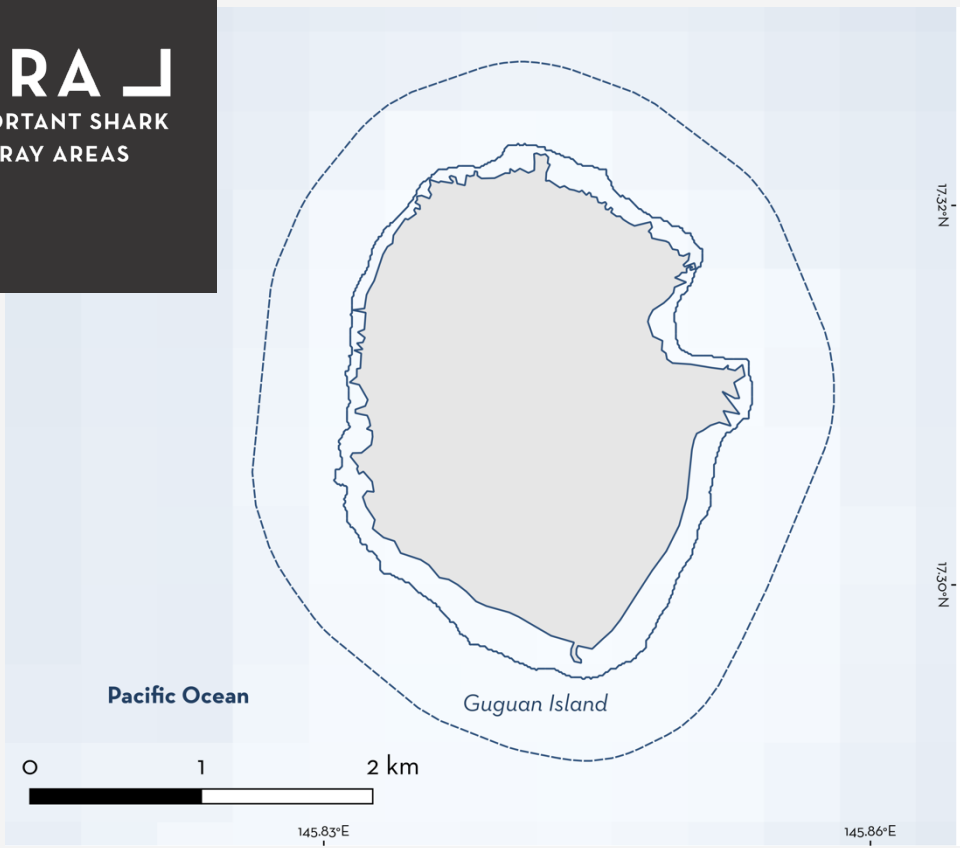
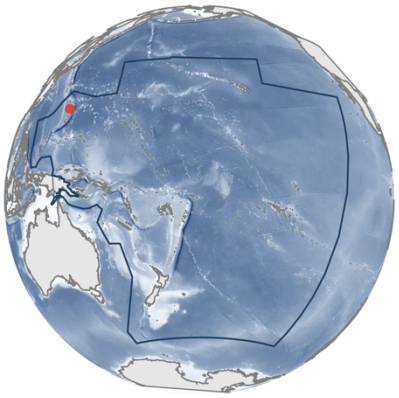
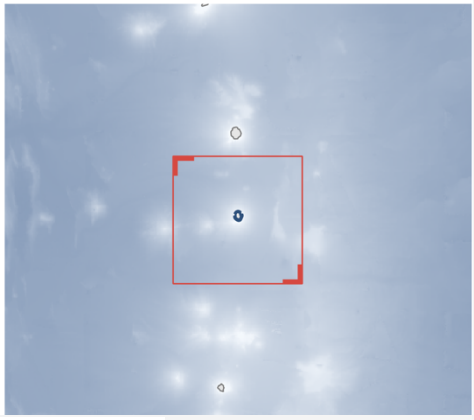
ISRA
IMPORTANT SHARK AND RAY AREAS







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

GUGUAN ISLAND ISRA

New Zealand & Pacific Islands Region

NORTHERN MARIANA ISLANDS

0–70 metres

1.03 km²

SUMMARY

Guguan Island is located in the middle part of the Mariana Arc in the northwestern Pacific Ocean. It is part of the Commonwealth of the Northern Mariana Islands, a self-governing commonwealth in association with the United States of America. It is a dormant volcanic island. This island has one of the lowest salinities of the Northern Mariana Islands where unique species assemblages exist. It is characterised by coral with developing reefs that have carbonate deposits. Within this area there are: **threatened species** and **undefined aggregations** (Tawny Nurse Shark *Nebrius ferrugineus*).

