

**NEW RECORDS OF *BREGMACEROS ATLANTICUS* (BREGMACEROTIDAE),
ECHIODON DENTATUS (CARAPIDAE) AND *NEMICHTHYS SCOLOPACEUS*
(NEMICHTHYIDAE) FROM THE AEGEAN SEA**

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Abstract. Three fish species, *Bregmaceros atlanticus* Goode et Bean, 1886 (Bregmacerotidae), *Echiodon dentatus* (Cuvier, 1829) (Carapidae), and *Nemichthys scolopaceus* Richardson, 1848 (Nemichthyidae) were recorded in the Sığacık and Kuşadası Bays (Eastern Aegean Sea, Turkey). *B. atlanticus* and *E. dentatus* constitute new records for the Turkish waters and the Aegean Sea, respectively. The finding of *Nemichthys scolopaceus* is the second record for the Aegean Sea.

Keywords: fish, new record, *Bregmaceros atlanticus*, *Echiodon dentatus*, *Nemichthys scolopaceus*, Aegean Sea, Turkey

INTRODUCTION

The diversity of the ichthyofauna of local Turkish waters has increased within the last decade, primarily as a result of the establishment of exotic species and new records of deep-sea fishes (Bilecenoğlu et al. 2002). Although there are several reasons for the increased number of alien fish, i.e., Lessepsian intrusion, shipping, mariculture, global warming, etc. (Galil and Zenetos 2002), enrichment of the Aegean Sea fauna by new deepwater fishes has mostly been a result of modern trawling vessels, more extensive fishing effort, exploration of deeper areas, and intensified deep water studies (Kaya and Bilecenoğlu 2000).

Antenna codlet, *Bregmaceros atlanticus* Goode et Bean, 1886, has a wide geographic distribution. This circumtropical species has been reported from the eastern Atlantic (from Madeira to South Africa), western Atlantic (from New Jersey through the Gulf of Mexico to the Guyanas), Indian Ocean (South Africa and Mozambique Channel to the Arabian Sea), and from southern Japan (Masuda et al. 1984, Cohen 1986, Robins and Ray 1986, Smith 1986).

Members of the genus *Echiodon* Thompson, 1837 are free-living fishes, inhabiting both shallow and deep-water

habitats (Trott and Olney 1986). *Echiodon dentatus* (Cuvier, 1829) is a demersal species. Golani et al. (2006) reported that, in the Mediterranean, this species is distributed at the depth range between 100 and 300 m, Froese and Pauly (2006) suggested that its maximum depth was 3250 m. This fish is distributed in the eastern Atlantic, including the Mediterranean- and Adriatic Seas (Trott and Olney 1986, Froese and Pauly 2006).

Slender snipe eel, *Nemichthys scolopaceus* Richardson, 1848, is an oceanic, bathypelagic species, which may be encountered pelagically from the surface down to the depths of 2000 m in the Mediterranean (Nielsen 1986) and 3656 m in Atlantic (Coad and Reist 2004). It is cosmopolitan in tropical and temperate seas; western Atlantic, from Nova Scotia to Brazil; eastern Atlantic from Iceland, through Skagerrak and Spain to southern Africa (Froese and Pauly 2006).

In this paper, we would like to report two new records (one for the Turkish marine areas and one for the Aegean Sea) and a second record for the Aegean Sea.

In August and November 2006, one specimen of *N. scolopaceus* (Fig. 1) and one specimen of *E. dentatus* (Fig. 2) were captured during the bottom trawling by the commercial fishing vessel *HAPULOGLU* (23 m length

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and 550 HP), at the depth range of 150 and 600 m, off Sığacık Bay (southern Aegean Sea, Turkey, Fig. 3). Additionally, during a study on the some biological aspects of horse mackerel, *Trachurus trachurus* (L., 1758), inhabiting Kuşadası Bay (Fig. 3), one specimen of *B. atlanticus* (Fig. 4) was obtained from one stomach sample. The *T. trachurus* specimen (23.0 cm TL and 101.59 g total weight) was caught in day time (1430 h).

