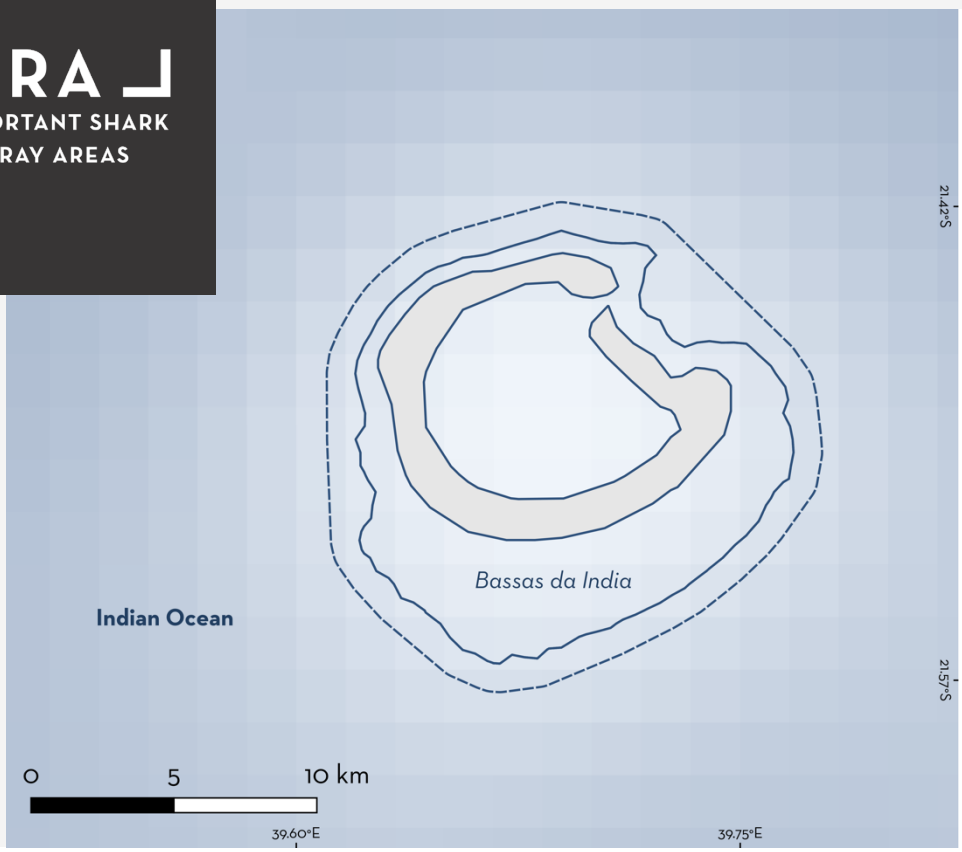
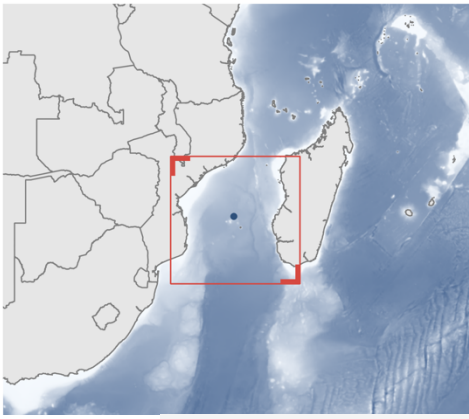
ISRA
IMPORTANT SHARK AND RAY AREAS





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

BASSAS DA INDIA ISRA

Western Indian Ocean Region

FRANCE

0–500 metres

125.74 km²

SUMMARY

Bassas da India is located in the southern Mozambique Channel, halfway between the African continent and Madagascar. It is an uninhabited atoll 110 km northwest of, and separated by deep water from, neighbouring Europa Island. Together with Europa Island, Bassas da India forms the southernmost part of the French Îles Éparses (Scattered Islands). Perched atop an extinct submarine volcano, Bassas da India consists of a hard coral reef surrounding a roughly circular shallow lagoon with a maximum depth of 15 m and includes ten barren rocky islets. The atoll is almost completely submerged at high tide, and the emerged part does not exceed 1 km at low tide. This area encompasses a range of habitats including shallow lagoons with sandy substrate, coral reefs, and pelagic waters. Within this area there are **undefined aggregations** (Galapagos Shark *Carcharhinus galapagensis*).

