

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

DERAWAN ISLANDS ISRA

Asia Region

SUMMARY

Derawan Islands is located off northeast Kalimantan, Borneo, in Indonesia. The area is characterised by sloping and flat reefs, sandy patches, and pelagic waters. It is influenced by the Indonesian Throughflow, the Berau River adding sediment and nutrients, and by strong tidal currents. The area overlaps with the Sulu-Sulawesi Marine Ecoregion Ecologically or Biologically Significant Marine Area and the Derawan Islands and Surrounding Waters Marine Protected Area. Within this area there are: **threatened species** (e.g., Pelagic Thresher *Alopias pelagicus*); **reproductive areas** (Reef Manta Ray *Mobula alfredi*); **feeding areas** (Reef Manta Ray); **resting areas** (Indo-Pacific Leopard Shark *Stegostoma tigrinum*); **undefined aggregations** (Reef Manta Rays); and **areas with distinctive attributes** (Pelagic Thresher).

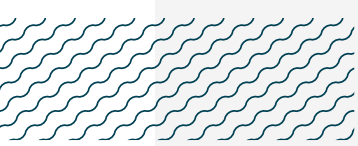
CRITERIA

Criterion A - Vulnerability; Sub-criterion C1 - Reproductive Areas; Sub-criterion C2 - Feeding Areas; Sub-criterion C3 - Resting Areas; Sub-criterion C5 - Undefined Aggregations; Sub-Criterion D1 - Distinctiveness

— INDONESIA —

— 0-40 metres —

— 9.68 km² —





DESCRIPTION OF HABITAT

Derawan Islands is located off the coast of East Kalimantan, Borneo, in the western part of the Makassar Strait in Indonesia. The area comprises several islands and their surrounding reefs: Sangalaki, Kakaban, and Maratua. Habitats are characterised by coral reefs, shallow sandy lagoons, reef walls, and pelagic waters.

Derawan Islands is influenced by the Indonesian Throughflow that connects the Pacific to the Indian Ocean and flows through the Makassar Strait (Wouthuyzen et al. 2023). The Berau River also influences this area, adding large amounts of nutrients and sediment into the coastal waters (Tarya et al. 2015). Locally, tidal currents affect the reefs, including the surveyed dive sites in Sangalaki: Manta Parade, Manta Run, Manta Tease, and Mountain Coral (Marine Megafauna Foundation unpubl. data 2023). Here, currents during rising tides (westward current) contribute to increased plankton accumulation in the current line, particularly around new and full moon when tidal currents are strongest (Scuba Junkies Sangalaki pers. comm. 2023).

The area overlaps with the Sulu-Sulawesi Marine Ecoregion Ecologically or Biologically Significant Marine Area (EBSA; CBD 2024) and the Derawan Islands and Surrounding Waters Marine Protected Area.

This Important Shark and Ray Area is benthopelagic and extends from inshore and surface waters (0 m) to 40 m based on the observations of Qualifying Species and the bathymetry of the area.

ISRA CRITERIA

CRITERION A – VULNERABILITY

Three Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occur in the area. These are the Endangered Pelagic Thresher (Rigby et al. 2019) and Indo-Pacific Leopard Shark (Dudgeon et al. 2019), and the Vulnerable Reef Manta Ray (Marshall et al. 2022).

SUB-CRITERION C₁ – REPRODUCTIVE AREAS

Derawan Islands is an important reproductive area for one ray species.

Dive surveys (n = 111) from October to December 2017–2019 were conducted to photo-identify Reef Manta Rays in the area (Marine Megafauna Foundation unpubl. data 2023). Surveys included four sites around Sangalaki Island: Manta Parade, Manta Run, Manta Tease, and Mountain Coral. A total of 155 individual Reef Manta Rays were identified from 846 encounters. They had an even sex ratio with 43.8% (n = 68) females, 44.5% (n = 69) males, and 11.6% (n = 18) did not have their sex identified. A third of females were either pregnant (n = 18) with a visibly distended abdomen and/or had mating scars indicative of recent mating (n = 4). Pregnant Reef Manta Rays (2018, n = 15; 2019, n = 6) included three individuals that were pregnant in consecutive years, showing the regular use of this area. This is the only known site in east Borneo where pregnant Reef Manta Rays regularly occur. They likely frequent the area due to the close proximity of cleaning stations and feeding areas, meaning they can conserve energy from travelling and spend it on foetal development.

SUB-CRITERION C₂ – FEEDING AREAS

Derawan Islands is an important feeding area for one ray species.

From all 846 encounters with Reef Manta Rays during the 111 surveys in 2017–2019, 52% were of feeding and foraging individuals (Marine Megafauna Foundation unpubl. data 2023). Of all behaviours, surface feeding was the most commonly recorded (46.7%). Most feeding events were recorded off the northern part of Sangalaki Island, with 65% at Manta Parade in the north-northeast and 30% at Manta Run in the north-northwest (Marine Megafauna Foundation unpubl. data 2023). Reef Manta Rays have not been seen feeding at any other sites in east Borneo, highlighting the importance of this area for the species. A total of 34 feeding aggregations of up to 42 Reef Manta Rays (mean = 9.6) have been observed during the surveys. Currents during rising tides (westward current) are likely to contribute to increased plankton accumulation in the current line (Scuba Junkies Sangalaki pers. comm. 2023), leading to favourable feeding conditions.

SUB-CRITERION C₃ – RESTING AREAS

Derawan Islands is an important resting area for one shark species.

