



Short Communication

Occurrence of the flagfin mojarra, *Eucinostomus melanopterus* (Bleeker, 1863) (Perciformes: Gerreidae), near Mar del Plata city (Argentina): southernmost occurrence on the western Atlantic coast

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Introduction

The Gerreidae family is represented by predominantly estuarine medium to small size coastal fish found over sand or mud bottoms (Gilmore and Greenfield, 2002). Some species occur in marine environments and some in freshwater; juvenile members of several species of the family are abundant in estuarine lagoons, which are ideal environments for breeding (Menezes and Figueiredo, 1980).

This family includes about 44 species (Nelson, 2006), one of which, *Eucinostomus melanopterus* (Bleeker, 1863), is distributed in the Eastern Atlantic from Senegal to Angola (Gilmore and Greenfield, 2002) and in the Western Atlantic from Chesapeake Bay (Murdy et al., 1997), New Jersey (Gilmore and Greenfield, 2002), Bermuda (McEachran and Fechhelm, 2005), and Florida to Río Grande do Sul (Brazil) (Carvalho Filho, 1999). This species was reported in Argentine waters south of Río de la Plata in April 2008 (Solari et al., 2010); the present report extends the distribution of the species an additional 204 km south of this previous Argentinean record.

Materials and methods

The specimens reported in this study were collected on the beach of Torreón del Monje in Mar del Plata (38°0'12"S, 57°33'10"W) (Fig. 1) with a 2 m high, 5 m diameter lower headline manual seine net. Nine flagfin mojarras were caught: three on 29 March 2010 and six on 1 April 2010 at approximately 1.50 m depth, with a 10 mm mesh net. Oceanographic characteristics of the *E. melanopterus* captured were measured with a thermometer and a salinometer to ascertain temperature and salinity of the water, respectively. The temperature was 22°C and the salinity 33.5 UPS. The specimens were identified according to Menezes and Figueiredo (1980). Three specimens were conserved and fixed in 4% formalin, preserved in 75% ethanol and deposited in the fish collection of the Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP) as INIDEP N° 819. Morphological measurements (Table 1) were taken following Fischer (2002).

Results

All individuals showed the distinguishing features of the species as described in the pertinent literature (Menezes and Figueiredo, 1980; Cervigón, 1993; Gilmore and Greenfield,

2002; McEachran and Fechhelm, 2005). All main diagnostic meristic counts and measurements correspond to the three specimens of the collection (Table 1). Specimen weights were 48.99 g, 49.57 g and 43.29 g for specimens 1, 2 and 3, respectively. Furthermore, the length-weight relationship based on these specimens was $\text{weight} = 18.922e^{0.0058 \text{ length}}$ ($R^2 = 0.7271$).

Discussion

The previous single reference for this species in Argentine waters was reported by Solari et al. (2010); they explained the presence of *E. melanopterus* in the southern Río de la Plata on April 2008 based on the long period of minimum freshwater discharge, which could have allowed the advection of marine waters from the southern Brazilian continental shelf to Río de la Plata and thus explain the presence of *E. melanopterus* in its southern portion. According to Solari et al. (2010), the exceptional phenomenon of a decreased water volume would allow the passage of thermophilous forms to the south by the end of the summer and beginning of autumn in the austral hemisphere (Briggs, 1974; Mianzan et al., 2001). However, the capture of specimens in this study was 204 km south of the above citation. The period in which the specimens were found are consistent with an ENSO period that caused an excess of rainfall and produced an increase in riverine discharge (Acha et al., 2004), much greater than the annual mean, and even exceeding the monthly mean discharges for that time of year (Fig. 2).

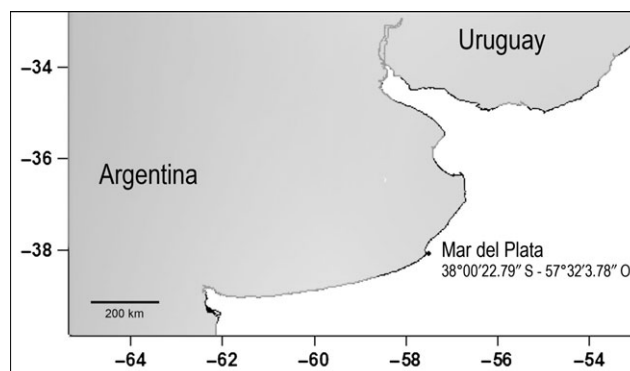


Fig. 1. Map of the southern hemisphere with an emphasis on the Mar del Plata area, where *Eucinostomus melanopterus* specimens were found

Table 1

Morphometric measurements and proportional relationships for *Eucinostomus melanopterus* specimens caught at Mar del Plata coast, March–April 2010. % SL= % standard length; % HL= % head length

