

Short communication

First record of *Torpedo puelcha* (Chondrichthyes, Torpedinidae) in an Argentinean coastal lagoon

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The order of Torpediniformes is represented by two families of electric rays: Narcinidae and Torpedinidae. The former includes nine genera and at least 37 species; the latter contains two genera and 22 species (Nelson, 2006). Two species of Narcinidae have been reported on the Argentinean continental shelf: the electric ray *Discopyge tschudii* (Heckel 1846), and the Brazilian electric ray *Narcine brasiliensis* (Olfers 1831). Only one species of Torpedinidae inhabits Argentinean waters, *Torpedo puelcha* (Lahille 1926) (Menni et al., 1984). *T. puelcha* is considered an endemic species of the warm-temperate Argentinean zoogeographic province (23°–42°S, García et al., 2000), with species typically ranging from Rio de Janeiro, Brazil to northern Patagonia, Argentina (Boschi, 2000). The presence of *T. puelcha* in the southwest Atlantic has been reported from off Santa Catarina and Rio Grande do Sul, Brazil (Figueiredo, 1977), to Argentina (Lahille, 1926; Pozzi and Bordalé, 1935; Kreff, 1968; Cousseau and Bastida, 1982; García et al., 2000). The southernmost record of this species was found at 39°S (Pozzi and Bordalé, 1935). Thus, this species is very rare, with few occurrences reported; consequently, no data are available regarding its biology and ecology.

We report here on the occurrence of *T. puelcha* in the inlet channel (37°44'S 57°25'W) about 1000 m from the mouth of Mar Chiquita coastal lagoon (Buenos Aires, Argentina; Fig. 1), regarded a World Reserve of Biosphere by the UNESCO as of 1996 (Iribarne, 2001). The lagoon has an area of approx. 46 km², with a maximum length of 25 km parallel to the sea, from which it is separated by a line of dunes. Connection with the sea is through an inlet channel of about 6 km length, 200 m width and 0.5–3 m depth (Reta et al., 2001). The lagoon receives freshwater from small streams, artificial canals and subterranean water (Azpelicueta et al., 1998). Salinity fluctuates in the inlet channel between 0 and 35 ups, depending on tides and winds (Azpelicueta et al., 1998; Reta et al., 2001); water temperatures range seasonally between 3 and 25°C (Figueroa et al., 2000).

The dead *T. puelcha* specimen, a 689 mm total length female, was found washed ashore by a local fisherman on 21 June 2003. The specimen was identified, gutted, sexed and measured with an ichthyometer and a digital caliper. It was later fixed in 10% buffered formaldehyde, preserved in 75% ethanol and catalogued in the Instituto Nacional de Inves-

tigación y Desarrollo Pesquero fish collection as INIDEP 723.

The fresh specimen was brownish on the dorsum, and white with dark edges ventrally. Morphometric parameters and respective body proportions are summarized in Table 1, and are in agreement with those reported by other authors who described this species (e.g. Cousseau and Bastida, 1982; García et al., 2000).

The oviducts and uteri were narrow and thread-like, indicating that the specimen was an immature female (Stehmann, 2002). Unfortunately, the state of preservation of the ovaries was insufficient to allow a thorough histological analysis. Microscopic examination of food remains in the stomach revealed sciaenid fish species as prey.

This specimen constitutes the first record of *T. puelcha* in brackish waters and is the third reported occurrence of a chondrichthyan species in the inlet channel of Mar Chiquita coastal lagoon. Only the angel shark *Squatina guggenheim* occurs sporadically (Cousseau et al., 2001); thus far, only one juvenile specimen of the porbeagle shark *Lamna nasus* was reported in recent years at the mouth of Mar Chiquita (Lucifora and Menni, 1998).

The temperature, pressure and wind diary recorded during June 2003 by the meteorological station of Mar Chiquita did not show any unusual atmospheric phenomena that could explain why the *T. puelcha* specimen entered the inlet channel. The low depth and narrow width of the lagoon mouth limit the entrance of large sharks into the Mar Chiquita lagoon (Lucifora, 2001), and *T. puelcha* is a large-size batoid.

