



Short communication

First occurrence of the Patagonian blennie, *Eleginops maclovinus* (Cuvier, 1830) and the silverside *Odontesthes smitti* (Lahille, 1929), in a temperate south-western Atlantic coastal lagoon

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Introduction

Among the fish that inhabit coastal areas of Patagonia (Argentina) is the Patagonian blennie, *Eleginops maclovinus* (Cuvier 1830) (Family Eleginopsidae) (Nelson, 2006), abundant in the southern region of South America and distributed throughout the Magellanic Biogeographic Province. It has been reported from Valparaíso, Chile to the San Matías Gulf in Argentina (Cousseau and Perrotta, 2004).

Another species of Patagonian distribution is the silverside *Odontesthes smitti* (Lahille, 1929) (Family Atherinopsidae), which has been reported along the Atlantic Ocean coast from Uruguay (34°S) to Tierra del Fuego (54°S) and the Malvinas Islands (Dyer, 2000; Cousseau and Perrotta, 2004). This marine species inhabits only lower latitudes in July–August (winter) for reproductive purposes, as demonstrated by Macchi (1993) for the coast of Mar del Plata, Argentina.

Mar Chiquita coastal lagoon (37°32'S–57°19'W) is a temperate, shallow estuary located in Buenos Aires province, Argentina. Separated from the sea by a littoral line of dunes, with an inlet joining it to the ocean of approximately 60 km² and a maximum length of 25 km parallel to the sea (Fig. 1a), the Mar Chiquita lagoon is considered a World Reserve of Biosphere by the Coordination Council of the Man and Biosphere Program (MaB) of UNESCO. The lagoon receives fresh water from small streams, artificial channels and subterranean water. The salinity has a horizontal gradient and

fluctuates between 0 and 36, depending on the tide and wind (González-Castro et al., 2009).

One specimen of *Eleginops maclovinus* (Fig. 1b) and one individual of *Odontesthes smitti* (Fig. 1c) were recorded for the first time in the inlet channel (approximately 1200 m from the mouth) of Mar Chiquita coastal lagoon, Argentina (37°43'54'S–57°25'49'W) on 27 July and 05 July 2012, respectively.

The occurrence of *Eleginops maclovinus* in Mar Chiquita lagoon so far represents the northernmost record for the species in the western Atlantic.

Materials and methods

The specimen of *Eleginops maclovinus* was collected with a 25 m long, 2 m high-monofilament-gill net with 120 mm mesh size at a depth of 0.7 m. The *Odontesthes smitti* specimen was captured by means of a 25 m long, 2 m high-monofilament-gill net with 67 mm mesh size at a depth of 1.0 m. At the moment of collection the water temperature was 5.9°C (5 July) and 5.7°C (27 July) and salinity was 30.9 and 32, respectively.

Specimen identification was based on Cousseau and Perrotta (2004). Meristic and morphometric characters were measured on the left side of each specimen (Table 1). The specimens were preserved in the fishes collection of the

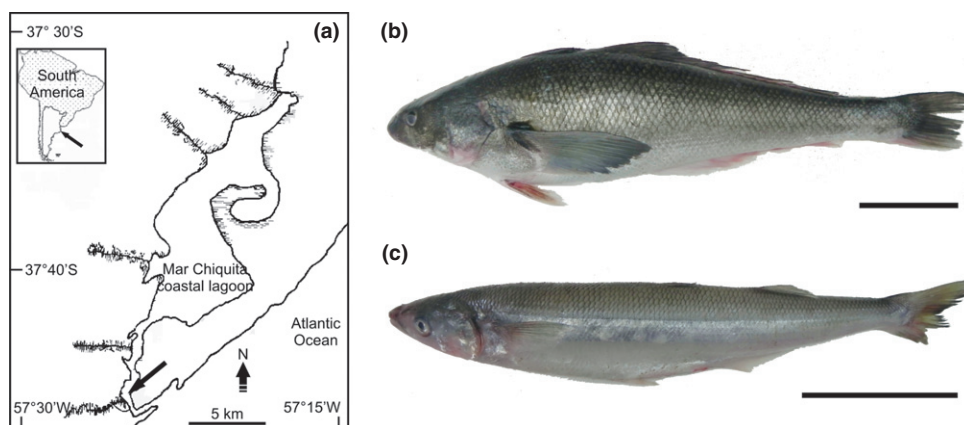


Fig. 1. (a) Collection site of *Eleginops maclovinus* and *Odontesthes smitti* captured July 2012 in Mar Chiquita coastal lagoon, Argentina; (b) *Eleginops maclovinus* UNMDP 2157 and (c) *Odontesthes smitti* UNMDP 2343. Bar = 10 cm

