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SHORT COMMUNICATION

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NEW RECORD OF THE BLUNTNOSE SIXGILL SHARK, Hexanchus griseus (CHONDRICHTHYES, HEXANCHIDAE), IN THE SOUTHWEST ATLANTIC OCEAN

Novo registro do tubarão-de-seis-guelras, *Hexanchus griseus* (Chondrichthyes, Hexanchidae), no Oceano Atlântico sudoeste

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ABSTRACT

A new record of *Hexanchus griseus* is reported for the coast of Argentina in Patagonia (45°36'32.73" S - 67°16'33.68" W) at a depth of 19 m and with water temperature at 15.4 °C. The specimen was a female captured, tagged and released inside a Marine Protected Area by local recreational fishermen as part of a national citizen science project. The specimen was a juvenile of 284.1 cm total length and it also constitutes the first tagged individual in the Southwest Atlantic Ocean for this species.

Keywords: *Hexanchus griseus*, sixgill shark, Argentina, recreational fishery, citizen science, tagging, juvenile.

RESUMO

Um novo registro de Hexanchus griseus *é relatado para a costa da Argentina (45°36'32.73" S - 67°16'33.68" W) a uma profundidade de 19 m, com temperatura da água de 15,4 °C. O espécime era uma fêmea capturada, marcada e solta dentro de um MPA por pescadores recreativos locais comoparte de um projeto nacional de ciência cidadã. O espécime era um jovem de 284,1 cm de compri- mento total e constitui o primeiro indivíduo marcado no oceano Atlântico sudoeste para essa espécie.*

Palavras-chave: Hexanchus griseus, *Argentina, pesca recreativa, ciência cidadã, marcação.*

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The bluntnose sixgill shark *Hexanchus griseus* (Order Hexanchiformes, Family Hexanchidae) is one of the largest carnivorous sharks reaching a maximum size of 5.5 m in total length (TL) (Weigmann, 2016; Ebert, 1994, 2015). *Hexanchus griseus* is a top predator in both coastal and deep-water ecosystems (Barnett *et al*., 2012). Males mature between 309 and 330 cm TL and females mature between 350 and 420 cm TL (Ebert; Dando & Fowler, 2013). The species has been recently categorized as Near Threatened globally (Finucci *et al*., 2020) and it is listed on Appendix I (Highly Migratory Species) of UNCLOS (FAO, 1994).

Hexanchus griseus has a circumglobal distribution, in tropical and temperate waters from 0 to 2,490 m but commonly found between 200 and 1,100 m (Ebert; Dando & Fowler, 2013; Griffing *et al*., 2014; Weigmann, 2016) with juveniles distributed close inshore in general (Ebert & Stehmann, 2013). Depth distribution has been related to growth and temperature, with the shallowest records linked to juveniles' specimens and from colder, poleward regions (Compagno, 1984; Last & Stevens, 1994; Crow; Lowe & Wetherbee, 1996; Mundy, 2005).

In the Western Atlantic, it is distributed from USA to Argentina in a patchily distribution (Compagno, 1984; Ebert & Stehmann, 2013). The last known record of the species in the region is a male captured in Ceará, Brazil, at 140 m depth and with 179.2 cm in TL, a juvenile with no signs of maturation (Santander-Neto *et al*., 2007).

Lahille (1906) reported a specimen of *H. griseus* (sub *H. cinereus*) for the first time in Argentina. It was found dead on the coast, at Miramar (38°16′17″ S - 57°50′20″ W). Later, this species was included in numerous lists of chondrichthyan species in Argentina (Pozzi & Bordalé, 1935; Bigelow & Schroeder, 1948; Ringuelet & Arámburu, 1960; Stehmann, 1978; Compagno, 1984; Menni; Ringuelet & Arámburu, 1984; Menni & Lucifora, 2007; Pan-Tiburones, 2011; Par-Condrictios, 2018; Figueroa, 2011, 2019) in a nominal way, without reference material.

Ninety years after the first report for Argentina, Coscarella *et al.* (1997) reported in Patagonia two specimens, an immature male of 219 cm TL and 51.50 kg of weight, and an immature female of 174.5 cm TL and 22.50 kg of weight. Both individuals were caught by a bottom trawl vessel targeting Argentine Hake (*Merluccius hubbsi*) at San Jorge Gulf (46°20' S, 66°20' W and 45°20' S, 64°20' W). This report, becomes the second record for the species in Argentina, extending its southern distribution in the Western Atlantic to 1,000 km southward in central Patagonia (Coscarella *et al*., 1997). Here we report a new record of *H. griseus* more than two decades after its last documented record in Argentinean waters. One female was caught at La Tombola islet in Rocas Coloradas Marine Protected Area, Chubut (45°36'32.73" S 67°16'33.68" W) during austral summer on February 7th in 2021 (Figure 1 and 2). The islet sector matches with the area reported as the southern limit forthe species in the Southwest Atlantic (Coscarella *et al*., 1997). The specimen was captured from kayak by local recreational fishermen, using rod and reel and Patagonian blennie (*Eleginops maclovinus*) and Atlantic chub mackerel (*Scomber colias*) as bait. The juvenile specimen measured 284.1 cm in total length (Figure 2) and was fished at a depth of 19 mand with a surface temperature of 15.4 °C. Juveniles specimens of the same range size (1.35-3.54 m) have also been found in similar shallow waters reef depths (20-40 m) during summer in Flora Islets, British Columbia (Dunbrack & Zielinski, 2003).

