



SHORT NOTE

## On the occurrence of *Diplecogaster bimaculata* (Bonnaterre, 1788) in the Aegean Sea

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**Abstract:** In June 2016, a two-spotted clingfish *Diplecogaster bimaculata* (Bonnaterre, 1788) specimen of 18.67 mm total length was captured by hand on a rock at one-meter depth from Akbuk Cove (Gökova Bay, southern Aegean Sea). Since there is no any morphometric data of the species in Turkish waters, now we provide the morphometric data of *D. bimaculata* for the Aegean Sea.

**Résumé :** Sur l'occurrence de *Diplecogaster bimaculata* (Bonnaterre, 1788) en Mer Egée. En juin 2016, un spécimen d'une longueur de 18,67 mm de *Diplecogaster bimaculata* (Bonnaterre, 1788) a été capturé à la main sur une roche à un mètre de profondeur dans l'anse Akbuk (baie de Gökova, au sud de la Mer Egée). Comme il n'existe pas de données morphométriques de l'espèce dans les eaux turques, nous fournissons ici les données morphométriques de *D. bimaculata* en Mer Egée.

**Keywords:** *Diplecogaster bimaculata* • Two-spotted clingfish • Akbuk Cove • Aegean Sea

### Introduction

The Gobiessocidae is a diverse group of primarily shallow water or intertidal marine fishes consisting 50 genera and 169 species (Conway et al., 2017; Fricke et al., 2017). Their distinguishing characteristics include: pelvic fins modified into a thoracic suction disc, pelvic fin with one small modified spine and four or five soft rays, single dorsal fin without spines, no basibranchial, lateral line confined to

head, two postcleithra, hypurals fused into a single plate (Allen, 1984). *Diplecogaster bimaculata* is a member of Gobiessocidae (Clingfishes and singleslits), and is an Atlanto-Mediterranean demersal fish species distributed between 0 to 60 meters (Briggs, 1979) in the Black Sea, Sea of Marmara, Aegean Sea and the Mediterranean Sea, and also in the north-east Atlantic from Norway and Faroes south to Gibraltar.

The genus *Diplecogaster*, the clingfish, was first described by Fraser-Brunner (1938, p. 415), and considered as monotypic. After this revision of gobiessocid fishes, Briggs (1955) described *Diplecogaster ctenocrypta*, *D.*



**Figure 1.** *Diplecogaster bimaculata*. Photograph of the specimen from Akbuk.

*megalops* and *D. bimaculata pectoralis*, distinguishing a total of four species-group taxa in the genus. Later, *Diplecogaster bimaculata euxinica* from the Black Sea added another subspecies by Murgoci (1964, p. 229). Regarding eastern Atlantic and Mediterranean gobiesocids,

Hofrichter (1995) treated all these taxa as valid, comprising three valid species of *Diplecogaster*, or five valid taxa in the species group (including subspecies). Fricke et al. (2015) classified the genus within two species groups, namely *Diplecogaster-bimaculata* group and

*Diplecogaster-ctenocrypta* group, comprising a total of six valid species.

The present article provides the occurrence and morphometric data of *D. bimaculata* for the Turkish seas and thus is a significant contribution to our current knowledge on the occurrence of the in the seas of Turkey.

## Material and Methods

One two-spotted clingfish *Diplecogaster bimaculata* (Bonnaterre, 1788) specimen (with 18.67 mm TL) was captured by hand on a rocky bottom at about 1 meter depth from Akbuk Cove (37°02'00.23"N-28°05'57.46"E), Gökova Bay (southern Aegean Sea) on 25 June 2016 (sampling time, 1:30 p.m.). The specimen (Fig. 1) was fixed in 70% ethanol solution and deposited in the fish collection of Muğla Sıtkı Koçman University, Fisheries Faculty (MUSUM/PIS/2016/1). The alcohol fixed specimen was photographed under the Nikon SMZ-U stereo zoom microscope at 10x magnification under reflected light. Meristic data for dorsal, anal, ventral and pectoral fin rays and morphometric data of specimen were determined. In the laboratory, all relevant lengths were measured parallel to the longitudinal axis of the body, while depths were measured perpendicular to the axis using Digimizer image analysis software (Version 4.6.1).

## Results and Discussion

Meristic data of the fins were for the specimen were counted as D: 6, A: 4, P: 23 and C: 9, within the reported variation (D: 5-7, A: 4-6, P: 21-25, C: 9-12) described by Fricke et al. (2015). Morphometric measurements of the specimens are given in Table 1. Examined *D. bimaculatus* specimen has two lacrymal canal pores. Metric measurements, meristic counts, morphological descriptions

**Table 1.** *Diplecogaster bimaculata*. Morphometrics for key body proportions (mm) of specimen captured from Gökova Bay.

Characters	Size (cm)	Ratio
Total length (TL)	1.867	-
Standard length (SL)	1.485	1.3 (in TL)
Head length (HL)	0.475	3.1 (in SL)
Body depth	0.293	5.1 (in SL)
Caudal peduncle depth	0.303	1.5 (in HL)
Eye diameter	0.125	3.8 (in HL)
Interorbital width	0.181	2.6 (in HL)
Snout length	0.141	3.4 (in HL)
Adhesive disc length	0.357	4.2 (in SL)

as well as the color were compatible with the descriptions of Fricke et al. (2015).

*Diplecogaster bimaculata* was reported for the first time in the Mediterranean from near to the Mljet Island, the Adriatic waters of former Yugoslavia in 1958 (Anonymous, 2000). Concerning the Turkish coasts, *D. bimaculata* has been reported by various researchers: Black Sea (Erazi, 1942), Sea of Marmara (Ostroumoff, 1894; Okuş & Yüksek, 2001; Keskin, 2007), Aegean Sea (Slastenenko, 1955-1956; Anonymous, 2006 & 2009) and the Levant Sea (Erazi, 1942; Can & Bilecenoğlu, 2005). However, they have failed to provide detailed morphometric information on the specimen(s) because *D. bimaculata* is rarely collected due to its cryptic, habitat-dependent behavior and small size.

Based on the information obtained from available literature, there are no detailed morphometric data of *D. bimaculata*, up to now, in Turkish waters, thus we hope that our results will contribute revisionary studies related to *D. bimaculata*.

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