differences between these two species and stated that the body width of *P. trispilus* is less than that of *P. pelycus*, and the black dot on the operculum of *P. trispilus* is smaller than that of *P. pelycus* (Fig 3). *P. trispilus* was not recorded in the Syrian marine water before 2014 [14], which

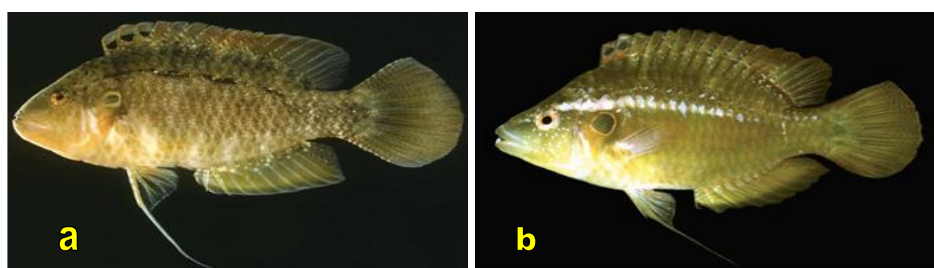


Fig 3. The general shape of *P. trispilus* (a) and *P. pelycus* (b), (Randall, 2013)

may be due to many reasons such as inappropriate fishing gears, fishermen ignorance to this uncommercial species, and the lack of scientific research in this area before [16-18]. Presence of this tropical and subtropical fish species in the Syrian marine waters provides evidence of the Eastern Mediterranean environmental changes [19, 20], and its existence in new location (Banyas coast) different

from the previous one (Tartous coast) may indicate the species expansion range and probably species establishment in the Syrian coast. *Pteragogustrispilus* feeds on small gastropods and crustacean [15,21], which may threaten the native fish population through competition for food and for space [16]. On the other hand, presence of this tropical and subtropical species may indicate that

human activities facilitate the species introduction to the Mediterranean Sea [4, 22, 23, 24], and climatic changes make seawaters in this area more able to accommodate the tropical species. Anyway, these obsessions need more work to reveal the economic and environmental impacts of this fish on the native fish populations [25]. Consequently, regional cooperation in regards of biodiversity management is required to reduce the impact of foreign species [17, 26, 27].

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