

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

PALK BAY ISRA

Asia Region

SUMMARY

Palk Bay sits within the bay of the same name lying between Tamil Nadu in India and Sri Lanka's Northern Province. This semi-enclosed bay is primarily shallow and flat with a low tidal amplitude. Extensive seagrass beds and coastal lagoons are dominant habitat features. The area overlaps with Parititivu Island Marine Sanctuary and Jafna Lagoon Key Biodiversity Area (both in Sri Lanka). Within this area there are: **threatened species** (e.g., Shorttail Whipray *Maculabatis bineeshi*); **range-restricted species** (e.g., Sharpnose Guitarfish *Glaucostegus granulatus*); and **reproductive areas** (e.g., Grey Sharpnose Shark *Rhizoprionodon oligolinx*).

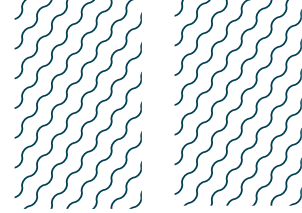
CRITERIA

Criterion A - Vulnerability; Criterion B - Range Restricted; Sub-criterion C1 - Reproductive Areas

INDIA
 SRI LANKA

0-13 metres

4,080.5 km²



DESCRIPTION OF HABITAT

Palk Bay sits within the bay of the same name lying between Tamil Nadu in India and Sri Lanka's Northern Province. This semi-enclosed bay is connected to the Bay of Bengal by Palk Strait in the northeast and to the Gulf of Mannar to the south by very shallow waters between Dhanushkodi, India, and Mannar Island, Sri Lanka. Palk Bay is primarily a shallow flat bay reaching depths of 13 m with a low tidal amplitude of 0.5–0.8 m (Durve & Alagarwami 1964; Rao et al. 1987; Victor & Kumar 2019).

Extensive mudflats and seagrass meadows are found across the bay and within the area, while the coast is dominated by brackish and saline lagoons and estuaries with patches of mangroves (Sridhar et al. 2010; Balasubramanian et al. 2011; Manikandan et al. 2011; Silva et al. 2013). There are only limited stretches of coral reef in the bay which occur ~200–600 m from shore around Pamban–Rameswaram (Kumaraguru et al. 2008).

The area receives most of its rainfall during the northeast monsoon season (November–February) during which time large sediment plumes enter Palk Bay from the Bay of Bengal. Freshwater input and turbulent conditions prevail during this period. The Vaigai River enters Palk Bay at Alagankulam and is a major source of freshwater input (Rao et al. 1987). Air temperatures vary between 26–35°C while water temperatures are between 26–33°C (Sulochanan et al. 2007).

The area overlaps with Parititivu Island Marine Sanctuary (Fernando 2023) and Jafna Lagoon Key Biodiversity Area (Sri Lanka) (KBA 2024).

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 13 m based on the bathymetry of the area.

ISRA CRITERIA

CRITERION A – VULNERABILITY

Four Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occur in the area. These are the Critically Endangered Sharpnose Guitarfish (Kyne et al. 2022) and Shorttail Whipray (Sherman et al. 2021), the Endangered Bleeker's Whipray (Sherman et al. 2020), and the Vulnerable Grey Bambooshark (VanderWright et al. 2020).

CRITERION B – RANGE RESTRICTED

This area holds the regular presence of Sharpnose Guitarfish, Shorttail Whipray, and Bleeker's Whipray as resident range-restricted species. All three species occur year-round in the area and are regularly encountered by local fisheries operating in the area both on the Indian and Sri Lankan coasts (L Remya unpubl. data 2023; Blue Resources Trust unpubl. data 2024). In India, Sharpnose Guitarfish occur in the area year-round but are mainly encountered by trawlers during August–October and by other local fisheries during October–February (L Remya unpubl. data 2023). Bleeker's Whipray represents one of the dominant ray species in the area where it comprised 18% of all ray landings from monitored trawl and gillnet fisheries operating in Palk Bay during 2015–2023 (L Remya unpubl. data 2023). The monitoring of 87 landing sites across Sri Lanka showed the frequency of landings of Sharpnose Guitarfish, Shorttail Whipray, and Bleeker's Whipray were highest at landing sites associated with Palk Bay indicating that this area is more important than any

other locations in Sri Lanka for these species. All three species are restricted to the Arabian Sea Large Marine Ecosystem (LME) and Bay of Bengal LME.

SUB-CRITERION C1 – REPRODUCTIVE AREAS

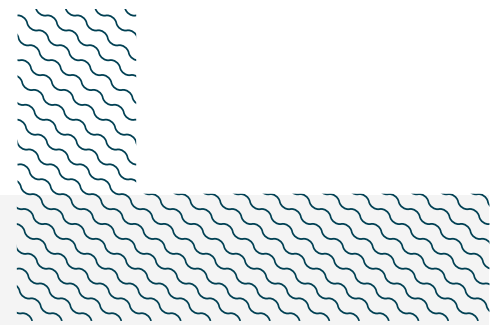
Palk Bay is an important reproductive area for two shark and one ray species.

The collection of biological data was undertaken during the monitoring of fish landing sites adjacent to the area where fisheries operating within the area land their catch. The major trawl landing sites in India from where catch data and samples for biological studies were collected were: Rameswaram, Mandapam, MV Pattinam, Devipattinam, Jagathapattinam, and Kottaipattinam. Catch data were collected during 2015–2023 on a biweekly basis (L Remya unpubl. data 2023). In Sri Lanka, the major landing sites are Myliddy, Mathagal, and Point Pedro and data were collected during 2018–2023 (Blue Resources Trust unpubl. data 2024). Dissections were undertaken to assess reproductive status.

