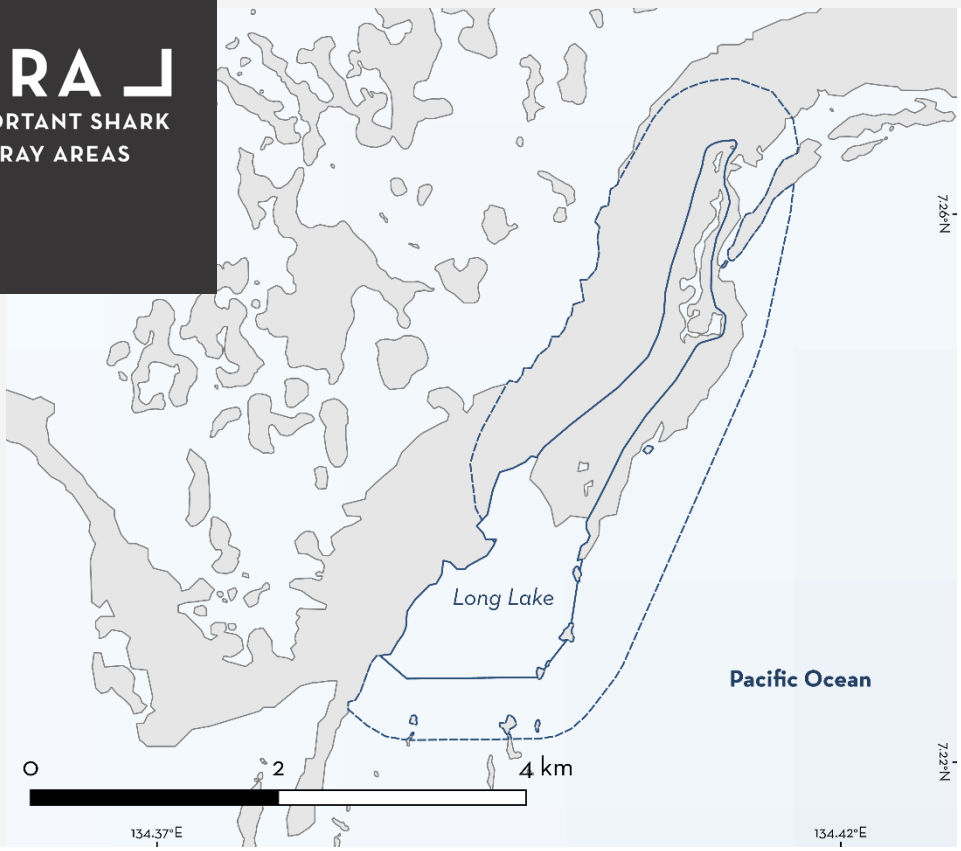
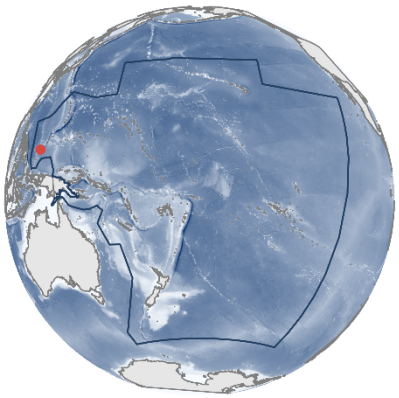
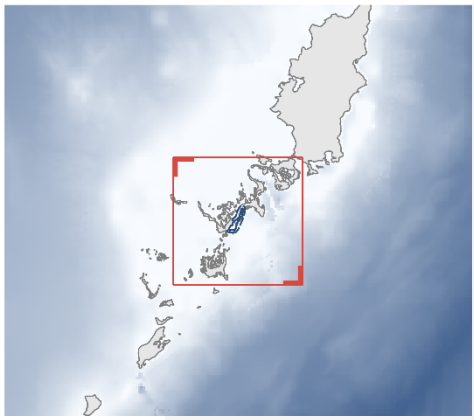
ISRA
IMPORTANT SHARK AND RAY AREAS







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

LONG LAKE ISRA

New Zealand & Pacific Islands Region

PALAU

0–10 metres

2.89 km²

SUMMARY

Long Lake is located in the Koror State of Palau. The habitat in the area includes a small shallow bay characterised by sandy substrates with seagrass and small coral heads. A mangrove channel connects the bay and the lagoon, and is mostly dry during low tide. The lagoon is characterised by sandy substrate on the edges and silt in the middle deeper part. Within this area there are: **threatened species** and **reproductive areas** (Blacktip Reef Shark *Carcharhinus melanopterus*).

