



The recent capture of *Bregmaceros nectabanus* (Bregmacerotidae) from purse-seine fishery in Izmir Bay, NE Aegean Sea

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ABSTRACT

On 25 March 2022, two specimens of *Bregmaceros nectabanus* were captured by a commercial purse-seiner for targeting sardine and anchovy off Kırdeniz, Izmir Bay at a depth of 30 m. The total length of these specimens was between 53 and 63 mm. Thus, the record number has reached at least 37 specimens in the eastern Mediterranean Sea. This paper presents the third confirmed record of *B. nectabanus* from Izmir Bay (Northeastern Aegean Sea). Though the sporadic occurrences of this species in Izmir Bay do not indicate an established population for the time being, it signs that it's getting abundant.

Keywords: Smallscale codlet, Measurement, Occurrence, Eastern Mediterranean

Introduction

Family Bregmacerotidae, commonly known as codlets, comprises 15 valid species (Fricke et al., 2020). The smallscale codlet, *Bregmaceros nectabanus* Whitley, 1941 (misidentified as *B. atlanticus*) is a monotypic species in the Mediterranean Sea and it is one of the three Lessepsian species belonging to the genus *Bregmaceros* (*B. nectabanus* Whitley, 1941, *B. arabicus* D'Ancona and Cavinato, 1965 and *B. mcclellandi* Thompson, 1840) that occurring possibly in the Red Sea (Harold & Golani, 2016). It is native to the Indo-West Pacific and western Indian Ocean, including the Red Sea (Harold & Golani, 2016).

Only eleven specimens of *B. nectabanus* (most of them reported as *B. atlanticus*) have been documented: Kuşadası Bay (n=1, Filiz et al., 2007), Izmir Bay (n=1, Aydın & Akyol, 2013; n=1, Özgül & Akyol, 2017) in the eastern Aegean Sea; and Gulf of Seranikos (n=8, Dogrammatzi & Karachle, 2015) in the western Aegean Sea. Özgül & Akyol (2017) reported 23 specimens, including eleven (above mentioned) throughout the eastern Mediterranean Sea until 2014. Additional records give signs of whether an alien species is established in a region. The paper provides additional records of rare *B. nectabanus* in both the Aegean Sea and the eastern Mediterranean. It is also the first finding of the purse seine catch composition.

Material and Methods

On 25 March 2022, two specimens of *B. nectabanus* (Figure 1) were captured by a commercial purse-seiner for targeting sardine and anchovy off Kirdeniz, Izmir Bay (lat. 38°35'20''N – long. 26°46'21''E) at a depth of 30 m. The specimen was fixed with 5% formaldehyde solution and deposited in the fish collection of the Fisheries Faculty, Ege University (ESFM-PIS/2022-003).

Results and Discussion

Both specimens were measured to the nearest millimeter (Table 1); a brief description of the specimen: body fusiform, elongate, the color is silver-grey on the belly, with dense pigmentation entirely along the dorsum, and a distinctive thin brown dorso-lateral longitudinal stripe below the second dorsal fin. All determined measurements and color patterns are in accordance with the descriptions of Harold & Golani (2016) and Özgül & Akyol (2017).

Although *B. nectabanus* forward to the western part of the Mediterranean Sea since it reached the Adriatic Sea in 2019

(see, Palermino et al., 2022), especially its population tends to rise in the eastern Mediterranean, and successive records of *B. nectabanus* are shown in Table 2. Thus, the record number has reached at least 37 specimens in the eastern Mediterranean Sea. Interestingly, some of *B. nectabanus* have been found in the stomach content of *Saurida lessepsianus* (Yılmaz et al., 2004) and *Trachurus trachurus* (Filiz et al., 2007; Othman & Galiya, 2018).

