

Blue lines indicate the area meeting the ISRA Criteria; dashed lines indicate the suggested buffer for use in the development of appropriate place-based conservation measures

# **ARRAIAL DO CABO ISRA**

#### South American Atlantic Region

## SUMMARY

Arraial do Cabo is located in Rio de Janeiro State in southeastern Brazil. The area consists of an isthmus and two islands dominated by sandy substrate and rocky shores. It is influenced by strong upwellings related to winds and the bathymetry of the area bringing up cold nutrient rich waters from the South Atlantic Central Water. Within this area there are: threatened species (e.g., Spinner Shark Carcharhinus brevipinna); range-restricted species (e.g., Lesser Numbfish Narcine brasiliensis); reproductive areas (Shortnose Guitarfish Zapteryx brevirostris); and undefined aggregations (Spinner Shark).

BRAZIL	
-	-
0-80 metre	S
-	-
137.4 km²	

## CRITERIA

Criterion A - Vulnerability; Criterion B - Range Restricted; Sub-criterion C1 – Reproductive Areas; Sub-criterion C5 – Undefined Aggregations

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# DESCRIPTION OF HABITAT

Arraial do Cabo is located in Rio de Janeiro State in southeastern Brazil. The area consists of an isthmus and two islands dominated by sandy substrate and rocky shores. It is influenced by strong upwellings related to winds and the bathymetry of the area bringing up cold nutrient rich waters from the South Atlantic Central Water (Valentin 2001). Upwelling events lead to two major distinct habitat conditions. The western side of the isthmus is affected directly by cold, upwelling waters (Cordeiro et al. 2016). It is also characterised by higher chronic wave exposure and deeper habitats, conferring warm-temperate characteristics on this location. Sites located to the east of the isthmus are less influenced by upwelling waters and show subtropical-tropical characteristics in their benthic composition (Cordeiro et al. 2016).

This Important Shark and Ray Area is benthic and pelagic and is delineated from inshore and surface waters (O m) to 80 m based on the bathymetry of the area.

## **ISRA CRITERIA**

#### **CRITERION A - VULNERABILITY**

Two Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occur in the area. These are the Endangered Shortnose Guitarfish (Pollom et al. 2020) and the Vulnerable Spinner Shark (Rigby et al. 2020).

# **CRITERION B - RANGE RESTRICTED**

This area holds the regular presence of the Lesser Numbfish and the Shortnose Guitarfish as resident range-restricted species. These species occur year-round in the area and are regularly caught in artisanal beach seine fisheries, encountered by recreational divers, and in scientific dives focused on other taxa (CEL Ferreira pers. obs. 2000-2025). From September 2001 to August 2002, monthly scientific surveys using beach seine (25 m length, 2.5 m height, and 1 cm mesh size) were conducted on three beaches (Praia Grande and Praia dos Anjos within this area, and Prainha outside this area) in less than 1.5 m depth. Shortnose Guitarfishe were only captured in Praia Grande (the westernmost of the beaches within area). Lesser Numbfish was captured in Praia dos Anjos (n = 8 individuals) and Prainha (n = 2) comprising the core and easternmost part of this area (Gaelzer et al. 2006). This is the northernmost area where long-term surveys support the regular occurrence of both species along their known distribution. Contemporary records are also available on social media. The distribution of both species is limited to the Patagonian Shelf Large Marine Ecosystem (LME) and the South Brazil Shelf LME.

# SUB-CRITERION C1 - REPRODUCTIVE AREAS

Arraial do Cabo is an important reproductive area for one ray species.

Between 1985–1988, 36 monthly surveys during research cruises conducted by the Brazilian Navy, were conducted within the area (Fagundes Netto & Gaelzer 1991; Souza Xavier 2015; Silva 2016; Gonçalves 2022). In total, 147 bottom trawls used an otter trawl net. Samples were collected at depths of 30, 45, and 60 m. A total of 211 Shortnose Guitarfish were captured, of which 209 were measured (13.5–69 cm total length [TL]). Neonates and young-of-the-year (<20 cm TL) represented

~20% (n = 41) of measured individuals and were captured at 30 and 45 m depths. Additionally, five embryos with a yolk sac were captured in June 1986 (average 10.7  $\pm$  1.5 SD cm TL; Souza Xavier 2015). Shortnose Guitarfish size-at-birth is 13-16 cm TL (Last et al. 2016). In addition, three individuals, captured at 30 m depth, were pregnant in October 1985 and three had recently given birth (Souza Xavier 2015).