High tissue and plasma urea concentrations make chondrichthyans isosmotic, or slightly hyperosmotic, in seawater. Within this group, there are few species of elasmobranches that enter into more dilute salinities (e.g. *Carcharhinus leucas*, Nelson, 2006) or reside in freshwater (e.g. Potamotrygonidae, Nelson, 2006). These species must balance the large osmotic water gain with increased urinary water excretion (Evans et al., 2004). Electric rays are exclusive to marine waters (Nelson, 2006) and *T. puelcha* was found near the mouth of the lagoon where salinity shows high and sometimes rapid variations, ranging from oligohaline to fully marine conditions (Anger et al., 1994). This *T. puelcha* specimen was found dead possibly because it could not maintain an osmotic balance.

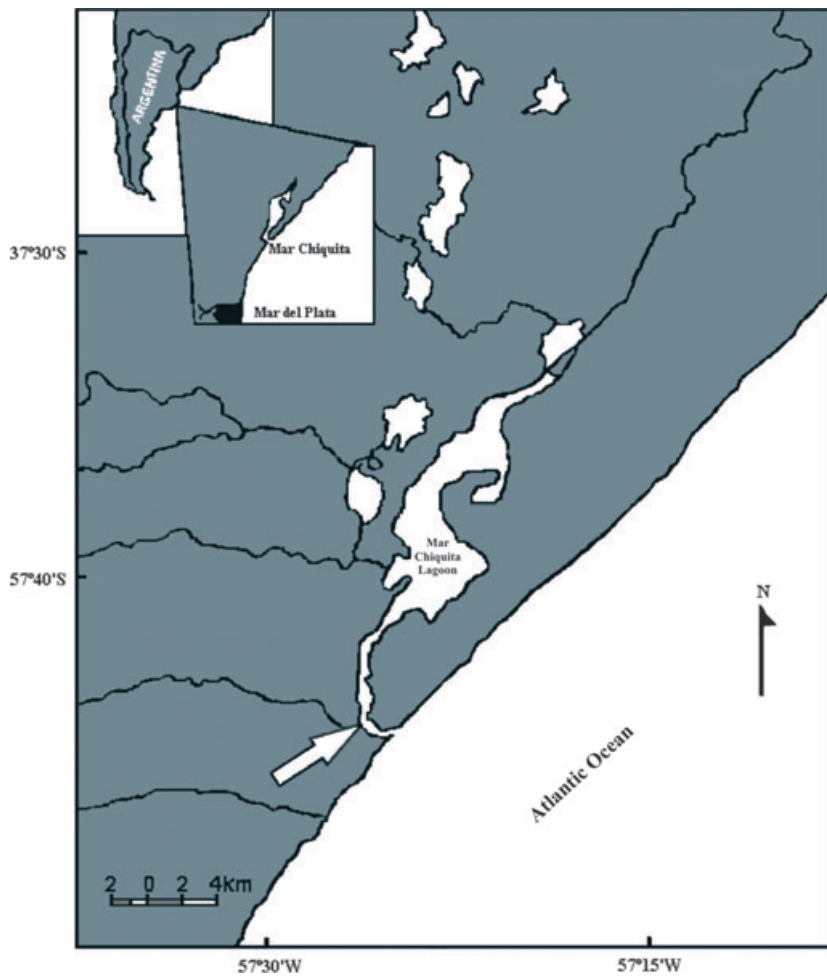


Fig. 1. Map showing Mar Chiquita coastal lagoon, Argentina. Arrow indicates collecting place of *Torpedo puelcha*

Table 1
Measurements and proportions of *Torpedo puelcha* from Mar Chiquita coastal lagoon

	mm	%TL
Disc width	380	70.97
Disc length	474	68.8
Interorbital width	46.2	6.71
Interspiracular width	41.1	5.97
Preorbital length	57	8.27
Preoral width	58.3	8.46
Mouth width (closed)	47.3	6.87
Orbit diameter	8.5	1.23
Spiracle length	20	2.9
Snout to 3rd gill slit	153.74	22.31
Snout to 5th gill slit	190	27.58
Interbranchial length, 1st	17.2	2.5
Interbranchial length, 3rd	19.1	2.77
Interbranchial length, 5th	12.96	1.88
Interbranchial width, 1st	120.9	17.55
Interbranchial width, 3rd	117.6	17.07
Interbranchial width, 5th	113.42	16.46
Predorsal 1	441	64.01
Di stance D1/D2	24.2	3.51
Snout to middle of cloaca	404	58.64
Middle of cloaca to caudal	285	41.36
Dorsal 1 base length	40.1	5.82
Dorsal 1 height	41	5.95
Dorsal 2 base length	22.8	3.31
Dorsal 2 height	21	3.05
Width between pelvic fins	59.6	8.65
End D2-caudal	212	30.77

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