***Bregmaceros atlanticus* Goode et Bean, 1886**

Specimen examined: ESFM-PIS/2005-2. 37.0 mm SL (39.0 mm TL), 4 February 2005, Kuşadası Bay (southern Aegean Sea), at depth of approximately 150 m.

Brief description of specimen: Specimen with single, very long, dorsal ray above head and dorsal fin with 52 rays (Fig. 4). Anal fin with 53 rays. Pectoral fin with 16 rays. 5th–6th anal and dorsal rays being longest. Origin of

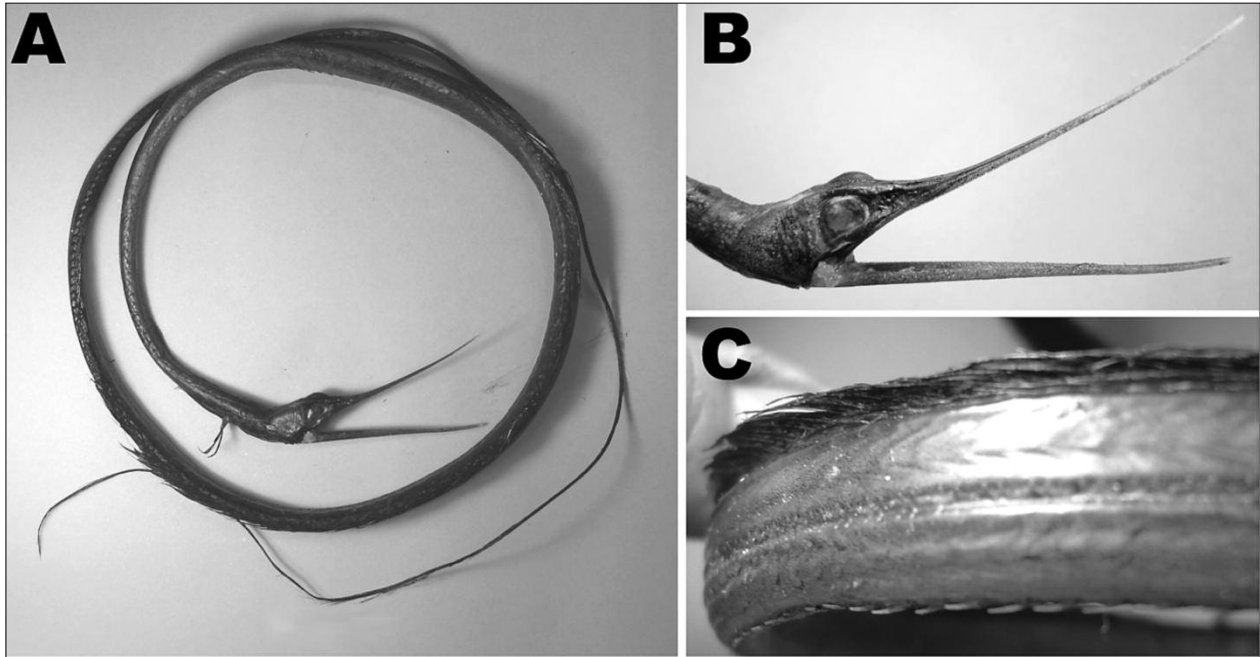


Fig. 1. *Nemichthys scolopaceus*, 974.0 mm SL, captured from Sığacık Bay (southern Aegean Sea); (A) general view; (B) head view; (C) spine-like dorsal fin rays at the midbody



Fig. 2. *Echiodon dentatus*, 187.0 mm TL, captured from Sığacık Bay (southern Aegean Sea); (A) general view; (B) head view

The fishes were fixed in 4% formalin and preserved at the Museum of the Faculty of Fisheries, Ege University (ESFM). Measurements were carried out to the nearest 0.1 mm by a calliper and meristic counts were made under the reflected light of a stereomicroscope. Taxonomic keys of Cohen (1986), Nielsen (1986), Cohen et al. (1990), and Nielsen et al. (1999) were used to identify the specimens. The nomenclature followed that of the FishBase (Froese and Pauly 2006).

dorsal fin above insertion of anal fin. (Specimen examined was damaged and lost most of its scales and pigmentation. Selected proportions are presented and compared with previous records in Table 1).

