

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

VAMIZI ISRA

Western Indian Ocean Region

SUMMARY

Vamizi lies in the northern Quirimbas Archipelago of northern Mozambique. It is a coral reef habitat between the two islands of Vamizi and Metundo. The area is characterised by steep reef walls, shallow reef tops, and pelagic waters. The area partly overlaps with the Vamizi Key Biodiversity Area and lies within three Ecologically or Biologically Significant Marine Areas (Mozambique Channel, Northern Mozambique Channel, and Pemba Bay to Mtwara). Within the area there are: **threatened species** (e.g., Blacktip Reef Shark *Carcharhinus melanopterus*); **reproductive areas** (Grey Reef Shark *Carcharhinus amblyrhynchos*); and **undefined aggregations** (Blacktip Reef Shark).

CRITERIA

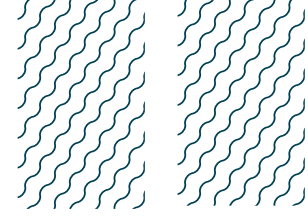
Criterion A - Vulnerability; Sub-criterion C1 - Reproductive Areas; Sub-criterion C5 - Undefined Aggregations

— —
MOZAMBIQUE

— —
0-280 metres

— —
185.95 km²





DESCRIPTION OF HABITAT

Vamizi lies in the Quirimbas Archipelago in northern Mozambique. It is located in the waters around Vamizi and Metundo Islands, which are ~5-20 km off the mainland. The area is characterised by pelagic waters, coral reef habitats including shallow reef tops and steep walls, and deep canyons to ~500 m between the reefs (Davidson et al. 2006). Vamizi is influenced by the northeast monsoon from October to March, which brings warm temperatures and seasonal rains, and by the southeast monsoon from April to September, which is associated with the cooler dry season and strong southerly winds (Davidson et al. 2006). The large tidal range (>4 m spring equinox tides), combined with strong periodic upwelling events, draw cool nutrient rich waters up from the adjacent deepwater canyons, conferring strong currents, a resilience to coral bleaching events (West & Salm 2003), and a regular nutrient input known to support one of the highest productivities in Western Indian Ocean coral reef systems (Benkwitt et al. 2021). The coral reefs in this area are some of the most diverse in the Western Indian Ocean (Obura 2012).

The area partly overlaps with the Vamizi Key Biodiversity Area (KBA 2023) and lies within three Ecologically or Biologically Significant Marine Areas (Mozambique Channel, Northern Mozambique Channel, and Pemba Bay to Mtwara; CBD 2023a, 2023b, 2023c). The area also partly overlaps with a community sanctuary around Vamizi Island.

This Important Shark and Ray Area is benthopelagic from surface waters (0 m) to 280 m based on the global depth range of the Qualifying Species.

ISRA CRITERIA

CRITERION A - VULNERABILITY

The two Qualifying Species within the area are considered threatened with extinction according to the IUCN Red List of Threatened Species™. These are the Endangered Grey Reef Shark (Simpfendorfer et al. 2020a) and the Vulnerable Blacktip Reef Shark (Simpfendorfer et al. 2020b).

SUB-CRITERION C1 - REPRODUCTIVE AREAS

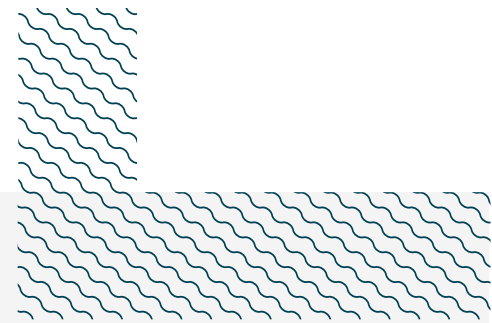
Vamizi is an important reproductive area for one shark species.

Divers frequently observe pregnant female and neonate (~70 cm total length [TL]) Grey Reef Sharks at Baixa de Methundo canyon, locally known as Neptune's Reef (I Marques da Silva pers. obs. 2023). Pregnancy was visually assessed underwater by a visibly extended abdomen. Aggregations during the peak season from August-September comprised an average of ~30 individuals (T Hempson pers. obs. 2010-2013). Two pregnant females with visibly distended abdomens were tagged in 2014 and only females have been reported in the aggregations seen by divers at Neptune's Reef. At the end of September, neonates and young-of-the-year (YOY) are regularly reported in the same area, indicating that pupping may have occurred in the area (I Marques da Silva pers. obs. 2023). For example, 10 neonates or YOY were regularly observed at this site for several weeks in August-September 2012, and a further 12 neonates or YOY were regularly seen over a period of ~6 weeks in September-October 2013 (T Hempson unpubl. data 2023). Sizes were estimated to be 60-90 cm TL, classifying them as neonates or YOY considering their reported size-at-birth of 60 cm TL (Wetherbee et al. 1997).

