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Short Communication

New record and morphometry of the bluntnose sixgill shark *Hexanchus griseus* (Chondrichthyes: Hexanchidae) in Baja California Sur, Mexico

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ABSTRACT. We report the first record and morphometry of a complete juvenile *Hexanchus griseus* female shark, caught in Punta Lobos, Baja California Sur, Mexico. The oceanographic conditions of the area, where the specimen was caught, coincide with the habitat previously described for this shark species, with low temperature, stable salinity and high hydrostatic pressure. There is an overall lack of information about *H. griseus* in Mexico, with only eight records of its presence in the Mexican Pacific. Moreover, none of these previous records provided detailed information on the morphometry of a whole bluntnose sixgill shark. Here, we present the morphometric measures of a complete individual caught in shallow waters. We expect this information to be useful for future comparisons of specimens caught in other coastal regions.

Keywords: *Hexanchus griseus***,** elasmobranchs, distribution, bathyal zone, Tropical Eastern Pacific.

The bluntnose sixgill shark, *Hexanchus griseus*, is the only species of the genus *Hexanchus* recorded in the Mexican Pacific (Compagno, 1984; Fischer *et al*., 1995). It is one of the largest carnivorous sharks, occupying the highest trophic level, reaching 4.82 m in total length (Ebert, 2015). The species possesses six pairs of gill slits, a subterminal mouth and a short, broadly rounded blunt snout. It is grey with or without irregular brown spots. Also, the distance from the dorsal fin to the caudal fin is equal to the length of the dorsal fin base (Compagno, 1984).

Records of *H. griseus* in Mexico have come from catches and fish lists drawn up in Sonora (Santana-Morales, 2005; Robertson & Allen, 2015), Baja California (Miller & Lea, 1972; Castro-Aguirre & García-Domínguez, 1988; Goodson, 1988; Ruiz-Campos *et al*., 2010) and Baja California Sur (Castro-Aguirre *et al*., 2003; Robertson & Allen, 2015). Of the studies reporting the occurrence of this species, that of Castro-Aguirre *et al*. (2003) is the only one, however, that includes morphometric measurements, those of the head of an unsexed specimen recorded in Bahía Magdalena, Baja California Sur, Mexico. Here, we present the first record and morphometry of a complete specimen of 107 cm in total length, caught 180 km south of Bahía Magdalena, off the fishing camp of Punta Lobos, Baja California Sur, Mexico.

A juvenile female of *H. griseus* was caught incidentally on 18 December 2013 by coastal fishermen using longlines. Punta Lobos is located at 23º25'N, 110º14'W, on the west coast of the Baja California Peninsula (Fig. 1).

In this area, oceanographic conditions at a depth of 200 to 2500 m are characterized by a temperature range of 4 to 12°C, a stable salinity of 34 to 35, and dissolved oxygen values of 2.5 to 4 mL L^{-1} (Locarnini *et al*., 2013; Zweng *et al*., 2013; García *et al*., 2014). Such conditions coincide with the known habitat of *H. griseus* in its area of distribution, *i.e*., hypoxic environments with low temperature and high hydrostatic pressure (Compagno, 1984; Barnett *et al*., 2012). Although this species mainly inhabits the continental slope, juveniles have been reported to make incursions into neritic environments (over the continental shelf) during the night, when they undergo vertical migration possibly related to feeding (Compagno, 1984; Andrews *et al*., 2007, 2009, 2010; Comfort, 2012).