CRITERIA

Sub-criterion C5 – Undefined Aggregations

DESCRIPTION OF HABITAT

Bassas da India is a coral atoll located in the centre of the southern Mozambique Channel. The area is influenced by eddy systems, including eddy dipoles consisting of a cyclonic and an anticyclonic mesoscale eddy. The rotation of these eddies results in down- and upwelling of water, and warmer and cooler temperatures in the eddy centres, and this transfers nutrients across the thermocline (Bouvy et al. 2016). Further, these eddies reach throughout the water column to at least 1,000 m depth, and as they interact with the continental shelf, they draw nutrients off the slopes and into the water column (Roberts et al. 2014). These eddy dynamics profoundly affect pelagic biological communities including phytoplankton, zooplankton, larger invertebrates, fishes, marine mammals, and birds (Ternon et al. 2014).

Bassas da India is a subcircular atoll ~10 km in diameter with a shallow sandy lagoon. The atoll is surrounded by deep open ocean waters of the southern Mozambique Channel, reaching up to 3,000 m in depth. The climate of Bassas da India can be described as a semi-arid and tropical combination with wet austral summers and dry winters.

Bassas da India has been identified as a Key Biodiversity Area (KBA 2023). The area lies within two Ecologically or Biologically Significant Marine Areas (EBSAs): the Mozambique Channel and The Iles Éparses (CBD 2023a, 2023b).

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 500 m based on the depth use of the Qualifying Species in the area.

ISRA CRITERIA

SUB-CRITERION C5 – UNDEFINED AGGREGATIONS

Bassas da India is an important area for undefined aggregations of one shark species.

A visual survey in July 2010 identified 34 Galapagos Sharks, of which 32 were seen inside the Bassas da India lagoon (Clarke et al. 2012). They formed loose aggregations, with a maximum of 20 seen in a group. Almost all were visually estimated to be <150 cm total length (TL), but no further size details were recorded. Based on additional visual observations, several juvenile specimens of 140 cm TL were seen at night outside the reef (van der Elst et al. 2021). At this size class, juvenile Galapagos Sharks tend to leave the shallow protected inshore waters and start to occupy deeper waters (Gausmann, submitted). A photographic expedition to Bassas da India recorded aggregations of Galapagos Sharks in the lagoon during the day (up to three in a frame) and at night when they estimated 30 individuals in an aggregation (up to six in a frame; SOSF 2014). Clarke et al. (2012) termed the site a 'nursery area', also based on an earlier study which recorded 54 Galapagos Sharks, including aggregations of up to six individuals, during a survey in October 2003 (Hammerschlag & Fallows 2005). One of these was estimated to be 120 cm TL and 15 others were <200 cm TL (Hammerschlag & Fallows 2005). The size-at-birth of the species is 57–80 cm TL (Compagno 1984), so without more detailed length estimates, it is unclear whether any of the sharks reported in 2010 were neonates or young-of-the-year, and if this area is important for the reproduction of this species. Further information is required to determine the function of these aggregations.

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QUALIFYING SPECIES

Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met								
				A	B	C1	C2	C3	C4	C5	D1	D2
SHARKS												
Carcharhinus galapagensis	Galapagos Shark	LC	0–528							X		

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
Carcharhinus albimarginatus	Silvertip Shark	VU
Carcharhinus altimus	Bignose Shark	NT
Carcharhinus amblyrhynchos	Grey Reef Shark	EN
Carcharhinus falciformis	Silky Shark	VU
Carcharhinus longimanus	Oceanic Whitetip Shark	CR
Carcharhinus melanopterus	Blacktip Reef Shark	VU
Galeocerdo cuvier	Tiger Shark	NT
Isurus oxyrinchus	Shortfin Mako	EN
Prionace glauca	Blue Shark	NT
Rhincodon typus	Whale Shark	EN
Sphyrna lewini	Scalloped Hammerhead	CR
RAYS		
Aetobatus ocellatus	Spotted Eagle Ray	EN
Mobula birostris	Oceanic Manta Ray	EN

IUCN Red List of Threatened Species Categories are available by searching species names at www.iucnredlist.org 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 Bassas da India is an important reproductive area for the Galapagos Shark in the Western Indian Ocean. This species is strongly confined to remote oceanic islands and atolls for reproduction, with global observations of juvenile Galapagos Sharks reported exclusively from oceanic island habitats and not from continental coasts (Kyne et al. 2019; Gausmann, submitted). Therefore, it is very unlikely that nurseries of this species are located along the coasts of Madagascar and the African continent. Although no gravid females or neonates were observed at Bassas da India in a study targeting this species (Hammerschlag & Fallows 2005), their absence during the survey does not preclude the presence of reproductive areas, as they may occupy areas of the atoll that differ from the sites sampled in this study or during times when sampling did not occur. The two surveys occurred in July (Clarke et al. 2012) and in October (Hammerschlag & Fallows 2005), and Galapagos Shark parturition is seasonal in other locations (Wetherbee et al. 1996). Given its isolation, it is likely the juvenile sharks (120 cm TL) documented during this study were born in the atoll (Hammerschlag & Fallows 2005).

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