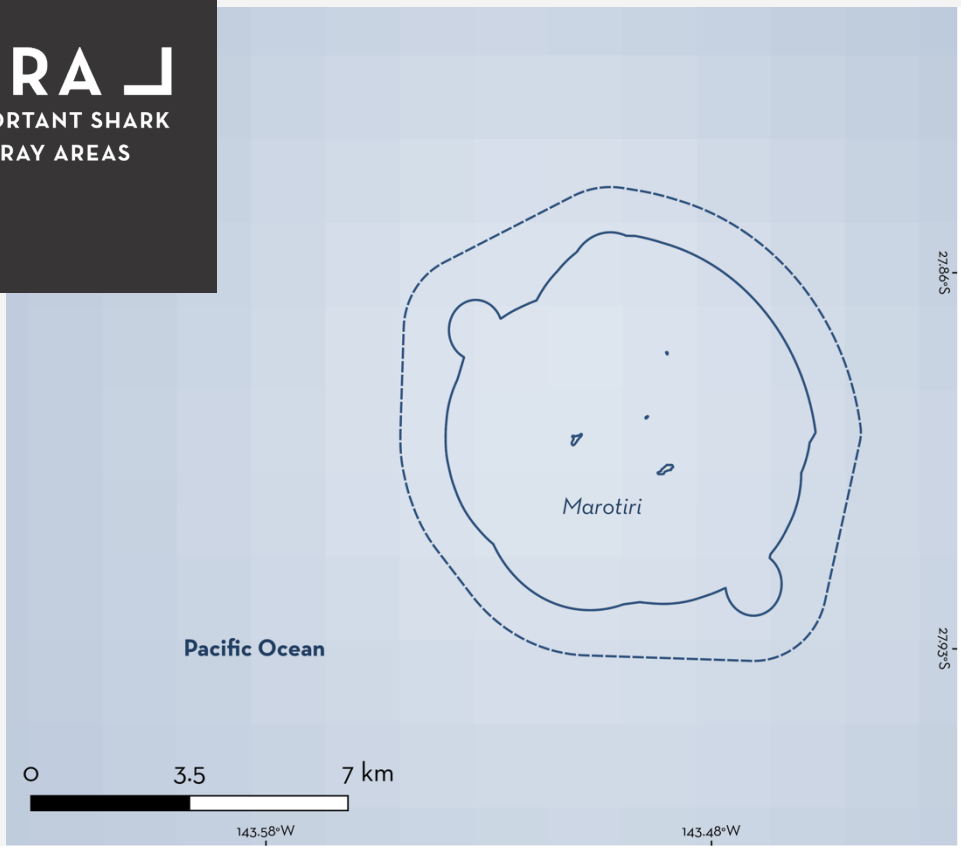
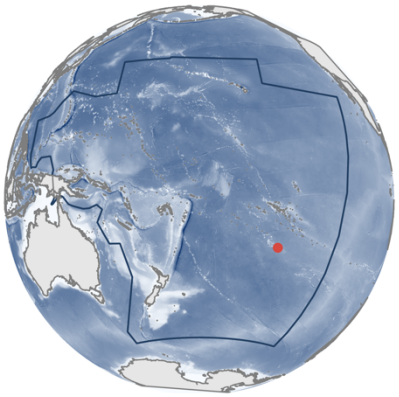
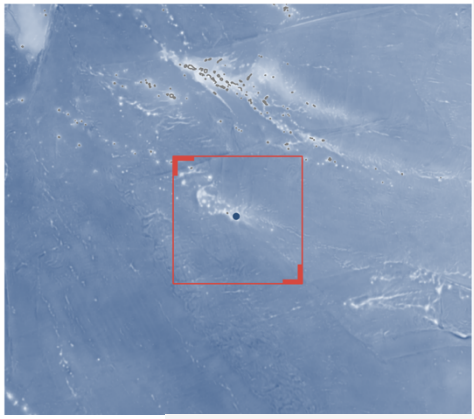
ISRA
IMPORTANT SHARK AND RAY AREAS







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

MAROTIRI ISRA

New Zealand & Pacific Islands Region

FRENCH POLYNESIA

0–500 metres

52.77 km²

SUMMARY

Marotiri is located in the Austral Islands at the southernmost end of French Polynesia. This is a remote and isolated rocky islet composed of four uninhabited volcanic rocks. This area is influenced by the South Equatorial Current. This area overlaps with the Marotiri Marine Key Biodiversity Area. Within this area there are: **undefined aggregations** (Galapagos Shark *Carcharhinus galapagensis*).

CRITERIA

Sub-criterion C5 – Undefined Aggregations

DESCRIPTION OF HABITAT

Marotiri is a group of rocky islets in the South Pacific Ocean, located in the Austral Islands, the southernmost islands in French Polynesia. This area, also known as 'Bass Rocks', is an isolated and subtropical location that encompasses a group of four uninhabited volcanic rocks protruding from the sea, the highest reaching 113 m, and several submerged rocks. The closest island is Rapa Iti, 75 km to the northwest.