	Specimen 1		Specimen 2		Specimen 3	
	mm (%SL)		mm (%SL)		mm (%SL)	
Total length	168		158		146	
Standard length	136		131		123	
Post-anal length	73 (46.2)		76 (48.1)		70 (47.9)	
Pre-dorsal length	50 (31.6)		53 (33.5)		43 (29.4)	
Pre-pelvic length	50 (31.6)		51 (32.3)		48 (32.9)	
Pre-pectoral length	42 (26.6)		41 (25.9)		40 (27.4)	
Body depth	45 (28.5)		48 (30.8)		45 (30.8)	
Head length	41 (25.9)		40 (25.3)		39 (26.7)	

	No	mm (%HL)	No	mm (%HL)	No	mm (%HL)
Eye diameter		14 (34.1)		14 (35)		12 (30.1)
Caudal peduncle depth		12 (29.2)		12 (30)		12 (30.1)
Gill rakers (lower part, 1st gill arch)	9		9		9	
Dorsal fins	IX – 10		IX – 10		IX – 10	
Anal fins	III – 9		III – 9		III – 9	
Pelvic fins	I – 5		I – 5		I – 5	
Pectoral fins	15		15		15	

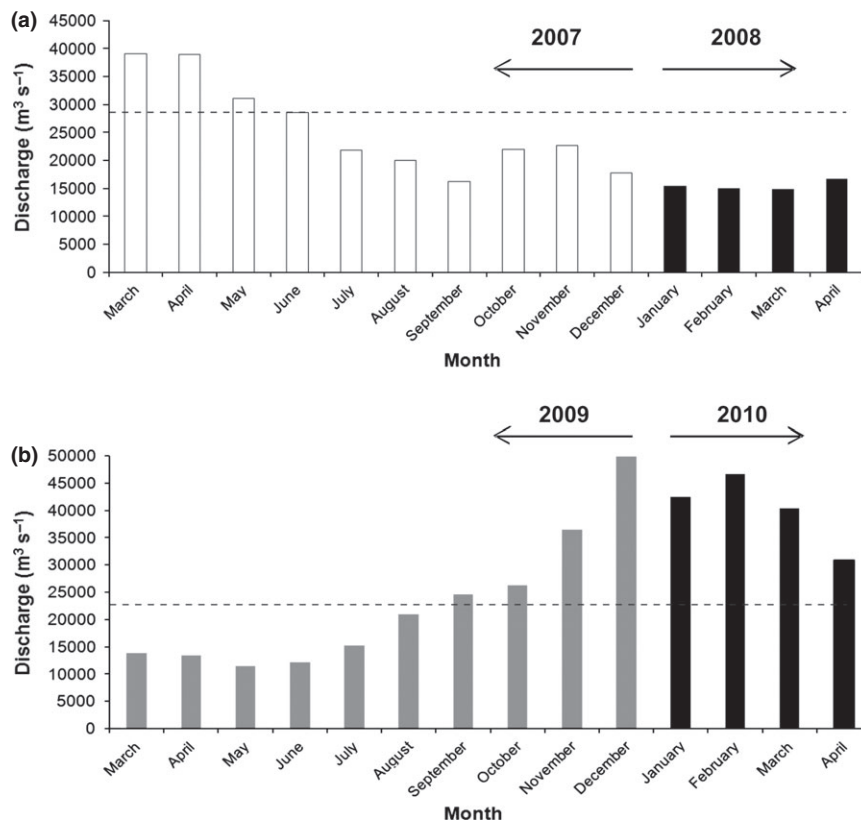


Fig. 2. Monthly discharge of Río de la Plata System ($\text{m}^3 \cdot \text{s}^{-1}$), (a) 2007 and 2008; (b) 2009 and 2010. Dashed line = average annual discharge (Borús et al., 2011)

Occurrence of thermophile forms is a common phenomenon in late summer and early autumn, corresponding to the period when the waters are warmer in the area. Several other tropical species have been recorded in coastal waters of northern Argentina (Cousseau and Figueroa, 1989; Díaz de Astarloa and Figueroa, 1995). Appearance of these species in the coastal region is due to the penetration of a western branch of the subtropical waters of the Brazil Current to the west of the Malvinas Current that reaches the coast via wind

and eddies (Boltovskoy, 1970). These observations in the Southwest Atlantic are similar to descriptions in the North Atlantic, on both North American and European shores and in the former are due to eddies, rings and meanderings of the Gulf Stream (Mann and Lazier, 1991), whereas in Europe the reason may be a heating of the current from the south to the north on the upper slope, the continental shelf of northern Spain and southern France (Queró et al., 1998). This behavior is similar to that described for Argentina for

the northern warm current whereby the volume of freshwater discharge at the mouth of the Río de la Plata has not been a significant zoogeographic barrier to the passage of thermophilic forms as proposed in Solari et al. (2010).

Our study not only shows that the Río de la Plata does not prevent the passage of subtropical specimens but also that the higher summer water temperatures, coupled with the influence of the Brazilian current, allow for the encounter of subtropical wildlife in the area.

Acknowledgements

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