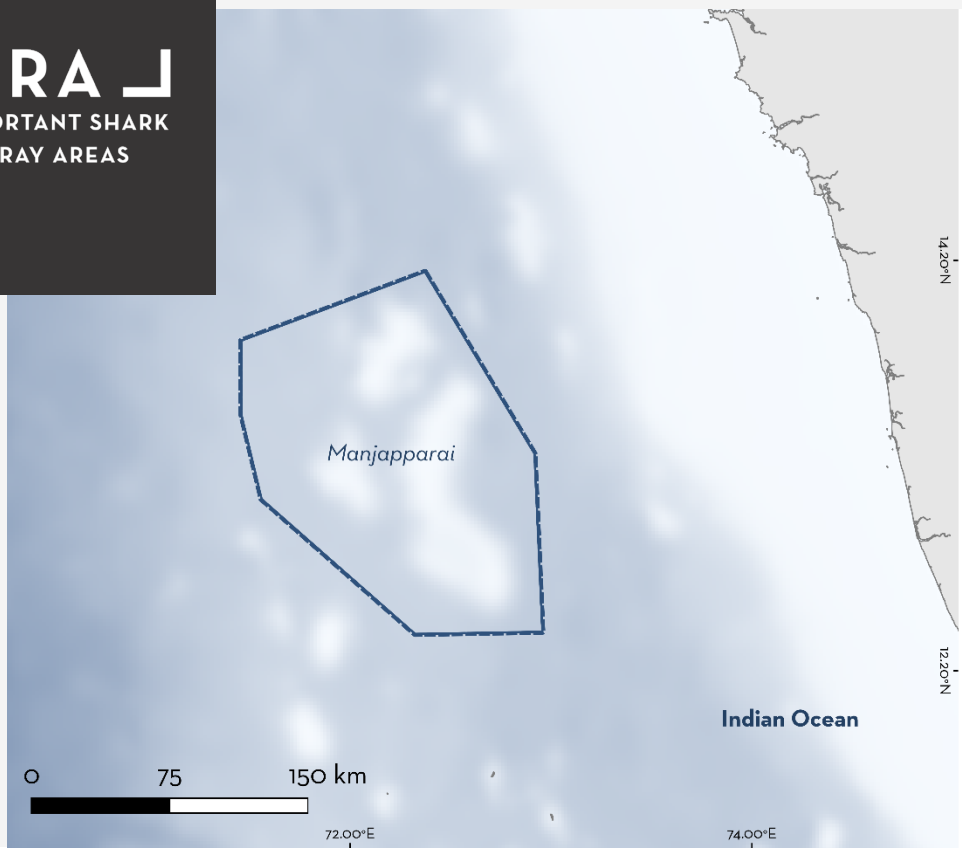
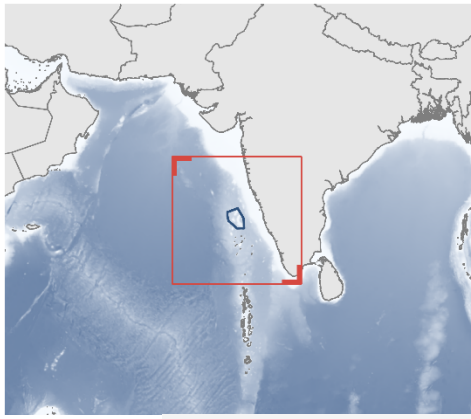
ISRA
IMPORTANT SHARK AND RAY AREAS





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

MANJAPPARAI ISRA

Western Indian Ocean Region

INDIA

0–1,896 metres

22,323.07 km²

SUMMARY

Manjapparai is located off the west coast of India, north of the Lakshadweep Islands. The area is a system of three shallow, submerged plateaus – Manjappar Bank (also called Bassas de Pedro), Sesostris, and Corah Div – situated within the Amindivi subgroup of the Lakshadweep Island Union, within the western continental shelf of the southern Indian peninsula. These three fully submerged coral banks form the northernmost and largest features of the Lakshadweep Island archipelago. This area hosts myriad habitats including coral reefs, sandy flats, and pelagic waters surrounding the banks. Within this area there are: **threatened species** (e.g., Oceanic Whitetip Shark *Carcharhinus longimanus*); **reproductive areas** (e.g., Bottlenose Wedgefish *Rhynchobatus australiae*); and the area sustains a **high diversity of sharks** (24 species).