***Echiodon dentatus* (Cuvier, 1829)**

Specimen examined: ESFM-PIS/2006-4. 187.0 mm TL, 25 November 2006, Sığacık Bay (southern Aegean Sea), from lat 38°08'10" N, long 26°42'57" E to lat 38°04'08" N, long 26°48'13" E, between 162 and 156 m depth, respectively.

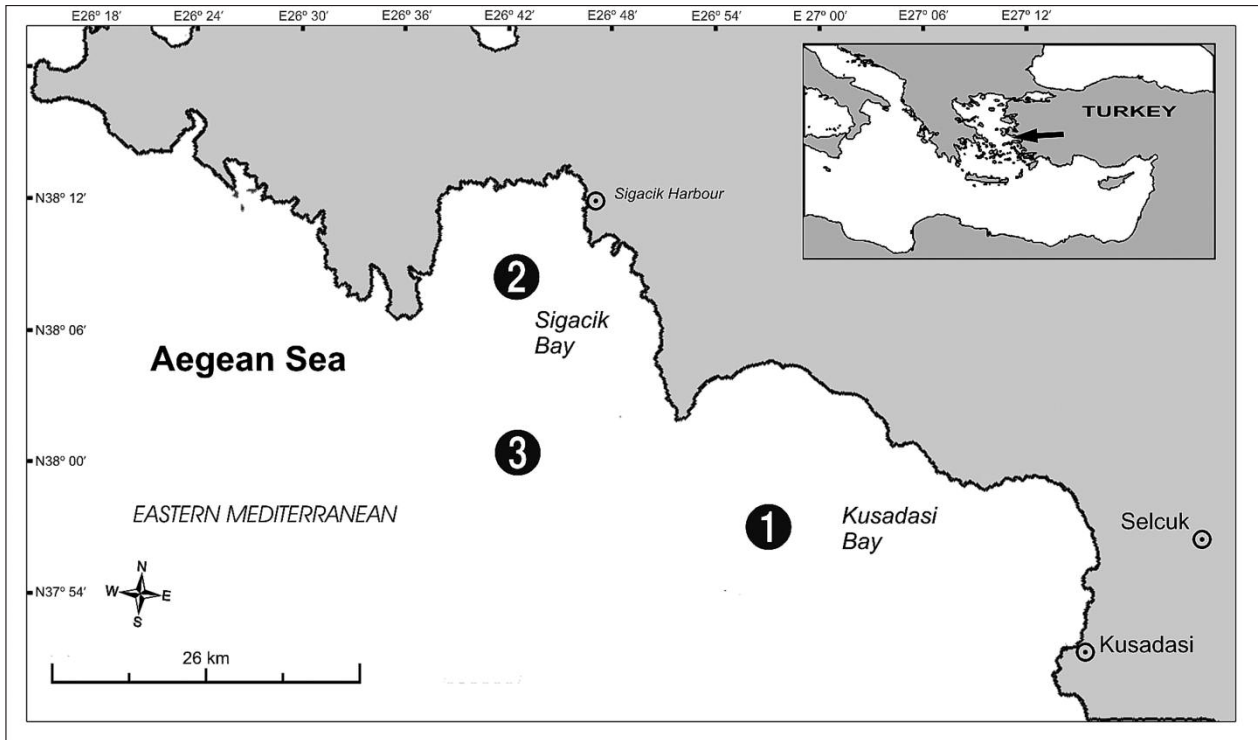


Fig. 3. Area where the specimens were taken: 1 – *Bregmaceros atlanticus*; 2 – *Echiodon dentatus*; 3 – *Nemichthys scolopaceus* (Location of *E. dentatus* [2] pointed as the beginning coordinates of the trawl hauling line)

