

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

## APAURA-VAIANE ISRA

### New Zealand & Pacific Islands Region

#### SUMMARY

Apaura-Vaiane is located on the western side of Moorea Island in the Society Archipelago of French Polynesia. The area encompasses the Bay of Vaiane and a lagoon bordered by fringing reef. Apaura-Vaiane is characterised by mangrove and silt-dominated areas. It has low tidal variation, and is influenced by currents generally oriented from the crest towards the channel, largely induced by waves. This area overlaps 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** (Sharptooth Lemon Shark *Negaprion acutidens*).

#### CRITERIA

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

FRENCH  
POLYNESIA

0-22 metres

1.51 km<sup>2</sup>





## DESCRIPTION OF HABITAT

Apaura-Vaiane is situated on the western side of Moorea Island in the Society Archipelago of French Polynesia. The area is located within Moorea's narrow lagoon system and encompasses the Bay of Vaiane and a lagoon bordered by fringing reef. Apaura-Vaiane is characterised mainly by mangrove and silt-dominated areas with a homogenous mix of corals, algal turfs, sandflats, and rock substrate (Bouyoucos et al. 2022; Eustache et al. 2024). It has by low tidal variation (~20–30 cm) (Bouyoucos et al. 2022) and is influenced by currents generally oriented from the reef crest towards the channel, largely induced by waves (Ramsar Convention 2008; Berthe et al. 2018).

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

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 22 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 Endangered Sharptooth Lemon Shark (Simpfendorfer et al. 2021).

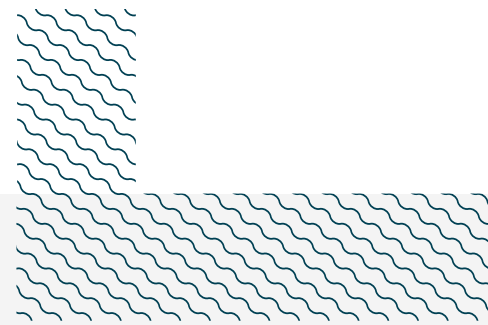
### SUB-CRITERION C<sub>1</sub> – REPRODUCTIVE AREAS

Apaura-Vaiane is an important reproductive area for one shark species.

Between 2015–2022, a fisheries-independent survey was conducted in ten locations around Moorea Island (Mourier & Planes 2013; Bouyoucos et al. 2022). The area was sampled twice per month, between October–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. Fishing survey data were used to quantify catch per unit effort (CPUE, sharks h<sup>-1</sup>) per site and per survey season each year (Bouyoucos et al. 2022). Captured animals were fin-clipped, sexed, measured, weighed, and life stage was estimated based on size (total length, TL) (Bouyoucos et al. 2022). These sharks were confirmed to be neonates or young-of-the-year (YOY) (Bouyoucos et al. 2022), considering that size-at-birth is 45–80 cm and size-at-maturity is ~220–240 cm TL (Ebert et al. 2021).

Between 2017–2022 a total of 325 neonates and YOY Sharptooth Lemon Sharks 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). Additionally, between 2015–2020 the area had a significantly higher relative neonate abundance based on the CPUE (2.6 individuals h<sup>-1</sup>) compared to the population mean for the entire study period relative to the other nine sites surveyed around Moorea Island (Bouyoucos et al. 2022). Neonates exhibited residency to the area, represented by the number of individuals that were recaptured at least once each survey season (2015 = 7, 2016 = 1, 2017 = 5, 2018 = 17, 2019 = 13) (Bouyoucos et al. 2022). Although adult females were not captured in the area, Sharptooth Lemon Sharks around Moorea Island follow a biennial reproductive pattern, exhibiting philopatry to nursery areas with a seasonal parturition period between August–October (Mourier et al. 2013).

The three nursery area criteria (Heupel et al. 2007) were satisfied on an interannual basis across 2015–2020 (Bouyoucos et al. 2022). The area functions as a nursery area for Sharptooth Lemon Shark.



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This factsheet has undergone review by the ISRA Independent Review Panel prior to its publication.

