

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

MAHAREPA ISRA

New Zealand & Pacific Islands Region

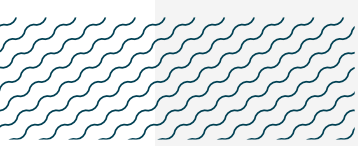
SUMMARY

Maharepa is situated on the northeast side of Moorea Island in the Society Archipelago of French Polynesia. The area encompasses a fringing reef bordering a small lagoon. Maharepa is characterised by a homogenous mix of corals, muddy and sandy substrates, and is influenced by low tidal variation. This area overlaps with the Lagon de Moorea Ramsar site and the Tetiaroa, Moorea et Tahiti marine Key Biodiversity Area. Within this area there are: **threatened species** and **reproductive areas** (Blacktip Reef Shark *Carcharhinus melanopterus*).

CRITERIA

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

— —
FRENCH POLYNESIA
 — —
0-25 metres
 — —
1.98 km²
 — —





DESCRIPTION OF HABITAT

Maharepa is situated on the northeast side of Moorea Island in the Society Archipelago of French Polynesia. The area is located within Moorea's narrow lagoon system and encompasses fringing reef bordering a small lagoon. The area encompasses the reef plateau to the limit of the reef with the open ocean and part of the channel that runs closer to shore on the west side of the area. Maharepa is characterised by a homogenous mix of corals, muddy and sandy substrates at depths <2 m within 50 m of shore (Bouyoucos et al. 2023; Eustache et al. 2024). The area is influenced by low tidal variation (~20–30 cm) (Bouyoucos et al. 2023) and currents generally oriented from the reef crest towards the channel, largely induced by waves (Ramsar Convention 2008; Berthe et al. 2018).

This area overlaps with the Lagon de Moorea site (Ramsar Convention 2008) and the Tetiaroa, Moorea et Tahiti marine Key Biodiversity Area (KBA 2024).

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 25 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

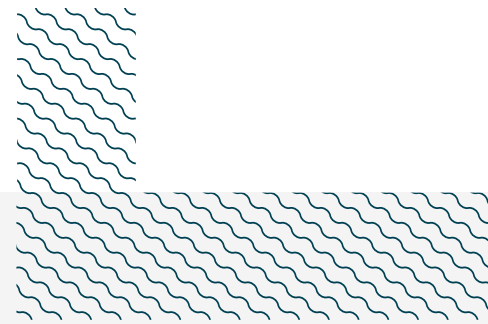
Maharepa is an important reproductive area for one shark species.

Between 2013–2022, a fisheries-independent program led by the Center for Island Research and Environmental Observatory (CRIOBE) was conducted at ten sites around Moorea, including Maharepa (Bouyoucos et al. 2023, Eustache et al. 2024). The area was sampled twice per month, between October and February, using a monofilament gillnet (50 m x 1.5 m, with a 5 cm mesh size) set perpendicular to the shore for approximately three hours in the evening. Captured animals were fin-clipped, sexed, measured, weighed, and had their umbilical scars photographed with a size reference. The sharks sampled were identified as neonate or young-of-the-year (YOY) based on the healing stage of the umbilical scar and size (Bouyoucos et al. 2023; Eustache et al. 2024). Fishing survey data were used to quantify catch-per-unit-effort (CPUE, sharks h⁻¹) per gillnet set per site and per survey year (Bouyoucos et al. 2023; Eustache et al. 2024). These CPUE data were then used to test the three shark nursery area criteria (Heupel et al. 2007) to identify which of the 10 sites function as nursery areas (Bouyoucos et al. 2023).

Between 2013–2022, a total of ~217 neonates and YOY Blacktip Reef Shark were captured in the area (Physioshark Lab unpubl. data 2024). The seasonal pattern for parturition occurs annually from October–February when neonates and YOY are captured (Mourier & Planes 2013). Maharepa presented a higher abundance of neonates and YOY relative to the other ten sites in 2016 and 2019, with a mean CPUE of 0.9 sharks h⁻¹ from 2015–2020 (Bouyoucos et al. 2023). Recapture rates were highest in this area than any other area (2015 = 3, 2016 = 8, 2017 = 5, 2018 = 1, 2019 = 7) (Bouyoucos et al. 2023). Moreover, the abundance in the area did not decline over time in 2016 and 2019 (Bouyoucos et al. 2023). Maharepa is a nursery area for Blacktip Reef Sharks, fulfilling the three nursery area

criteria in 2016 and 2019 (Bouyoucos et al. 2023). Individuals captured across the 10 sites in Moorea (n = 1,607) included 52.2% neonates (n = 839), which were 35 days old or younger, and 46.7% YOY (n = 751), which were older than 36 days (Physioshark Lab unpubl. data 2024). Adults of Blacktip Reef Shark accounted for only 1.1% (n = 17) of the total captures (Physioshark Lab unpubl. data 2024).

Maharepa is one of the several areas of importance for neonates and YOY Blacktip Reef Sharks that have been identified around Moorea (Mourier & Planes 2013; Bouyoucos et al. 2023; Eustache et al. 2024). The existence of several of these areas dispersed around the island is attributed to the small home ranges of neonatal Blacktip Reef Sharks in Moorea. Research using mark-recapture and acoustic telemetry has shown that these home ranges are the smallest documented for the species, likely due to the deep channels within Moorea's lagoon and the fragmented habitat (Bouyoucos et al. 2020). Additionally, pregnant female Blacktip Reef Sharks exhibit philopatry, returning to the same nursery for each birthing event (Mourier & Planes 2013). These factors together explain the presence of multiple nursery areas or areas that are crucial for neonate and YOY Blacktip Reef Sharks in Moorea.



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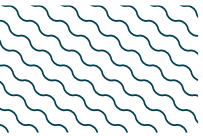
QUALIFYING SPECIES

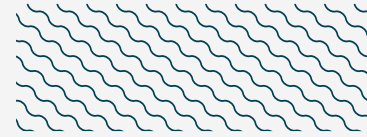
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met									
				A	B	C1	C2	C3	C4	C5	D1	D2	
SHARKS													
<i>Carcharhinus melanopterus</i>	Blacktip Reef Shark	VU	0-100	X		X							

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Negaprion acutidens</i>	Sharptooth Lemon Shark	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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