

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

FUSHIFARU KANDU ISRA

Western Indian Ocean Region

SUMMARY

Fushifaru Kandu is located south of Fushifaru island on the northeastern side of Lhaviyani atoll, northern Maldives. This area is in a channel (locally known as Kandu) that connects the inner atoll lagoon to the open ocean and is characterised by strong tidal currents. In the entrance to the channel there is a submerged pinnacle reef. The area overlaps with Fushifaru Region Marine Protected Area. Within this area there are: **threatened species** (e.g., Blotched Fantail Ray *Taeniurops meyeri*); **feeding areas** (Reef Manta Ray *Mobula alfredi*); and **undefined aggregations** (e.g., Grey Reef Shark *Carcharhinus amblyrhynchos*).

CRITERIA

**Criterion A - Vulnerability; Sub-criterion C2 - Feeding Areas;
 Sub-criterion C5 - Undefined Aggregations**

MALDIVES

0-30 metres

1.14 km²





DESCRIPTION OF HABITAT

Fushifaru Kandu is located in the Maldives archipelago and sits centrally upon the Chagos-Laccadive Ridge (Stevens & Froman 2019). The area is located south of Fushifaru island on the northeastern side of Lhaviyani atoll (also known as Faadhippolhu atoll), in northern Maldives. Kandu is the local name for channel openings on the outer reef connecting the inner atoll lagoons to the open ocean. The area is a large, deep channel with a width of 0.7-1 km, and a sandy substrate. Around the corner of Fushifaru Kandu, depth is 8 m and drops towards the channel to 30 m (Godrey 2023). These channels are high current flow areas, and are hotspots for marine life, attracting large schools of planktivorous fishes and their predators (Stevens & Froman 2019). At the entrance of the channel stands a pinnacle reef called Fushifaru Thila. Thila is the local name for underwater pinnacles where the top of the reef is completely submerged, even during low tide. The top reef of Fushifaru Thila is 11 m and slopes down to 20 m.

This area experiences two major seasons. Namely, the southwest monsoon (May to October), which is characterised by strong southwesterly winds and higher rainfall, and the northeast monsoon (January to March), which is dominated by northeasterly winds and lower rainfall.

This area is located within the Fushifaru Region Marine Protected Area declared in 1995, which covers an area of 14 km².

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 30 m based on the bathymetry of the area.

ISRA CRITERIA

CRITERION A - VULNERABILITY

Four 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. 2020) and Spotted Eagle Ray (Finucci et al. submitted); and the Vulnerable Blotched Fantail Ray (Sherman et al. submitted) and Reef Manta Ray (Marshall et al. 2022).

SUB-CRITERION C2 - FEEDING AREAS

Fushifaru Kandu is an important feeding area for one ray species.

Reef Manta Rays aggregate to regularly and predictably feed on high abundances of zooplankton that concentrate in the area. Sightings of Reef Manta Rays in the area peak at the beginning of the northeast monsoon season (Manta Trust unpubl. data 2023). The area has been identified as one of four key aggregation areas within the Lhaviyani atoll with 771 Reef Manta Ray sightings (total of 220 individuals identified) recorded between 2004 and 2022. The maximum number of individuals recorded per diving survey was 27, and in 47 diving surveys more than four individuals have been sighted simultaneously. Since 2010, there have been 362 sightings of 143 Reef Manta Rays feeding in the area. This represents 31% of the total individuals identified in Lhaviyani Atoll (n = 465) (Manta Trust unpubl. data 2023).

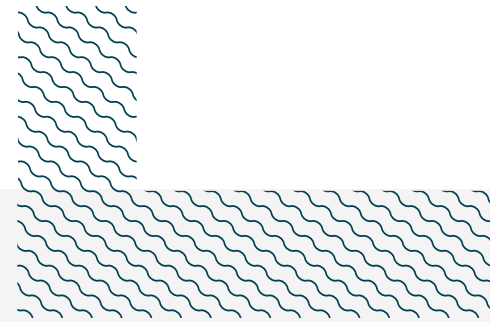
SUB-CRITERION C5 - UNDEFINED AGGREGATIONS

Fushifaru Kandu is an important area for undefined aggregations of one shark and two ray species.

