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OCCURRENCE OF *Bregmaceros nectabanus* (WHITLEY, 1941) IN THE GULF OF ANTALYA

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ABSTRACT *With the opening of the Suez Canal in 1869, a connection was established between the Red Sea and the Mediterranean. Because of this connection, many organisms of Red Sea origin migrated to the Mediterranean. These migratory organisms also include fish. For this reason, we monitor and determine the number of fish originating from the Red Sea in the Gulf of Antalya. One of the fishing methods in the Gulf of Antalya is trawler fishing. One of the fish species caught during commercial trawling is horse mackerel. A small and different type of fish was found in the stomach of horse mackerel caught during trawling on October 26, 2021 in the Gulf of Antalya. During the species identification of these fish samples, which were intact in the stomach content of horse mackerel and preserved their integrity, it was determined that these fish were Bregmaceros nectabanus, which is included in the Bregmacerotidae family. With this study, the presence of B. nectabanus identified in the Gulf of Antalya was one more addition to the number of Red Sea origin fish species in the Gulf.*

Keywords: *Mediterranean, Gulf of Antalya, Bregmaceros nectabanus, record, horse mackerel.*

INTRODUCTION

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Members of the Bregmacerotidae family are small fish that can grow up to a maximum length of 12 cm. These fish have two dorsal fins. The first dorsal fin just behind the head has a long and single fin ray, the front of the second dorsal fin has long fin rays and the middle part has short fin rays. The anal fin is similar to the second dorsal fin. The Bregmacerotidae family has only one genus which is Bregmaceros and this genus is reported to contain 14 species (Harold and Golani ,2016; Dulčić *et al*. 2020). Although it is reported that these fish live in the areas from the mesoplagic region of tropical and semi-tropical seas to the coast, it is stated that there is no detailed information about their biology.

Two species belonging to the genus Bregmaceros have been reported so far in the Mediterranean. These species are *Bregmaceros atlanticus* Goode & Bean, 1886 and *Bregmaceros nectabanus* (Whitley, 1941). However, Harold and Golani (2016) report that *Bregmaceros nectabanus* was misidentified as *Bregmaceros atlanticus* by some researchers in the Mediterranean. According to Harold and Golani (2016), there is only *B. nectabanus* belonging to the Bregmacerotidae family in the Mediterranean. The natural habitat of this fish is the western Indo-Pacific, and it is thought that for this species, like other lessepsian species, probably entered the Mediterranean from the Suez Canal.

The first record of *Bragmaceros atlanticus* in the Mediterranean was reported in 1965 (Harold and Golani, 2016). However, it was pointed out in this report, not all the characteristics of the species were given and that the specified features also defined *B. nectabanus*. It was emphasized that the mistake continued because the records from the Mediterranean were made over this definition.

Antalya Bay is the one of the region where Lessepsian migrations are most common in the Mediterranean. The number of Lessepsian fish species detected in the Antalya Bay has approached 70 (Gökoğlu and Bicer, 2022). Moreover it is estimated that this number will increase from now.

Some fish were taken for eating purpose from horse mackerels (*Trachurus trachurus*) which was caught by trawler in the Antalya Bay on October 26, 2021. During the cleaning of the fishs, it was observed that their stomachs were full of small fish. The purpose of the study is to identify these small fish taken from their stomach contents and to add them to the Antalya Bay fish species list.

MATERIAL AND METHOD

Some horse mackerel (*Trachurus trachurus*) was caught during trawling (coordinate: 36º47.362N; 031º04.579E - 36º46.679N; 031º10.234E) from Antalya Bay on October 26th, 2021. Approximately 2 kg (23 individuals) of fish were taken from these caught fish for eating purpose. During the cleaning of the fishs, it was observed that their stomachs were full of small fish. During the opening of the stomachs of horse mackerels, we noticed that these small fish, which come out of the stomach contents, are a different species. The samples taken for species identification was selected from fish that were not yet deformed due to digestion. And the samples were brought to the laboratory of the Faculty of Fisheries of Akdeniz

University and the species were identified. Morphometric and meristic measurements of the *B. nectabanus* specimens were carried out in the laboratory according to Harold and Golani (2016), Dulčić *et al*. 2020; Vrdoljak *et al*. 2021. During these studies, fish used in identification were photographed. (Fig. 1).