Table 1
Morphometric and meristic data of *Eleginops maclovinus* and *Odontesthes smitti* collected in Mar Chiquita coastal lagoon, Argentina

	<i>Eleginops maclovinus</i>	<i>Odontesthes smitti</i>
Code	UNMDP 2157	UNMDP 2343
Date	27-07-2012	05-07-2012
Sex/Reproductive phase	F/Spawning capable	F/Spawning capable
Weight (g)	2,218	370
Morphometrics	mm	mm
Total length (TL)	568	—
Standard length (SL)	490	336
Eye diameter	13.7	9.4
Pectoral-fin length	123.4	47.8
Prepectoral-fin length	139.6	73.1
Predorsal-fin 1 length (D1)	143.8	173.2
Predorsal-fin 2 length (D2)	214.6	232.8
Preventral-fin length	120.6	135.4
Preanal-fin length	258	202.4
Meristics		
Gill rakers on lower branch	—	29
Vertical scales rows	70	99
D1/D2	VIII/25	V/I- 10
Anal fin	21	I- 17

Universidad Nacional de Mar del Plata, Argentina, under catalogue numbers UNMDP 2157 (*E. maclovinus*) and UNMDP 2343 (*O. smitti*). Moreover, samples of muscular tissue in 95° ethanol (tissue vouchers) of both specimens were stored at -20°C , as part of the UNMDP fishes collection.

Results

For the first time the occurrence of two species with sub-Antarctic waters affinities collected during the winter of 2012 were recorded for Mar Chiquita lagoon. The morphometric measurements and meristic data are summarized in Table 1. Body colouration, standard counts and measurements fit previous descriptions of the species, such as in Nakamura et al. (1986) and Cousseau and Perrotta (2004).

Both specimens were females in the reproductive phase of capable spawning, according to the terminology employed by Brown-Peterson et al. (2011).

Discussion

From an ecological point of view the occasional occurrence of fish in Mar Chiquita lagoon is well documented (Díaz de Astarloa et al., 2000; González-Castro et al., 2006; Bruno et al., 2011). However, the recorded species have always been of tropical/subtropical origin, the occurrences being attributed to the incursion of warm neritic waters to the Argentine continental shelf (Díaz de Astarloa and Figueroa, 1995) in combination with winds from the oceanic region that allowed marine water to enter several kilometers into the inner channel.

During June and July 2012, the coastal area of Buenos Aires province and northeastern Patagonia were affected by lack of rainfall coupled with a predominance of minimum temperatures well below the normal monthly values. Frequent cold air intake, combined with low clouds and dryness favored the predominance of very cold nights, particularly in the province of Buenos Aires, an area where the minimum temperatures were between 4 and 7°C below average. The

absolute minimum temperatures recorded were below -8°C in much of Patagonia. Overall, this led to one of the coldest winters in Buenos Aires province in over 50 years (Skansi, 2012). Accordingly, our records (obtained in the sampling field) of the monthly water temperatures of Mar Chiquita lagoon from 1996 to 2011, showed that July 2012 represented one of the coldest documented periods ever known (5.8°C in average), being July 2000 the only period with an even lower temperature.

Moreover, the occurrence of sub-Antarctic cold-temperate water species such as the orange throat *Paranotothenia magellanica*, which share the distribution area of the two species described in the present study, was attributed to a lower mean water temperature in the area (Figueroa et al., 2005). According to the authors, the advection of colder water masses from the intermediate shelf to the coast of Mar del Plata could have been a pathway used by *P. magellanica* to reach the shore.

Although the winter occurrence of *O. smitti* in coastal waters with higher latitudes (such as Mar del Plata) for reproductive purposes was demonstrated (Macchi, 1993), there were no documented occurrences of adults in coastal lagoons. It is expected that this marine species has no tolerance to brackish or freshwater environments. On the other hand, *Eleginops maclovinus* has a distribution covering only the southern cone of South America, from San Matias Gulf in Argentina to Valparaiso in Chile; this species occurs in shallow waters, estuaries and rivers (Cousseau and Perrotta, 2004).

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