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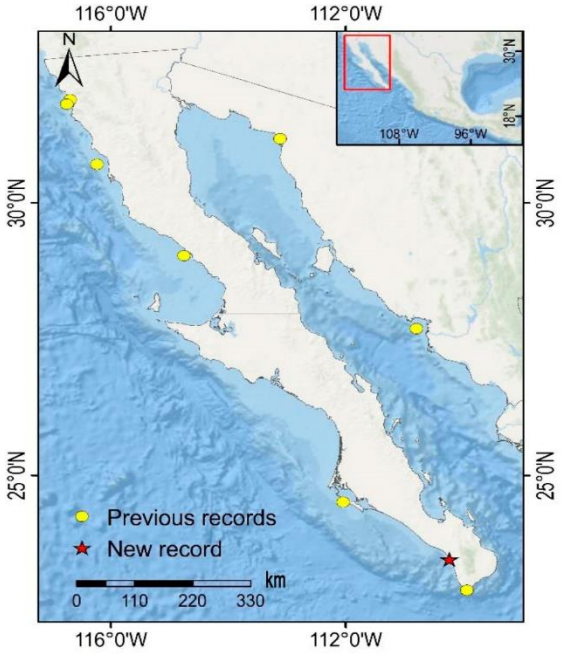

Figure 1. Previous records of *Hexanchus griseus* and new location of Punta Lobos, BCS, Mexico.

Figure 2. Juvenile female of *Hexanchus griseus* caught off the fishing camp of Punta Lobos, BCS, Mexico.

The caught specimen was dark grey without spots on the back and white on the belly, with no clear boundary between the two colours (Fig. 2). Its flabby body, typical of organisms inhabiting the mesopelagic or bathypelagic zone (Randall & Farrell, 1997), had an epidermis entirely covered with mucus, with no ectoparasites detected.

Taxonomic identification was performed using Fischer *et al.* (1995) dichotomous key as well as morphometry of the whole organism (Table 1). The shark specimen was transported on ice to the Laboratory of Fish Ecology of the Interdisciplinary Centre of Marine Sciences (CICIMAR-IPN, by its Spanish acronym) in La Paz, BCS, Mexico.

Table 1. Morphometry of the bluntnose sixgill shark female captured off Punta Lobos, BCS, Mexico.

Measure	Length (cm)	Proportion (%)
TL (total length)	107.2	100.00
FL (fork length)	84.6	78.92
PCL (pre-caudal-fin length)	74.9	69.87
HDL (head length)	22.1	20.62
POB (preorbital length)	5.2	4.85
PP1 (prepectoral-fin length)	22.1	20.62
PP2 (prepelvic-fin length)	27.8	25.93
PAL (preanal-fin length)	63.4	59.14
EYL (eye length)	1.6	1.49
ING (intergill length)	1.4	1.31
P1A (pectoral-fin anterior margin)	5.4	5.04
P1B (pectoral-fin base)	15.3	14.27
CDM (dorsal caudal-fin margin)	10.3	9.61
CPV (oreventral caudal-fin margin)	30.1	28.08
CFW (caudal-fin fork width)	3.4	3.17
CFL (caudal-fin fork length)	5.4	5.04
P2L (pelvic-fin length)	2.9	2.71
P2B (pelvic-fin base)	8.7	8.12
ANL (anal-fin length)	1.7	1.59
ANA (anal-fin anterior margin)	8.2	7.65
ANB (anal-fin base)	5.4	5.04

Despite the fact that *H. griseus* is a top predator, knowledge of this shark species is scarce and insufficient (Ebert, 2002, 2003), in both coastal and deep-water ecosystems (Barnett *et al.*, 2012). This study provides the first record of *H. griseus* that includes detailed morphometric data of a complete individual. This individual was caught in shallow waters off the west coast of Baja California Sur, providing additional information on the species' distribution

in Mexico. As for its conservation status, the bluntnose sixgill shark is categorised as "near threatened" by the IUCN (Cook & Compagno, 2005).

In Mexico, information relative to *H. griseus* is insufficient for realize a proper assessment of the status of its population; furthermore, the limited information on its reproductive biology suggests that this taxon may be vulnerable to fishing (Barnett *et al*., 2012). The punctual catches recording of *H. griseus* taking advantage of them to produce scientific knowledge about basic aspects of its biology, will allow better understanding of the ecological niche occupied by this species in the national territory.

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