A recent study proved that *B. nectabanus* is a Lessepsian migrant and this fish was previously misidentified as *B. atlanticus* (Harold & Golani, 2016). However, Özgül & Akyol (2017) expressed that *B. nectabanus* was also likely introduced in the eastern Mediterranean via ship ballast water in terms of occurring near large ship harbours during the last decade, and secondarily, it has been proved as a Lessepsian migrant. Also, Dulcic et al. (2020) noted that a shipping-related introduction of *B. nectabanus* to the Adriatic Sea, where the area of Bari features a commercial harbour was possible. Vrdoljak et al. (2021) also supported both hypotheses (i.e. Lessepsian migration and ballast water) since two specimens have been found near cargo port Ploče, Croatia.



Figure 1. Two specimens of *Bregmaceros nectabanus*, captured by a purse-seiner in Izmir Bay, NE Aegean Sea (ref. ESFM-PIS/2022-003) (Photo: O. Akyol)

Table 1. Morphometric measurements in mm and as percentage of total length (%TL) and head length (%HL) and counts recorded in *Bregmaceros nectabanus* (ref. ESFM-PIS/2022-003), captured from Izmir Bay, NE Aegean Sea

Specimens	1		2	
	Size (mm)	Proportion %	Size (mm)	Proportion %
Total length (TL)	53		63	
Standard length (SL)	48	90.6 TL	56	88.9 TL
Predorsal fin length	20	37.7 TL	22	34.9 TL
Prepectoral fin length	10	18.9 TL	11	17.5 TL
Pre-anal fin length	20	37.7 TL	22	34.9 TL
Head length (HL)	10	18.9 TL	11	17.5 TL
Eye diameter	3.7	37.0 HL	3.9	35.5 HL
Preorbital length	2	20.0 HL	2.4	21.8 HL
Counts				
Dorsal fin rays	48		48	
Anal fin rays	49		49	
Pectoral fin rays	16		16	
Weight (g)	1.06		1.69	

Table 2. Successive records of *Bregmaceros nectabanus* in the Eastern Mediterranean Sea

Location	Coordinates	Depth (m)	Record Date	Number collected	Size (mm)	References
	Lat. N - Lon. E					
Gulf of Antalya, Türkiye	?	30	12 Oct. 2002	2	30-34 TL	Yılmaz et al. (2004)
Off Palmahim, Israel	31°05' - 34°03'	35	20 Sep. 2004	1	46.5 SL	Goren & Galil (2008)
Kuşadası Bay, Türkiye	?	150	04 Feb. 2005	1	39 TL	Filiz et al. (2007)
Off Palmahim, Israel	31°05' - 34°03'	35	26 May 2006	3	47-62 SL	Goren & Galil (2008)
Off Iskenderun, Türkiye	35°57' - 35°59'	120	15 Dec. 2010	5	70.7-102 TL	Turan et al. (2011)
Izmir Bay, Türkiye	38°28' - 26°47'	50	01 Dec. 2011	1	66 TL	Aydın & Akyol (2013)
Gulf of Seronikos, Greece	37°50' - 23°29'	90	31 July 2014	1	53 TL	Dogrammatzi & Karachle (2015)
Gulf of Seronikos, Greece	37°50' - 23°20'	98	02 Aug. 2014	7	54-64 TL	Dogrammatzi & Karachle (2015)
Rashid, Egyptian Med.	?	29	? Sept. 2014	1	76 TL	Rizkalla & Akel (2015)
Izmir Bay, Türkiye	38°23' - 26°46'	20	09 Sep. 2014	1	95 TL	Özgül & Akyol (2017)
Syrian waters	35.6844° - 35.7837°	100	16 Aug. 2018	12	19-53 TL	Othman & Galiya (2019)
Izmir Bay, Türkiye	38°35' - 26°46'	30	25 Mar. 2022	2	53-63 TL	This study

Conclusion

This paper presents the third confirmed record of *B. nectabanus* from the northeastern Aegean Sea. Though the sporadic occurrences of this species in Izmir Bay do not indicate an established population, for the time being, it signs that it's getting abundant. In addition, capturing them by purse-seine shows that *B. nectabanus* might be attracted under the strong light that uses for aggregating clupeid fishes owing to their phototaxy feature.

Compliance with Ethical Standard

Conflict of interests: The authors declare that for this article they have no actual, potential, or perceived conflict of interests.

Ethics committee approval: Ethics committee approval is not required for this study.

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