Marotiri is influenced by the South Equatorial Current which flows from east to west across the South Pacific Ocean, moving warm waters. This area is also influenced by the southeast trade winds, which are more consistent and stronger during the dry season (May–October). In this area, the depth increases drastically from 25 m to 1,000 m. Almost all (96%) of the benthic structure around Marotiri consists of submerged banks (Friedlander et al. 2015). The most abundant coral species in Marotiri is the Cauliflower Coral *Pocillopora verrucosa* which covers 9% of the bottom (Friedlander et al. 2015).

This area overlaps with the Marotiri Marine Key Biodiversity Area (KBA 2024).

This Important Shark and Ray Area is pelagic and is delineated from surface waters (0 m) to 500 m based on the global depth range of the Qualifying Species and bathymetry of the area.

ISRA CRITERIA

SUB-CRITERION C5 – UNDEFINED AGGREGATIONS

Marotiri is an important area for undefined aggregations of one shark species.

Aggregations of Galapagos Sharks were regularly observed in this area between 1968–2014, as documented by underwater visual censuses, baited remote underwater video station (BRUVS) surveys, historical records, fishing surveys, and citizen science.

Historically, in 1968 and 1984, Galapagos Sharks were reported to occur in great abundances at Marotiri (Plessis 1986). In 2011, an experienced diver throughout the Pacific Islands observed hundreds of Galapagos Sharks in the area, with this observation one of the largest aggregations of sharks ever recorded by this diver (G Wragg pers. obs. 2024).

In October 2014, a total of 15 mid-water BRUVS surveys were deployed in this area (Friedlander et al. 2015). Sampling sites were at different depths (<50, 50–200, >200 m). Abundance was calculated as the maximum number of individuals observed in any video frame (MaxN; Friedlander et al. 2015). All sharks observed were Galapagos Sharks. Sharks were seen in 87% of surveys, with aggregations of more than twenty individuals observed in a single frame. Sharks were most abundant above 200 m (Friedlander et al. 2015). The abundance of Galapagos Sharks at Marotiri (mean = 10.7; $\sigma = \pm 7.3$) was higher in comparison to other islands in the Pacific Ocean that had estimated abundance through BRUVS (Acuña-Marrero et al. 2018; Lara-Lizardi 2018; Morales et al. 2019; Cambra 2022; Morales & Gonzalez-Pestana 2024). The only location with a higher abundance is in Rapa Iti with an average MaxN of 13 individuals on the eastern side (Friedlander et al. 2015).

In October 2014, underwater visual censuses (n = 42) were carried out at 10 and 20 m depth, at 14 study sites (Friedlander et al. 2015). At each survey, divers counted all sharks encountered along three fixed-length (25 m) corridor transects. Total fish biomass was estimated through underwater

visual censuses, which revealed that apex predators comprise 65% of the total fish biomass (Friedlander et al. 2015). In this area, Galapagos Shark comprised an average of 43 (SD = ± 63) individuals per 0.01 km^2 (Pristine Seas unpubl. data 2014). Fifteen surveys had high density of Galapagos Sharks. In 12 surveys, 100 individuals per 0.01 km^2 were recorded, and in three surveys, 200 individuals per 0.01 km^2 were recorded (Pristine Seas unpubl. data 2014).

The body sizes of Galapagos Sharks (n = 18) were estimated through the underwater visual censuses. On average, the sharks measured 105 (SD = ± 19) cm total length (TL) with a size range between 70–135 cm TL (Pristine Seas unpubl. data 2014). Individuals <1 m TL were reported to occur at adjacent Rapa Iti (Mourier & Planes 2015; Friedlander et al. 2015). Given the size-at-birth of this species (57–81 cm TL; Ebert et al. 2021), this suggests that the area may be important for the early life stages (i.e., neonates, young-of-the-year) of Galapagos Sharks, and that Marotiri could serve as a nursery ground for this species. In February 1971, twenty-one Galapagos Sharks up to 240 cm TL were caught in a few hours of fishing effort at Marotiri in which a pregnant female was reported (Randall et al. 1990).

Although mainly restricted in its distribution and confined to a few isolated oceanic around the globe, the Galapagos Shark can be the most common shark species in some locations, especially around remote offshore islands, seamounts, and atolls (P Gausmann unpubl. data 2024). Remote locations function as critical habitat and nursery areas for this species (P Gausmann unpubl. data 2024).

This area might function as a reproductive and nursery area due to its remoteness. Further information is needed to understand the nature and function of these aggregations and the environmental role of Marotiri for this species.

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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 galapagensis	Galapagos Shark	LC	0–528							X		

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
False Catshark	*Pseudotriakis microdon*	LC

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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