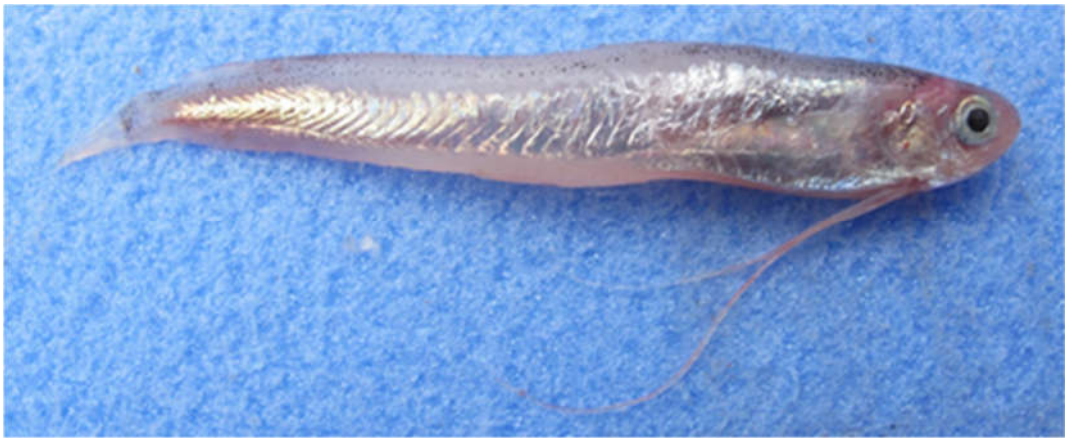

Figure 1. *B. nectabanus* from the stomach of *T. trachurus*, which caught by trawl in the Gulf of Antalya.

RESULT AND DISCUSSION

Small fish ranging from 1 to 4 were found in the stomachs of 23 horse mackerel fish taken from the fisherman engaged in trawling in the Gulf of Antalya. Small fish detected in the stomach contents of horse mackerel caught by trawling in the Gulf of Antalya were identified as *B. nectabanus* (Table 1). Typical coloration and the presence of a fimbriate opercular spine distally facilitated the identification of the species (Harold and Golani 2016; Dulčić *et al*. 2020; Vrdoljak *et al*. 2021).

Table 1. Meristic and Morphometric measurements in mm and as percentage of total length (%TL) and head length (%HL) and numbers recorded of *Bregmaceros nectabanus* in the Gulf of Antalya.

Measurements	Size (mm)	Proportion (%)	Number	
Total length (TL)	73	-	-	
Standard length (SL)	65	88.7 TL	Dorsal fin rays	48
Predorsal fin length	24.6	33.8 TL	Anal fin rays	49
Prepectoral fin length	12	17.7 TL	Pectoral fin rays	16
Pre-anal fin length	24	33.8 TL	Weight (g)	2.0
Head length (HL)	12	17.7 TL		
Eye diameter	4.1	34.5 HL		
Preorbital length	2.5	20.9 HL		

The total length of the fish measured 73 mm, the body is elongated, the abdomen is slightly compressed, the nose is blunt, and it has a small head with relatively large eyes. It has a chin that reaches the vertical line in the middle of the eye. It has a long fin ray on the top of the head and slightly behind the eye. It has a chin that reaches the vertical line in the middle of the eye. It has a long ray on the top of the head and slightly behind the eye. It has a intense pigmented dorsal along the body, greatly elongated three-rayed but non-pigmented pelvic fins, and an elongated non-pigmented abdomen. Below the second dorsal fin, there is a thin brown dorsolateral longitudinal stripe. These identified features of the species of *B. nectabanus* are show parallelism with the features Harold and Golani (2016) and Dulčić *et al*. (2020) describe.

The main morphological characters that distinguish *B. nectabanus* from *B. atlanticus* and other congeners are the distally fimbriate opercular spine, an almost non-pigmented abdomen, and the presence of a thin dorsolateral longitudinal stripe under the second dorsal fin (Harold and Golani, 2016; Dulčić *et al*. 2020; Vrdoljak *et al*.,2021).

Yılmaz *et al*. (2004) detected *Bregmaceros atlanticus* for the first time in the Gulf of Antalya off the Turkish coast with 2 individuals in the stomach contents of Saurida undosquamis. After this study, Filiz *et al*. (2007), Aydın and Akyol (2013) from the Aegean coasts, and Turan *et al*. (2011) reported the species as *B. atlanticus* from the Mediterranean coasts. Only Özgül and Akyol (2017) defined the species as *B. nectabanus* in the report they made from the Aegean coasts.

The monogenic, circumtropic family Bregmacerotidae, known as codlets, consists of 14 valid species and according to Harold and Golani (2016), only *B. nectabanus* is found in the Mediterranean.

CONCLUSION

The presence of *B. nectabanus* identified in this study in the Gulf of Antalya increased the number of Red Sea origin fish in the bay by one more species. This increase in the number of Red Sea origin species seen in the Gulf of Antalya shows that the Mediterranean is becoming more and more tropical biologically. With the registration of *B. nectabanus* in the Gulf of Antalya, the number of fish species originating from the Red Sea in the bay has reached 70.

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