The area holds the most important documented aggregation of Grey Reef Sharks in the Maldives. Data were collected from a citizen-science program known as the Sharkwatch project which was a government-led initiative run between 2009–2019 (Maldives Marine Research Institute [MMRI], unpubl. data 2023). Data were reported by experienced dive guides using the roving diver technique where surveyors can swim in any direction and count the number of individuals encountered by species during one-hour dive surveys. Forty-three dive surveys were conducted in 2017 and 2018 in which the average (and maximum) number of Grey Reef Sharks recorded were 50 (n = 133) and 100 (n = 111) per hour dive, respectively (Prodivers Dive Centre unpubl. data 2023). Sharks were recorded year-round. Fushifaru Kandu represents the highest average encounter rate (57 sharks/hour dive) of the ~1,110 sites surveyed in the Maldives (Maldives Marine Research Institute unpubl. data 2023). Between 2019 and 2023 (except for 2022), 19,224 sharks have been recorded in 894 of the 1,518 dive surveys (59% of all dive surveys). The yearly average number of sharks sighted per dive ranges from 17 in 2021 to 28 in 2019. The maximum number of sharks sighted per dive ranged from 80 to 250. Between 2019 and 2023, more than nine individuals have been sighted in 544 dive surveys (Prodivers Dive Centre unpubl. data 2023).

Spotted Eagle Rays aggregate year-round in the area (Prodivers Dive Centre unpubl. data 2023). Between January 2019 and August 2023, 6,940 rays were recorded during 945 of the 1,518 dive surveys (62% of all dive surveys). The yearly average number of rays sighted per dive ranges from four in 2019 to 11 in 2023. The maximum number of rays sighted per dive ranged from 20 in 2019 to 50 in 2023. Between January 2019 and August 2023, more than nine individuals were sighted per survey (during 272 dive surveys).

Blotched Fantail Rays are regularly sighted year-round in the area and individuals are often observed cleaning (Prodivers Dive Centre unpubl. data 2023). Between January 2019 and August 2023, 845 rays were recorded in 409 of the 1,518 dive surveys (27% of all dive surveys). The yearly average number of rays sighted per dive ranges from two in 2022 to three in 2023. The maximum number of rays sighted together per dive ranges from five in 2021 and 2022 to 20 in 2023. Between 2019 and 2023, in 29 dive surveys more than four individuals were sighted per survey.



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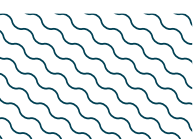
QUALIFYING SPECIES

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 amblyrhynchos</i>	Grey Reef Shark	EN	0-280	X							X		
RAYS													
<i>Aetobatus ocellatus</i>	Spotted Eagle Ray	EN	0-40	X							X		
<i>Mobula alfredi</i>	Reef Manta Ray	VU	0-432	X			X						
<i>Taeniurops meyeri</i>	Blotched Fantail Ray	VU	0-439	X							X		

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Carcharhinus albimarginatus</i>	Silvertip Shark	VU
<i>Carcharhinus melanopterus</i>	Blacktip Reef Shark	VU
<i>Galeocerdo cuvier</i>	Tiger Shark	NT
<i>Nebrius ferrugineus</i>	Tawny Nurse Shark	VU
<i>Negaprion acutidens</i>	Sharptooth Lemon Shark	EN
<i>Sphyrna lewini</i>	Scalloped Hammerhead	CR
<i>Triacnodon obesus</i>	Whitetip Reef Shark	VU
RAYS		
<i>Pastinachus sephen</i>	Cowtail Ray	NT
<i>Pateobatis fai</i>	Pink Whipray	VU
<i>Rhina ancylostomus</i>	Bowmouth Guitarfish	CR
<i>Urogymnus asperrimus</i>	Porcupine Ray	EN
<i>Urogymnus granulatus</i>	Mangrove Whipray	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.





REFERENCES

Finucci B, Rigby C, Armstrong A, Rezaie-Atagholipour M. Submitted. *Aetobatus ocellatus*. *The IUCN Red List of Threatened Species 2023*.

Godrey T, ed. 2023. *Dive Maldives: a guide to the Maldives Archipelago, fourth edition*. Cairns: Atoll Editions.

Marshall A, Barreto R, Carlson J, Fernando D, Fordham S, Francis MP, Herman K, Jabado RW, Liu KM, Pacoureau N, et al. 2022. *Mobula alfredi* (amended version of 2019 assessment). *The IUCN Red List of Threatened Species 2022*: e.T195459A214395983. <https://dx.doi.org/10.2305/IUCN.UK.2022-1.RLTS.T195459A214395983.en>

Sherman S, Bennett R, Charles R, Haque AB, Jabado RW, Simpfendorfer C, Van Beuningen D. Submitted. *Taeniurops meyeri*. *The IUCN Red List of Threatened Species 2023*.

Simpfendorfer C, Fahmi, Bin Ali A, D, Utzurrum JAT, Seyha L, Maung A, Bineesh KK, Yuneni RR, Sianipar A, et al. 2020. *Carcharhinus amblyrhynchos*. *The IUCN Red List of Threatened Species 2020*: e.T39365A173433550. <https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T39365A173433550.en>

Stevens GM, Froman N. 2019. The Maldives Archipelago. In: Sheppard C, ed. *World seas: An environmental evaluation*, second edition. London: Academic Press, 211-236. <https://doi.org/10.1016/B978-0-08-100853-9.00010-5>