Reports from dive operators show that an area in the eastern part of the Maratua Atoll is an important resting site for Indo-Pacific Leopard Sharks (I Gunawan pers. obs. 2024). Between 2019–2023, this dive site has been regularly visited by operators with at least one visit per week. Dive leaders report that they see 2–3 Indo-Pacific Leopard Sharks resting together in the sandy substrate of the reef on ~70% of the dives. Sharks are very rarely observed swimming over the reef, usually only when a diver gets too close. This resting behaviour is rarely observed at other dive sites in the archipelago. Derawan Islands is one of the few areas in Indonesia where the species is still regularly observed, and this resting area, compared to other areas in the archipelago, plays an important role during the day for this nocturnal forager (Dudgeon et al. 2008).

SUB-CRITERION C₅ – UNDEFINED AGGREGATIONS

Derawan Islands is an important area for undefined aggregations of one ray species.

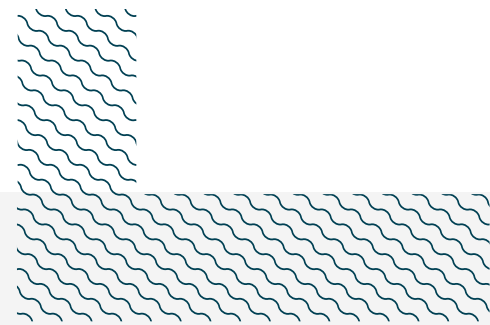
Reef Manta Rays were observed engaging in cleaning behaviour in 11% of 846 encounters during 111 dive surveys (Marine Megafauna Foundation unpubl. data 2023). The majority of cleaning behaviour was observed at two prominent coral outcrops, Mountain Coral (34.1%, n = 31) and Manta Parade (42.9%, n = 39) in the north-northeast of the island, although cleaning behaviour were also seen at Manta Tease (8.8%) and Manta Run (2.2%). These are the only known cleaning stations for Reef Manta Rays in east Borneo, with 123 photo-identified individuals observed feeding and cleaning in this area. Cleaning is an important behaviour for this species. Apart from the physical/health benefit, cleaning stations are also important locations for social interactions for Reef Manta Rays (Perryman et al. 2019).

SUB-CRITERION D₁ – DISTINCTIVENESS

Derawan Islands is a distinct area for one shark species.

There are three cleaning stations for Pelagic Threshers in this area, with two located off Maratua Island and one off Kakaban Island (I Gunawan pers. obs. 2024). During cleaning, 1–2 individuals are observed slowly circling an area of the reef while cleaner fishes (Pennant Coral Fish *Heniochus*

acuminatus, Yellow-speckled Chromis *Chromis alpha*, Yellow-axis Chromis *C. xanthochira*, and Bicolour Cleanerfish *Labroides bicolor*) presumably pick off dead skin and skin parasites. This behaviour was first observed in the area in 2015. Between 2019-2024, the observation effort has significantly increased (>200 dives in total). Pelagic Threshers most regularly use the cleaning station off the southern tip of Kakaban Island, with an estimated 70% success rate of observing the cleaning behaviour during the morning dive (~7 am) (I Gunawan pers. obs. 2024). Early morning cleaning behaviour is similar to what has been reported from Malapascua Island in the Philippines (Oliver et al. 2011). While the encounter rate in the cleaning stations off Maratua Island is lower than that off Kakaban Island, Pelagic Threshers are mostly seen in the afternoon (after 3 pm) and particularly during the rising tide at this location. Cleaning during the rising tide, when currents are strongest, may help the sharks to more easily hover over the cleaning station, similar to what is observed for other species at several cleaning stations in the northern Great Barrier Reef, Australia (O'Shea et al. 2010). All three cleaning stations are located at 30-38 m depth and are in close proximity to each other so that individuals may use the different sites at different times of day. This is one of few known sites globally where Pelagic Threshers regularly clean.



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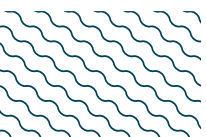
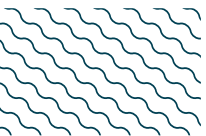
QUALIFYING SPECIES

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>Alopias pelagicus</i>	Pelagic Thresher	EN	0-584	X								X	
<i>Stegostoma tigrinum</i>	Indo-Pacific Leopard Shark	EN	0-62	X				X					
RAYs													
<i>Mobula alfredi</i>	Reef Manta Ray	VU	0-711	X		X	X				X		

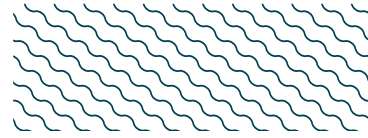
SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Carcharhinus melanopterus</i>	Blacktip Reef Shark	VU
<i>Rhincodon typus</i>	Whale Shark	EN
<i>Sphyrna lewini</i>	Scalloped Hammerhead	CR
<i>Triaenodon obesus</i>	Whitetip Reef Shark	VU
RAYS		
<i>Mobula birostris</i>	Oceanic Manta 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.



SUPPORTING INFORMATION



Derawan Islands may be an important feeding area for Whale Sharks.

Whale Sharks are observed seasonally between May–October in nearby Talisayan and between November–February near Derawan Island. Whale Sharks in both locations migrate locally based on photo-identification. They are usually seen around *bagan* fishing platforms. Anecdotally, Whale Sharks previously ate what the target fishes eat, such as zooplankton or smaller fishes (e.g., anchovy). *Bagan* fishers now often (58%) capture anchovies. While *bagan* fishing started in 2012–2013, Whale Sharks have anecdotally been reported since 1980s–1990s, presumably due to the abundance of anchovy and shrimp, but it is unclear whether they still naturally feed in the area outside the *bagan* operations.



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