CRITERIA

Criterion A – Vulnerability; Sub-criterion C1 – Reproductive Areas; Sub-criterion D2 – Diversity

DESCRIPTION OF HABITAT

Manjapparai lies to the north of the Lakshadweep Islands of India. The Lakshadweep Islands are irregularly scattered in the Arabian Sea towards the southeast of the Indian peninsula. This system is comprised of 36 islands, 12 atolls, three reefs, and five sunken banks. Manjappar (also called Bassas de Pedro), Sesostris, and Corah Div sunken banks are the three largest and northernmost features of these islands and comprise the Manjappar bank complex referred to here as Manjapparai. Manjapparai are no emergent cays or islands, with the bank depth varying from 16 to 75 m below the surface. The bank complex is a part of the ecologically sensitive Chagos-Laccadive Ridge (Jagtap et al. 2008). The surrounding waters drop off steeply to 1,000 m depth and then gradually to >2,000 m.

Situated within the tropics and extending towards the equatorial belt, this area has a tropical, humid, and warm climate, becoming more equatorial in the south. The southwest monsoon is the chief rainy season, lasting from late May to early October. This region exhibits strong seasonal variability both in hydrography and current circulation under the influence of the seasonally reversing monsoons (Swallow 1984; Johannessen et al. 1987).

This area is a highly biologically productive region, contributing to large volumes of fishery resources due to upwelling processes during the monsoon (McCreary et al. 1993; Madhupratap et al. 1996, 2001; Shankar & Shetye 1997). This upwelling of marine nutrients also causes phytoplankton blooms, increasing prey concentrations.

This Important Shark and Ray Area is benthopelagic and is delineated from surface waters (0 m) to 1,896 m based on the bathymetry of habitat in the area and the global depth ranges of the Qualifying Species.

ISRA CRITERIA

CRITERION A – VULNERABILITY

Twenty-four Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species™ regularly occur in the area. Threatened sharks comprise two Critically Endangered species, four Endangered species, and 10 Vulnerable species; threatened rays comprise two Critically Endangered species, four Endangered species, and two Vulnerable species (IUCN 2023).

SUB-CRITERION C1 – REPRODUCTIVE AREAS

This area is important for the reproduction of one shark and one ray species.

Scalloped Hammerhead is one of the most abundant species caught in the bank area with a size range of <50–387 cm total length (TL) (Bineesh et al. 2014; Thomas et al. 2021). The species is caught using longlines and accidently caught in the gillnet fishery targeting carangids and snappers. Of 1,339 examined individuals from the area during 2010–2012, 25.9% were classified as neonates (<50 cm TL, which is the known size-at-birth; White et al. 2006), with a peak recorded from August to December (Bineesh KK unpubl. data 2023). Pregnant females represented 9.5% of observed individuals with fully formed embryos recorded from July to September across the years 2010–2012 (Bineesh KK unpubl. data 2023).

Data collected from fisheries monitoring surveys at Cochin Fisheries Harbour, Kerala, from vessels operating at Manjapparai indicate that Bottlenose Wedgefish are a regular bycatch from the area (n = 658 observed between 2010–2012) with a size range of 180–270 cm TL (Bineesh KK et al. unpubl. data 2023). As size-at-maturity (males) for this species is 124 cm TL (Last et al. 2016), it is inferred that all landings recorded represented adult animals. Landings at this site are substantial and not all animals landed can be recorded or inspected. Bottlenose Wedgefish were recorded from August to December, with pregnant females (n = 24 observed; n = 10 in 2010 and n = 16 in 2011) carrying 4–6 pups and recorded in each year of the study (Bineesh KK et al. unpubl. data 2023).

SUB-CRITERION D2 – DIVERSITY

Manjapparai sustains a high diversity of Qualifying Species (24 species). This exceeds the regional diversity threshold (22 species) for the Western Indian Ocean region. Bineesh et al. (2014) and Wildlife Conservation Society-India's (WCS) ongoing work (Payyat et al. unpubl. data 2023) provide evidence of these species being found regularly within the area, based on landing surveys conducted 10 years apart from fisheries that operate at Manjapparai.