In July 2011, pregnant and neonate Shortnose Guitarfish were opportunistically recorded within the area (Wosnick et al. 2019). Two adult females (45–50 cm TL) and four neonates, of which two were hand-captured (13 and 14.5 cm TL) were observed on the sandy substrate in a tidal pool and it was suggested that females had just given birth within the tide pools (Wosnick et al. 2019). Additionally, a social media record shows a mature male biting the pectoral fin of a female in February 2025, suggesting courtship behaviour. Although no recent study has investigated the reproductive use of this area by the Shortnose Guitarfish (CEL Ferreira pers. obs. 2000-2025), these opportunistic records aligned with the uncertain regularity of Shortnose Guitarfish north of this area supports this area is still important for reproductive purposes (Xavier et al. 2024).

## SUB-CRITERION C5 - UNDEFINED AGGREGATIONS

Arraial do Cabo is an important area for undefined aggregations of one shark species.

Between July 2018 and July 2019, face-to-face interviews were conducted with 155 small-scale fishers in six fishing communities that operate within Arraial do Cabo extending to the west region outside this area (Fogliarini et al. 2024). Semi-structured questionnaires included a general question about the most frequently caught shark species during the fishers' careers, as well as specific questions about three species: Spinner Shark, Sandbar Shark, and Shortfin Mako. Photographs were used to assist in species identification during the interviews. When a fisher recognised and reported having caught any of these species, information was collected on i) the highest number of individuals caught in a single day, ii) the location of the catch, and iii) the year it occurred (Fogliarini et al. 2024).

Historical and contemporary aggregations of Spinner Sharks (130-200 cm TL) are reported in the area based on beach seine and hook and line captures in the artisanal fishery. Between 1979-2005, on the best day's catch, beach seine fishers caught ~2,000 Spinner Sharks per beach seine, and captures of ~100-500 on four occasions were also noted. Between 2006-2019, the number of individuals caught on the best day's catch declined to a maximum of 500 individuals, although captures of ~100-400 (n = 3 occasions) was also reported in one beach seine (Fogliarini et al. 2024). According to hook and line fishers, the highest number of individuals caught on the best day's catch was ~27 between 1979-2008, and ~22 between 2009-2019 (catches of 5-15 individuals were also reported in this period; n = 6) (Fogliarini et al. 2024). These numbers indicate Spinner Sharks aggregate in this area. Pregnant females are captured between June and July and large catches of this species occur during upwelling events and following large mullet *Mugil* sp. shoals attracting sharks to the coastline between April-August (Fogliarini et al. 2021). Further information is required to understand the nature and function of this aggregation.

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# QUALIFYING SPECIES

Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met								
				Α	В	Cı	C2	C3	C4	C5	Dı	D2
SHARKS												
Carcharhinus brevipinna	Spinner Shark	VU	0-200	Х						Х		
RAYS												
Narcine brasiliensis	Lesser Numbfish	NT	6-60		Х							
Zapteryx brevirostris	Shortnose Guitarfish	EN	0-140	Х	Х	Х						

# SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category			
SHARKS					
Carcharhinus plumbeus	Sandbar Shark	EN			
Isurus oxyrinchus	Shortfin Mako	EN			
Rhincodon typus	Whale Shark	EN			
RAYS					
Aetobatus narinari	Whitespotted Eagle Ray	EN			
Atlantoraja castelnaui	Spotback Skate	CR			
Atlantoraja cyclophora	Eyespot Skate	EN			
Gymnura altavela	Spiny Butterfly Ray	EN			
Hypanus berthalutzae	Lutz's Stingray	VU			
Myliobatis freminvillei	Bullnose Eagle Ray	VU			
Rioraja agassizi	Rio Skate	VU			

IUCN Red List of Threatened Species Categories are available by searching species names at <u>www.iucnredlist.org</u> Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient.



# SUPPORTING INFORMATION



There are additional indications that Arraial do Cabo is an important area for undefined aggregations of two shark species.

According to hook and line fishers interviewed between July 2018 and July 2019, the highest number of Sandbar Sharks caught on the best day's catch was ~12 between 1968-2008, and ~nine between 2009-2019, with six reports of more than four individuals on the best day of catch between 2010-2019 (Fogliarini et al. 2024). Such numbers suggest that Sandbar Sharks aggregate in this area. Captures of ~30 Shortfin Mako Sharks were reported by hook and line fishers for 1968-2005 and 2006-2019, with more than five individuals on the best day catch in the same longline reported at least 15 times between 2010-2019 (Fogliarini et al. 2024). Such numbers suggest that Shortfin Mako Sharks aggregate in this area. Pregnant females have also been captured between June and July (Fogliarini et al. 2024). Further information is required to understand the nature and function of these aggregations.

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