CRITERIA

Criterion A – Vulnerability; Sub-criterion C5 – Undefined Aggregations

DESCRIPTION OF HABITAT

Guguan Island is located in the middle part of the Mariana Arc in the northwestern Pacific Ocean. It is part of the Commonwealth of the Northern Mariana Islands, a self-governing commonwealth in association with the United States of America. Guguan Island is an isolated and uninhabited volcanic island formed from two volcanoes (Brainard et al. 2012). The habitat is mostly coral, with developing reefs that have carbonate deposits but lack a fully formed three-dimensional structure. There are also large rocks with a reef matrix made from coral skeletons cemented by coralline algae, and high-relief structures with carbonate foundations that are well-colonised by marine life (Houk & Starmer 2009). In the northeast and northwest regions, the seabed is characterised by steep slopes and narrow ridges. The highest sand cover is observed around the southern point of the island (Brainard et al. 2012). The coastal waters around the island have one of the lowest salinities of the Northern Mariana Islands where unique species assemblages exist (Houk & Starmer 2009).

This Important Shark and Ray Area is benthopelagic and delineated from surface waters (0 m) to 70 m based on the global depth range of the Qualifying Species in 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 Tawny Nurse Shark (Simpfendorfer et al. 2021).

SUB-CRITERION C5 – UNDEFINED AGGREGATIONS

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

Between 2009–2017, 15 towed-diver surveys (TDS) were conducted in the area: 2009 (n = 4 surveys), 2011 (n = 5), 2014 (n = 3), 2017 (n = 3) (CREP PIFSC 2017a, 2017b, 2017c). The TDS method involved two divers being towed behind a boat (~2.2 km track). The diver at ~15 m depth recorded the number, size (TL), and species of all fishes measuring >50 cm total length (TL) within a 20,000 km^2 area (Brainard et al. 2012). Aggregations of Tawny Nurse Sharks were recorded in 2014 (n = 8 individuals) and 2017 (n = 4 individuals). These are the only aggregations of Tawny Nurse Sharks recorded in all 13 sampled islands from the Northern Mariana Islands by TDS in those years (CREP PIFSC 2017a, 2017b, 2017c). The number of Tawny Nurse Sharks per dive within this area was 1.13 while in the remaining 12 islands, ranged from 0–0.75 (average = 0.19) (CREP PIFSC 2017a, 2017b, 2017c). Tawny Nurse Sharks often have limited home ranges, display site fidelity, and aggregate in the shelter of caves and rocky crevices during daylight hours (Ebert et al. 2021). The ecology of Tawny Nurse Sharks and observations during surveys support the importance of this area for aggregations of this species. Further information is required to understand the function and nature of this aggregation.

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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												
Nebrius ferrugineus	Tawny Nurse Shark	VU	0–70	X						X		

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
Carcharhinus amblyrhynchos	Grey Reef Shark	EN
Triaenodon obesus	Whitetip Reef Shark	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.

SUPPORTING INFORMATION

There are additional indications that Guguan Island might be an important reproductive area for one shark species.

Aggregations of neonates and young-of-the-year (YOY) Grey Reef Sharks were recorded in the area during three surveys undertaken in May 2017 (CREP PIFSC 2017c). Neonate/YOY Grey Reef Sharks were classified based on the size-at-birth of 45–60 cm TL (Ebert et al. 2021). Aggregations ranged between 3–21 individuals (sizes 60–120 cm TL). In addition, four Grey Reef Sharks were recorded in 2009 and 2011 (size range 100–130 cm TL). Further information is required to determine the regularity and seasonality of these observations.

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