SUB-CRITERION C5 – UNDEFINED AGGREGATIONS

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

Local ecological knowledge (LEK) suggests there are regular aggregations of Blacktip Reef Sharks in this area, mostly based on unrecorded observations by people walking along the beach while on turtle patrol (I Marques da Silva pers. obs. 2023). Blacktip Reef Sharks aggregate in shallow water, often with the tip of the dorsal fin out of the water. The species has been recorded since 2012 when it was seen on a Baited Remote Underwater Video (BRUV) in 2 m depth, but numbers have increased since. In 2022-2023, turtle patrol officers reported seeing the species almost every day. To complement the LEK, a dedicated effort was made in August and September 2023 to quantify Blacktip Reef Shark aggregations in Vamizi. Six aggregations (min = 3, mean = 5, max = 8 individuals) were reported during nine surveys, with the species also seen on the remaining three surveys (1, 1, and 2 individuals). While mostly small Blacktip Reef Sharks with a visual size estimate of <70 cm TL are seen, some large individuals (>100 cm TL) were also reported.



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Isabel Marques da Silva (Universidade Lurio), Tessa N. Hempson (Mission Blue; James Cook University), and Christoph A. Rohner (IUCN SSC Shark Specialist Group – ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2023 ISRA Region 7 – Western Indian Ocean workshop for their contributions to this process.

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Suggested citation

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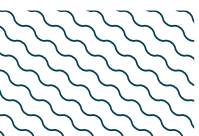
QUALIFYING SPECIES

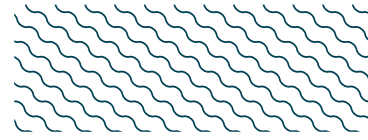
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met							
				A	B	C1	C2	C3	C4	C5	D1
SHARKS											
<i>Carcharhinus amblyrhynchos</i>	Grey Reef Shark	EN	0-280	X		X					
<i>Carcharhinus melanopterus</i>	Blacktip Reef Shark	VU	0-75	X						X	

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Carcharhinus albimarginatus</i>	Silvertip Shark	VU
<i>Carcharhinus falciformis</i>	Silky Shark	VU
<i>Carcharhinus leucas</i>	Bull Shark	VU
<i>Galeocerdo cuvier</i>	Tiger Shark	NT
<i>Sphyrna lewini</i>	Scalloped Hammerhead	CR
<i>Triaenodon obesus</i>	Whitetip Reef Shark	VU
RAYs		
<i>Aetobatus ocellatus</i>	Spotted Eagle Ray	EN
<i>Mobula alfredi</i>	Reef Manta Ray	VU
<i>Taeniura lymma</i>	Bluespotted Lagoon Ray	LC
<i>Taeniurops meyeri</i>	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.

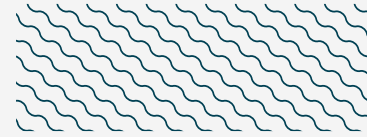




SUPPORTING INFORMATION

There are additional indications that Vamizi is an important site for aggregations of Grey Reef Sharks. Between 2010–2013, aggregations were regularly observed by scuba divers during August and September at Neptune’s Reef, with an estimated average of 30 individuals regularly reported (T Hempson unpubl. data 2023). Outside this peak season, dive logs from Vamizi Island indicate that the species is also seen, with sightings on 11 of 20 dives, and in each year, from 2017–2021 at Neptune’s Reef. Aggregations ranged from 2–6 individuals and were recorded in each year from 2017–2020 (I Marques da Silva unpubl. data 2023). Aggregations of Grey Reef Sharks have also been observed near the surface, coinciding with very strong currents at Neptune’s Reef, making observations on scuba challenging (I Marques da Silva pers. obs. 2023). Additional aggregations of Grey Reef Sharks in the area were also seen by divers at dive sites off Vamizi Island (two aggregations with up to five individuals) and Metundo Island (three aggregations, up to 10 individuals).

Passive acoustic telemetry indicates that one of the first two individuals tagged in 2014 was regularly recorded in each month from 2014 to 2018 at Neptune’s Reef (three receiver locations) (I Marques da Silva unpubl. data 2023). Six more individuals were tagged in 2018 and monitored up to 2021, and four receiver locations were added in the north of the area. Up to three of these sharks were detected together at a single receiver (defined as detections made within the same hour), with multiple tagged sharks recorded together at a receiver on 192 unique days, underlining the frequent occurrence of these aggregations. Two of the six individuals tagged in 2018 were detected each month from tag deployment to the last detection (maximum residency index $R_{\text{max}_{\text{month}}} = 1.0$), with an overall $R_{\text{max}_{\text{month}}}$ of 0.63 for all sharks combined. On a daily scale, tagged Grey Reef Sharks were detected on 23% of possible days (from deployment to last detection) for all individuals combined, and up to 68% for shark #2 (detected on 412 of 602 days). Grey Reef Sharks were detected in the array on up to 88 consecutive days (shark #3). Both geographic areas within Vamizi, Neptune’s Reef and the reef north of Vamizi Island, recorded many detections, but there were few connecting movements, showing that both are important aggregation sites.



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