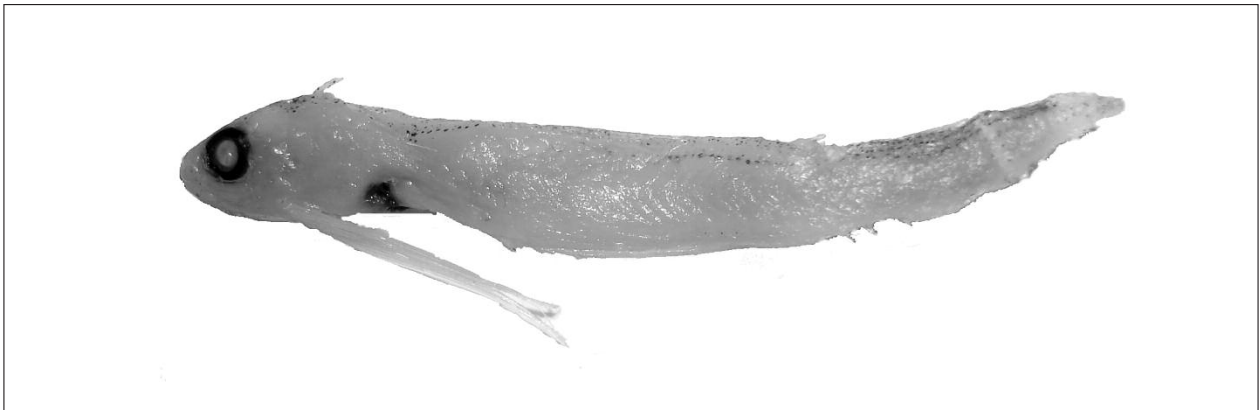


Fig. 4. *Bregmaceros atlanticus*, 37.0 mm SL, captured from Kuşadası Bay (southern Aegean Sea)

Brief description of specimen: Eel-like fish, cylindrical body pairing to a slender tail (Fig. 2). Body translucent (vertebrae visible). Two pairs of large fang-like teeth at both jaws (Fig. 2). Anus posterior to pectoral fin base. Lateral line pores absent. Selected proportions listed and compared with previous records in Table 2.

***Nemichthys scolopaceus* Richardson, 1848**

Specimen examined: ESFM-PIS/2006-3. 974.0 mm SL, 24 August 2006, Siğacık Bay (southern Aegean Sea), lat 37°54'66" N, long 26°43'83" E, 500 m depth.

Brief description of specimen: Body extremely long, with caudal fin ending as filament (Fig. 1). Anus located below pectoral fins. Dorsal-, caudal-, and anal fins confluent; base of dorsal fin rays at midbody, strong and spine-like (Fig. 1). Non-tubular anterior nostril indicating unripe

female specimen (Fig. 1). Dorsal fin origin located in front of pectoral fins, close to nape. Several irregular rows of pores on head: preopercular pores 9, suborbital pores 16, and postorbital pores 11. Jaws with several small acute teeth, directed posteriorly. Teeth almost equal in size in lower jaw. Some larger teeth located on midline of upper jaw, with largest ones below anterior nostril origin. Body pigmented on whole, but clearly darker below lateral line. Bases of dorsal and anal fins dusky. Selected proportions are presented and compared with previous records in Table 3.

In the western Mediterranean, *B. atlanticus* was first mentioned from the Straits of Sicily (D'Ancona and Cavinato 1965), however, Goren and Galil (2006) and Torii et al. (2003) implied that this record was doubtful.

Table 1Morphometric and meristic parameters of *Bregmaceros atlanticus*

Parameter	Present study	Yılmaz et al. (2004)	Goren and Galil (2006)
	1	2	4
<i>n</i>			
TL [mm]	39.0	34.0 and 30.0	—
SL [mm]	37.0	31.3 and 27.3	46.5–62.0
MBD/SL	13.05	—	15.00–17.00 (15.78)
HL/SL	17.08	18.5 and 17.9	18.00–21.00 (19.25)
SnL/HL	31.98	18.9 and 20.4	22.00–26.00 (23.90)
Sn–D/SL	37.28	—	39.00–43.00 (40.20)
Sn–PEC/SL	14.85	—	16.00–18.00 (17.23)
Sn–PEL/SL	15.21	—	12.00–14.00 (13.14)
Sn–A/SL	35.69	40.5 and 42.2	38.00–41.00 (39.66)
ID/HL	16.22	—	24.00–25.00 (24.18)
ED/HL	37.54	31.0 and 32.6	26.00–28.00 (27.00)
D	52	55 and 53	49
A	53	58 and 57	53
P	16	—	16
C	—	—	30

SL, standard length; Sn–A, snout to anal fin; Sn–PEL, snout to pelvic fins; Sn–D, snout to first dorsal fin; HL, head length; SnL, snout length; ED, eye diameter; MBD, maximum body depth; ID, interorbital distance; Sn–PEC, snout to pectoral fins; D, dorsal ray count; A, anal ray count; P, pectoral ray count; C, caudal ray count; (for Goren and Galil's (2006) data range is given and mean in parenthesis).

