



Short communication

Southernmost record of antenna codlet *Bregmaceros atlanticus* (Goode & Bean, 1886) (Gadiformes: Bregmacerotidae) in the Southwest Atlantic

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Introduction

The family Bregmacerotidae is composed of the unique genus *Bregmaceros* Thompson, 1840 with 13 valid species (Froese and Pauly, 2011). Four species are known for the western Atlantic: *Bregmaceros houdei* Saksena and Richards, 1986; *Bregmaceros mccllellandi* Thompson, 1840; *Bregmaceros cantori* Miliken and Houde, 1984; and *Bregmaceros atlanticus* Goode and Bean, 1886 (Belyanina, 1980; Houde, 1981, 1984; Miliken and Houde, 1984; Saksena and Richards, 1986; Hare et al., 2006; Froese and Pauly, 2011).

The *Bregmaceros* are small planktivorous fish living in open waters (neritic-pelagic) (Cohen, 1973, 1986; Smith, 1986) as well as tropical and subtropical seas, but rarely in estuaries. They are characterized by the presence of two dorsal fins, the first being a single ray located in the nuchal region, and the second dorsal fin and the anal fin being large and with a well-developed anterior lobe and considerably lower posterior lobe. Pelvic fins are formed of five spokes, three of which are free and extend into the filaments. Species of this family are small, reaching a maximum 12 cm. (Cervigón, 1991).

Antenna codlet, *Bregmaceros atlanticus* (Fig. 1), has a wide geographic distribution, the broadest distribution among its congeners. This circumtropical species has been reported from the eastern Atlantic (Madeira to South Africa), western Atlantic (New Jersey through the Gulf of Mexico to the Guyanas), Indian Ocean (South Africa and Mozambique Channel to the Arabian Sea), and southern Japan (D'Ancona and Cavinato, 1965; Masuda et al., 1984; Cohen, 1986; Robins and Ray, 1986; Smith, 1986). *B. atlanticus* was also found in samples between 11 and 23°S (Andreatta and Seret, 1995). Lopes et al. (2000) registered the occurrence of *Bregmaceros* sp. in Todos los Santos Bay (12°S) and on the adjacent continental shelf (13°S). In Brazil, adult specimens of *B. atlanticus* were collected between São Tomé Cape and Chuí (34°S) (Figueiredo et al., 2002).

In this paper we report an unusual record that is beyond the known natural range of *B. atlanticus*.

Materials and methods

The specimens reported in this study were caught by bottom trawl in the OB 05/98 campaign of Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP) at a depth of 135 m. Samples were taken with an IKMT net (Isaac Kid Midwater Trawl) having a mesh width of 2 mm.

The specimens were identified according to Figueiredo and Menezes (1980), fixed in 4% formalin, preserved in 75% ethanol and deposited in the Ichthyological Collection of the INIDEP, Mar del Plata, Argentina, as INIDEP N° 616. Morphological measurements (Table 1) were taken following Milliken and Houde (1984).

Results

The *B. atlanticus* specimens reported in this paper were collected off the coast of Uruguay (35°16'S–52°35'W) on 22 May 1998. The capture site was approximately 1° further south than the previous record of *B. atlanticus* (Figueiredo et al., 2002), and is now the southernmost record in the southwest Atlantic and a new record for Uruguay.

In addition to the morphometric and meristic characteristics, diagnostic characteristics of *B. atlanticus* are described in the pertinent literature (Smith, 1986; Cervigón, 1991) as showing a brownish coloration on the backside, silver on the belly, and densely pigmented flanks toward the ventral region (Smith, 1986; Cervigón, 1991) (Table 1).

Oceanographic characteristics of the *B. atlanticus* capture site showed a 7.8°C temperature and a salinity of 33.62.

Discussion

The oceanographic area is characterized by an encounter between the warm, southward-flowing Brazil Current and the cold, northward flow of the Malvinas Current (Figueroa et al., 1998) and local sources of run-off (Lucas et al., 2005). The Brazil Current extends along the Brazilian coast to 36°W, which separates the continent, allowing the entry of sub-Antarctic waters of the Malvinas Current flowing to the Brazil–Malvinas Confluence. The southern boundary of Brazilian warm water is accompanied by the intermittent formation of warm, core anticyclonic eddies within the longitudes 50–55°W (Gordon, 1981; Olson et al., 1988) and represents a highly complicated system reflected in the composition of the mesopelagic fish fauna in the surveyed area. When eddies separate from the Brazil Current, the temperature drops sharply as the eddies move and disintegrate.

The warm water extension to the South Pole, composed of warm eddies, filaments and meanders, is almost always present south of the Brazil–Malvinas Confluence and can be considered a quasi-stationary structure (Gordon, 1981). The

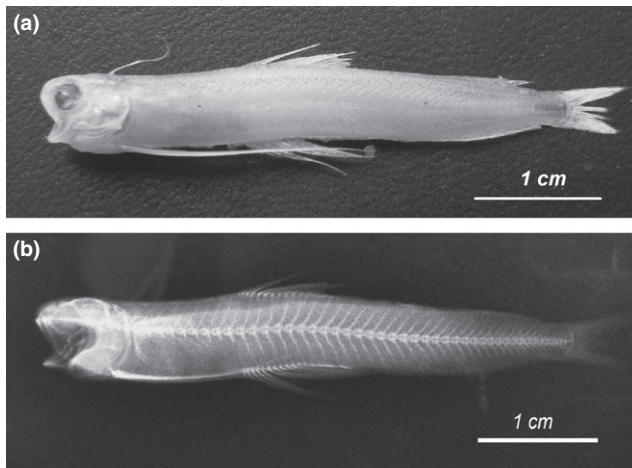


Fig. 1. *Bregmaceros atlanticus*, 48.75 mm TL. (a) Specimen collected by a bottom trawling of Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP). (b) X-ray of *B. atlanticus* showing the number of vertebrae

Table 1

Morphometric measurements and proportional relationships (% standard length = % SL; % head length = % HL) for a single specimen of *Bregmaceros atlanticus* captured in Uruguayan waters, 1998

	mm	% SL
Total length	48.75	
Standard length	43.5	
Pre-dorsal length	15.5	35.63
Pre-anal length	17	39.08
Ventral fin length	21.75	50
Head length	7.75	17.82
Body depth	7.5	17.24
Head depth	6.25	14.37
Caudal peduncles depth	2.75	6.32
		% HL
Pre-orbital length	1.75	22.58
Inter-orbital length	1.25	16.13
Eye diameter	2.3	29.68
Dorsal ray fins	1–45	
Anal ray fins	50	
Pelvic ray fins	5	
Pectoral ray fins	19	
Vertebrae	51	

generation of anticyclonic frontal vortices and their further displacement southward leads to the transport of thermophilic forms from the sub-tropical zone to the sub-Antarctic (Figueroa et al., 1998). This recurrent oceanographic phenomenon may explain how tropical and sub-tropical species such *B. atlanticus*, were collected substantially farther south than their usual area of occurrence. We believe this is noteworthy, as range extensions may continue; the documentation of new records may help to understand the patterns and breadth of change.

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