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### **Suggested citation**

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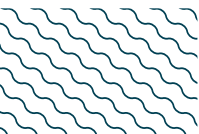
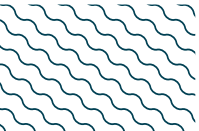
## QUALIFYING SPECIES

| 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 |  |
| <b>SHARKS</b>              |                        |                        |                        |                                |   |    |    |    |    |    |    |    |  |
| <i>Negaprion acutidens</i> | Sharptooth Lemon Shark | EN                     | 0-90                   | X                              |   | X  |    |    |    |    |    |    |  |

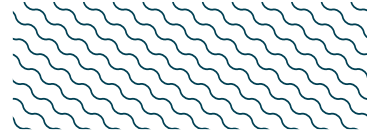
## SUPPORTING SPECIES

| Scientific Name                  | Common Name         | IUCN Red List Category |
|----------------------------------|---------------------|------------------------|
| <b>SHARKS</b>                    |                     |                        |
| <i>Carcharhinus melanopterus</i> | Blacktip Reef Shark | VU                     |

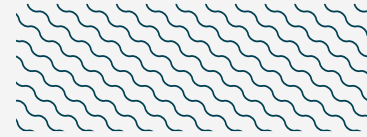
*IUCN Red List of Threatened Species Categories are available by searching species names at [www.iucnredlist.org](http://www.iucnredlist.org) Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient.*



## SUPPORTING INFORMATION



There are additional indications that this area is important for the reproduction of Blacktip Reef Shark. Between 2013–2022, a total of 101 neonates and juveniles Blacktip Reef Sharks were captured in the area (Physioshark Lab unpubl. data 2024). Additionally, during 2015–2020, catch-per-unit-effort (CPUE, sharks  $h^{-1}$ ) was 0.5 (mean) at Vaiane (Bouyoucos et al. 2023). All individuals collected during this period were neonates or YOY aged 0-1 years as confirmed by the presence of open or recently closed umbilical scars (Bouyoucos et al. 2023). Size-at-birth for the species is 30–52 cm TL (Ebert et al. 2021). Further information is required to confirm the importance of the area for reproduction in this species.



## REFERENCES

- Berthe C, Waqalevu VP, Latry L, Besson M, Lerouvreur F, Siu G, Lecellier G, Rummer JL, Bertucci F, Iglésias S, et al. 2018. Distribution patterns of ocellated eagle rays, *Aetobatus ocellatus*, along two sites in Moorea Island, French Polynesia. *Cybium* 42(4): 313–320. <https://doi.org/10.26028/CYBIUM/2018-424-002>
- Bouyoucos IA, Simpfendorfer CA, Planes S, Schwieterman GD, Weideli OC, Rummer JL. 2022. Thermally insensitive physiological performance allows neonatal sharks to use coastal habitats as nursery areas. *Marine Ecology Progress Series* 682: 137–152. <https://doi.org/10.3354/meps13941>
- Ebert DA, Dando M, Fowler S. 2021. *Sharks of the world: A complete guide*. Princeton: Princeton University Press.
- Eustache KB, van Loon E, Rummer JL, Planes S, Smallegange I. 2024. Spatial and temporal analysis of juvenile blacktip reef shark (*Carcharhinus melanopterus*) demographies identifies critical habitats. *Journal of Fish Biology* 104(1): 92–103. <https://doi.org/10.1111/jfb.15569>
- Heupel MR, Carlson JK, Simpfendorfer CA. 2007. Shark nursery areas: concepts, definition, characterization and assumptions. *Marine Ecology Progress Series* 337: 287–297 <https://doi.org/10.3354/meps337287>
- Key Biodiversity Areas (KBA). 2024. Key Biodiversity Areas factsheet: Tetiaroa, Moorea et Tahiti Marine. Available at: <https://www.keybiodiversityareas.org/site/factsheet/31035> Accessed June 2024.
- Mourier J, Planes S. 2013. Direct genetic evidence for reproductive philopatry and associated fine-scale migrations in female blacktip reef sharks (*Carcharhinus melanopterus*) in French Polynesia. *Molecular Ecology* 22(1): 201–214. <https://doi.org/10.1111/mec.12103>
- Mourier J, Buray N, Schultz JK, Clua E, Planes S. 2013. Genetic Network and Breeding Patterns of a Sicklefin Lemon Shark (*Negaprion acutidens*) Population in the Society Islands, French Polynesia. *PLoS ONE* 8(8): e73899. <https://doi.org/10.1371/journal.pone.0073899>
- Ramsar Convention. 2008. Ramsar site Factsheet Lagon de Moorea, French Polynesia. Available at: <https://rsis.ramsar.org/ris/1834> Accessed May 2024.
- Simpfendorfer C, Derrick D, Yuneni RR, Maung A, Utzurum JAT, Seyha L, Haque AB, Fahmi, Bin Ali AD, Bineesh KK, et al. 2021. *Negaprion acutidens*. *The IUCN Red List of Threatened Species* 2021: e.T41836A173435545. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T41836A173435545.en>