Over the past two years, WCS-India has been collecting landing data on sharks at the Cochin Fisheries Harbour where several longline and gillnet vessels fish Manjapparai to target pelagic fishes. During these surveys, fishers provided locations (GPS data) where they fished. This was used to map the fishing grounds which reflect the area delineated as Manjapparai. Additionally, nearly every fisher that docks at this harbour has stated that they fish around the shallow area just north of the Lakshadweep Islands, coinciding with the location of the three submerged banks and their surrounding waters.

WCS-India data (Payyat et al. unpubl. data 2023) shows that of ~20,000 shark and ray individuals recorded at the landing site, sharks were dominated by Silky Sharks (55% of the shark catch), followed by Oceanic Whitetip Sharks (10%), Scalloped Hammerheads (5%), and Tiger Sharks (4%). Rays were dominated by Spinetail Devil Ray (56% of the ray catch), followed by Pink Whipray (15%), Sicklefin Devil Ray (9%), Ocean Manta Ray (8%), and Blotched Fantail Ray (7%). Through personal communication with key fishers (boat owners or captains that have fished in the region for at least five years), the area has been highlighted as one of the prime fishing grounds for target fish like tunas (Payyat et al. unpubl. data 2023). Given the non-selectivity of their gear, several sharks are caught incidentally in the process.

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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												
Alopias pelagicus	Pelagic Thresher	EN	0–584	X								
Alopias superciliosus	Bigeye Thresher	VU	0–955	X								
Carcharhinus albimarginatus	Silvertip Shark	VU	0–800	X								
Carcharhinus amblyrhynchos	Grey Reef Shark	EN	0–50	X								
Carcharhinus amboinensis	Pigeye Shark	VU	0–60	X								
Carcharhinus brevipinna	Spinner Shark	VU	0–200	X								
Carcharhinus falciformis	Silky Shark	VU	0–1,112	X								X
Carcharhinus leucas	Bull Shark	VU	0–256	X								
Carcharhinus limbatus	Blacktip Shark	VU	0–140	X								
Carcharhinus longimanus	Oceanic Whitetip Shark	CR	0–1,082	X								
Isurus oxyrinchus	Shortfin Mako	EN	0–1,888	X								
Nebrius ferrugineus	Tawny Nurse Shark	VU	0–70	X								
Stegostoma tigrinum	Indo-Pacific Leopard Shark	EN	0–62	X								

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
Sphyrna lewini	Scalloped Hammerhead	CR	0–1,043	X		X						
Sphyrna zygaena	Smooth Hammerhead	VU	1–200	X								
Triaenodon obesus	Whitetip Reef Shark	VU	0–330	X								
RAYS												
Aetobatus ocellatus	Spotted Eagle Ray	EN	0–40	X								
Mobula birostris	Oceanic Manta Ray	EN	0–1,246	X								
Mobula mobular	Spinetail Devil Ray	EN	0–1,112	X								
Mobula tarapacana	Sicklefin Devil Ray	EN	0–1,896	X								
Pateobatis fai	Pink Whipray	VU	0–200	X								X
Rhina ancylostomus	Bowmouth Guitarfish	CR	0–70	X								
Rhynchobatus australiae	Bottlenose Wedgefish	CR	0–60	X		X						
Taeniurops meyeni	Blotched Fantail Ray	VU	0–439	X								

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
Carcharhinus altimus	Bignose Shark	NT
Carcharhinus melanopterus	Blacktip Reef Shark	VU
Carcharhinus sorrah	Spottail Shark	NT
Centrophorus granulosus	Gulper Shark	EN
Echinorhinus brucus	Bramble Shark	EN
Galeocerdo cuvier	Tiger Shark	NT
Hexanchus griseus	Bluntnose Sixgill Shark	NT
Negaprion acutidens	Sharpnose Lemon Shark	EN
Prionace glauca	Blue Shark	NT
RAYS		
Aetomylaeus vespertilio	Ornate Eagle Ray	CR
Megatrygon microps	Smalleye Stingray	DD
Mobula kuhlii	Shorthorned Pgymy Devil Ray	EN
Mobula thurstoni	Bentfin Devil Ray	EN
Neotrygon caeruleopunctata	Bluespotted Maskray	LC
Pastinachus sephen	Cowtail Ray	NT
Pteroplatytrygon violacea	Pelagic Stingray	LC
Urogymnus granulatus	Mangrove Whipray	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.

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