Figure 1 – Study area of *Hexanchus griseus* record. ▲ tagging site: La Tombola Islet, Rocas Coloradas MPA.

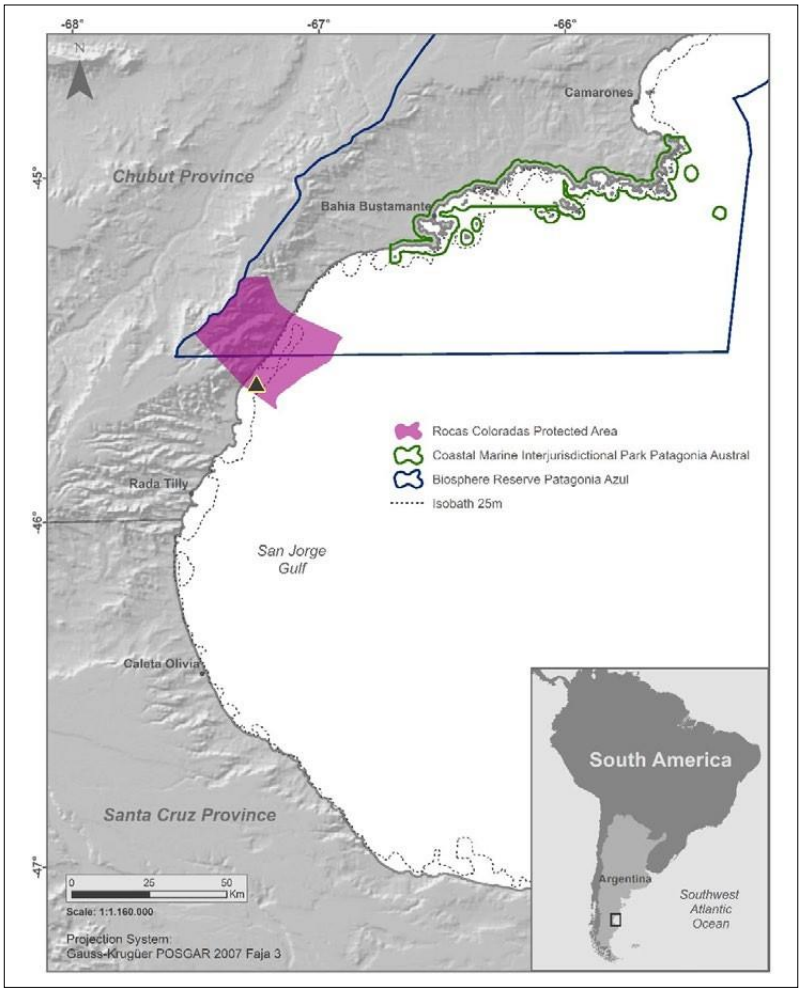

Figure 2 – Specimen of *Hexanchus griseus* captured and tagged in Rocas Coloradas MPA, Chubut Province, Argentina.

The specimen was tagged and release alive as part of the national citizen science project "Conservar Tiburones de Argentina" (Cuevas, 2016). Tagging procedures followed the code of good practice for sustainable recreational fisheries recommended by the Shark Tagging Manualof Argentina (Cuevas; Cedrola& Chiaramonte, 2013). Other complementary measures were taken as well by using an image analysis system – KLONK Image Measurement software version 20.4.6.0 (Andersen, 1993; Table I) for comparison with previous works.

Identification of the specimen was performed at the species level using Ebert *et al*. (2013) and Ebert and Stehmann (2013). Morphometric measures were more similar (in proportion) between subadult female individuals from the same region than from other region except for the left pectoral anterior margin that was different between all sites (Table I).

Although the information provided here relative to *H. griseus* is still deficient to conduct a subpopulation assessment of its conservation status in the Southwest Atlantic Ocean, it supplements with new distribution ranges and habitat uses of a juvenile that can be integrated with global data in the future. In conclusion, this record is the third report of the species in the Southwest Atlantic Ocean with reference material for the southern limit of its distribution in the region, is also the largest specimen reported for Argentina and the first tagged specimen for this area.

Table I – Morphometry comparison between females of *Hexanchus griseus*. Becerril-García *et al.* (2017): data from the Northeast Pacific (Mexico). Coscarella *et al.* (1997): data from the Southwest Atlantic (Argentina).

Measurement	Becerril-García *et al.* (2017)		Coscarella *et al.* (1997)		Present study	
	cm	%	cm	%	cm	%
Total length	107.2		174.5		284.1	
Fork length	84.6	78.9	120	68.8	197.0	69.4
Preanal length	63.4	59.1	90	51.6	-	-
Dorsal caudal margin	10.3	9.6	54	30.9	87.0	30.6
Predorsal length	-	-	97	55.6	148.3	52.2
Dorsal anterior margin	-	-	11.8	6.8	27.2	9.6
Right pectoral anterior margin	-	-	19.8	11.3	-	-
Left pectoral anterior margin	5.4	5.0	19.5	11.2	56.9	20.0
Head length	22.4	20.6	-	-	56.2	19.8
Head width	-	-	-	-	82.3	29.0
Eye diameter	1.6	1.5	-	-	6.3	2.2

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