CRITERIA

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

DESCRIPTION OF HABITAT

Long Lake is located in the Koror State of Palau. The area is formed by a group of basins and feeding channels found in the valleys between long lines of elevated fossil reefs (Colin 2009). Long Lake sits in two connected valleys between ridges and includes a connection to the lagoon by a few tunnels and an exceptionally long sill that feeds the Long Lake complex by tidal currents (Colin 2009). The habitat includes a very small shallow bay with a sandy substrate, seagrass beds, and small coral heads. A mangrove channel connects the bay and the lagoon is mostly dry during low tide and ~1 m depth during high tide.

This Important Shark and Ray Area is delineated from surface waters (0 m) to 10 m based on the bathymetry of the area.

ISRA CRITERIA

CRITERION A – VULNERABILITY

One Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occurs in the area. This is the Vulnerable Blacktip Reef Shark (Simpfendorfer et al. 2020).

SUB-CRITERION C1 – REPRODUCTIVE AREAS

Long Lake is an important reproductive area for one shark species.

Between 1998–2024, up to 12 neonates and/or young-of-the-year (YOY) Blacktip Reef Sharks were observed per sighting during high tide in the area. These sightings occurred in approximately 80% of ~30 kayaking trips through the mangrove forest sill (T Harel-Bornovski pers. obs. 1998–2024). Usually, if there has been no prior disturbance by tourists, around eight neonates and/or YOY Blacktip Reef Sharks can be observed in the area. However, animals quickly disperse when approached. The area is only accessible during new and full moon high tide. Only neonate and YOY Blacktip Reef Sharks are observed within the area. They are observed year-round but in higher abundance between November–May (T Harel-Bornovski pers. obs. 1998–2024).

Between 2021–2024, six Baited Remote Underwater Video Station surveys were deployed in the bay at the mouth of the sill and neonates/YOY were recorded in three deployments (up to five sharks per 60 min record). Blacktip Reef Sharks observed and recorded were visually estimated at 30–50 cm total length (TL) (T Harel-Bornovski pers. obs. 2009–2024). Blacktip Reef Shark size-at-birth is 30–52 cm TL (Ebert et al. 2021), confirming that the individuals observed were neonates or YOY.

Blacktip Reef Sharks use this mangrove area for foraging and shelter (T Harel-Bornovski pers. obs. 1998–2024). This is consistent with the ecological preference of young Blacktip Reef Sharks which are known to prefer shallow, sheltered waters (George et al. 2019).

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Tova Harel-Bornovski (Micronesian Shark Foundation), Amanda Batlle-Morera (IUCN SSC Shark Specialist Group – ISRA Project), and Vanessa Bettcher Brito (IUCN SSC Shark Specialist Group – ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2024 ISRA Region 10 – New Zealand and Pacific Islands workshop for their contributions to this 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												
Carcharhinus melanopterus	Blacktip Reef Shark	VU	0-100	X		X						

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
RAYS		
Aetobatus ocellatus	Spotted Eagle Ray	EN
Pastinachus ater	Broad Cowtail Ray	VU
Taeniurops meyeni	Blotched Fantail Ray	VU

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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Colin PL. 2009. *Marine Environments of Palau.* San Diego: Indo-Pacific Press.

Ebert DA, Dando M, Fowler S. 2021. *Sharks of the world: A complete guide.* Princeton: Princeton University Press.

George LW, Martins AP, Heupel MR, Simpfendorfer CA. 2019. Fine-scale movements of juvenile blacktip reef sharks *Carcharhinus melanopterus* in a shallow nearshore nursery. *Marine Ecology Progress Series* 623: 85–97. https://doi.org/10.3354/meps13010

Simpfendorfer C, Yuneni RR, Tanay D, Seyha L, Haque AB, Fahmi, Bin Ali A, Dharmadi, Bineesh KK, Gautama DA, et al. 2020. *Carcharhinus melanopterus*. *The IUCN Red List of Threatened Species* 2020: e.T39375A58303674. https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T39375A58303674.en