Grey Bamboosharks occur in the area year-round, but a seasonal Indian shore-seine fishery operating in shallow coastal waters during April–September regularly captures this species (L Remya unpubl. data 2023). The collection of biological data revealed that out the 446 specimens examined (285 females; 160 males), 264 were mature individuals, with 92.6% of mature females (size range, 34.2–52.7 cm total length [TL]) carrying egg cases with advanced-stage embryos (1–2 per female). Ninety-two early life-stage individuals were also observed during the same period within the size range of 14.5–21.8 cm TL (L Remya unpubl. data 2023). Size-at-birth is <12 cm TL (Ebert et al. 2021). Egg cases are frequently observed during December–January along the shallow coastal waters and beaches of the area and neonates are seen in the shallow habitats of the area, particularly on seagrass beds (L Remya unpubl. data 2023). Although reproductive biology has not specifically been assessed in the Sri Lankan part of the area, the species is seen landed regularly at the fish landing sites associated with the area where they are landed whole (Blue Resources Trust unpubl. data 2024). This highlights that this species occurs locally across the area.

Grey Sharpnose Sharks occur regularly in the area with 1,166 specimens documented over 630 days of surveys at Sri Lankan landing sites associated with fisheries operating within the area (Blue Resources Trust unpubl. data 2024). This species is recorded more frequently at these landing sites compared to all other landing sites surveyed across Sri Lanka (Blue Resources Trust unpubl. data 2024). Of the 181 specimens measured, 46.4% (n = 84) were <54.8 cm TL, which is the established upper size limit for young-of-the-year for this species in the Indian Ocean (Purushottama et al. 2017; Blue Resources Trust unpubl. data 2024). During December–February, >50% of the measured specimens fall into this size class (Blue Resources Trust unpubl. data 2024).

Sharpnose Guitarfish occur in the area year-round. The collection of biological data in India revealed that out the 70 specimens examined during October to February (2021–2023), 45 were mature individuals (16 females; 29 males), with 12 females (75% of mature females; size range, 42.8–186.3 cm TL) having advanced-stage embryos (9–12 embryos per female) (L Remya unpubl. data 2023). Nineteen neonates of 22.4–26.3 cm TL were also observed in the area during November–June. Although reproductive biology has not specifically been assessed in the Sri Lankan part of the area, the high frequency of catches seen at the fish landing sites associated with the area (Blue Resources Trust unpubl. data 2024) highlights that this species occurs locally across the area.



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QUALIFYING SPECIES

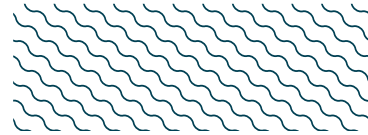
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met									
				A	B	C1	C2	C3	C4	C5	D1	D2	
SHARKS													
<i>Chiloscyllium griseum</i>	Grey Bambooshark	VU	5-100	X		X							
<i>Rhizoprionodon oligolinx</i>	Grey Sharpnose Shark	NT	0-36			X							
RAYS													
<i>Glaucostegus granulatus</i>	Sharpnose Guitarfish	CR	0-120	X	X	X							
<i>Maculabatis bineeshi</i>	Shorttail Whipray	CR	0-100	X	X								
<i>Pateobatis bleekeri</i>	Bleeker's Whipray	EN	0-40	X	X								

SUPPORTING SPECIES

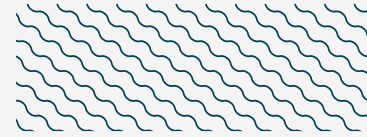
Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Carcharhinus amblyrhynchoides</i>	Graceful Shark	VU
<i>Carcharhinus limbatus</i>	Blacktip Shark	VU
<i>Rhizoprionodon acutus</i>	Milk Shark	VU
<i>Sphyrna lewini</i>	Scalloped Hammerhead	CR
RAYS		
<i>Aetobatus flagellum</i>	Longhead Eagle Ray	EN
<i>Aetobatus ocellatus</i>	Spotted Eagle Ray	EN
<i>Gymnura poecilura</i>	Longtail Butterfly Ray	VU
<i>Gymnura zonura</i>	Zonetail Butterfly Ray	EN
<i>Himantura leoparda</i>	Leopard Whipray	EN
<i>Himantura uarnak</i>	Coach Whipray	EN
<i>Himantura undulata</i>	Honeycomb Whipray	EN
<i>Maculabatis gerrardi</i>	Whitespotted Whipray	EN
<i>Pastinachus ater</i>	Broad Cowtail Ray	VU
<i>Pastinachus sephen</i>	Cowtail Ray	NT
<i>Pateobatis jenkinsii</i>	Jenkins' Whipray	EN
<i>Rhinoptera javanica</i>	Javan Cownose Ray	EN
<i>Rhynchobatus australiae</i>	Bottlenose Wedgefish	CR
<i>Taeniurops meyeri</i>	Blotched Fantail Ray	VU
<i>Urogymnus asperrimus</i>	Porcupine 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 indications that the area may be important for the reproduction of Bleeker's Whipray. Data collected over the period 2016-2023 (L Remya unpubl. data 2023) suggests that Bleeker's Whipray give birth in this area during November-February. Biological data revealed that all 45 females examined (size range, 56-101 cm disc width) were mature with 22 carrying developing embryos (L Remya unpubl. data 2023).



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