Table 2Morphometric parameters of *Echiodon dentatus*

Parameter	Present study	Trott and Olney (1986)
MBD/TL	4.45	—
HL/TL	9.78	11.11
SnL/HL	25.15	—
Sn–D/TL	18.50	—
Sn–PEC/TL	10.70	—
Sn–PEL/TL	10.70	—
Sn–A/TL	12.44	—
ID/HL	13.78	≤15.00
ED/HL	15.03	—

SL, standard length; Sn–A, snout to anal fin; Sn–PEL, snout to pelvic fins; Sn–D, snout to first dorsal fin; HL, head length; SnL, snout length; ED, eye diameter; MBD, maximum body depth; ID, interorbital distance; Sn–PEC, snout to pectoral fins.

Table 3Morphometric parameters of *Nemichthys scolopaceus*

Parameter	Present study	Trott and Olney (1986)
MBD/TL	4.45	—
HL/TL	9.78	11.11
SnL/HL	25.15	—
Sn–D/TL	18.50	—
Sn–PEC/TL	10.70	—
Sn–PEL/TL	10.70	—
Sn–A/TL	12.44	—
ID/HL	13.78	≤15.00
ED/HL	15.03	—

SL, standard length; Sn–A, snout to anal fin; Sn–PEL, snout to pelvic fins; Sn–D, snout to first dorsal fin; HL, head length; SnL, snout length; ED, eye diameter; MBD, maximum body depth; ID, interorbital distance; Sn–PEC, snout to pectoral fins.

Until 2004, there has been no other report on the occurrence of this species in the Mediterranean. Then, Yılmaz et al. (2004) found two specimens in the stomach of a brush-tooth lizardfish, *Saurida undosquamis* (Richardson, 1848), collected at a depth of ca. 30 m in Antalya Bay (southern Turkey). Finally, Goren and Galil (2006) reported four specimens from the coast of Israel. Although it is reported that most bregmacerotid species small epipelagic or mesopelagic fishes living in tropical and subtropical oceanic waters to depth of over 1000 m, some are found in shallow coastal areas and even in estuaries (Cohen et al. 1990). Also, it is noted that some of them apparently carried out diurnal vertical migrations (Cohen 1986). Although the depth range within which *B. atlanticus* occurs is unknown, its occurrence in the horse mackerel in this study and in the lizardfish stomach (Yılmaz et al. 2004), may confirm that its occurrence in shallow waters.

In the western Mediterranean, *E. dentatus* was captured from Balearic basin by Massuti et al. (2004). It is also known that this species has occurred in eastern Mediterranean in Ionian Sea (Gulf of Corinth), Malta–Crete, Sardinia–Messina Strait since 1930 (Anonymous 2001). In addition, Ondrias (1971) and Papaconstantinou and Tsimenides (1979) reported this species from Aegean Sea in Naxos Island and Thermaikos Gulf, respectively. In addition, to the best of our knowledge, our specimen's total length is the longest record that has been reported. Bilecenoğlu et al. (2002) cited *E. dentatus* as questionably present in Turkish waters since the report of Akşiray (1987) was dubious and not substantiated.

In the western Mediterranean, *N. scolopaceus* is already mentioned in the Ligurian Sea, off Algerian and northern Sicilian coasts (Relini-Orsi and Relini 1973), also in the Strait of Messina (Berdar et al. 1977), in southern Sardinian waters (Cau 1979), and in the eastern Ionian Sea (Mytilineou et al. 2005). A recent record was given by Bilecenoğlu et al. (2006) from both the eastern Mediterranean Basin and Marmaris coasts of the southern Aegean Sea.

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