

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

## HOLMES REEFS ISRA

### Australia and Southeast Indian Ocean Region

#### SUMMARY

Holmes Reefs is located in the Coral Sea off Queensland, Australia. It is situated ~230 km east of Cairns. This split area comprises two sections, one each on the eastern and western Holmes Reef. The two sections are separated by ~15 km and a ~600 m deep channel. The habitat is characterised by pelagic waters, coral reef slopes, and insular shelf slopes. The area is influenced by the South Equatorial Current and the East Australian Current, seasonal trade winds, and tidal currents through the reef channels. Within this area there are: **threatened species** and **undefined aggregations** (Grey Reef Shark *Carcharhinus amblyrhynchos*).

#### CRITERIA

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

— AUSTRALIA —

— 0-280 metres —

— 12.55 km<sup>2</sup> —





## DESCRIPTION OF HABITAT

Holmes Reefs is located in the Coral Sea off Queensland, Australia. It is situated ~230 km east of Cairns. This split area comprises two small parts of a larger reef system that rises as an escarpment from the >1,000 m deep western Queensland Plateau. Two separate atolls have steep slopes and lagoons and are separated by depths of >600 m (Leis 1994). The two parts of this area are both located at a pass where the atoll rim is broken. The eastern part of the area is at the northwestern corner of the eastern atoll. It sits at the edge of a large entrance into the central lagoon. The western part of the area is ~15 km away in the central southern section of the western atoll. It sits at a narrow pass between two reefs. The habitat is characterised by pelagic waters, a shallow coral reef slope, and insular shelf slopes (Bridge et al. 2019).

The area is influenced by tides and wind (Leis 1994). Strong trade winds drive a northerly surface flow during the austral winter from June to September, while in summer, winds are relatively weak (Choukroun et al. 2010). The area is also influenced by the South Equatorial Current and the southward flowing East Australian Current (Choukroun et al. 2010). Tides influence the local flow within the area.

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

## 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 Endangered Grey Reef Shark (Simpfendorfer et al. 2020).

### SUB-CRITERION C<sub>5</sub> – UNDEFINED AGGREGATIONS

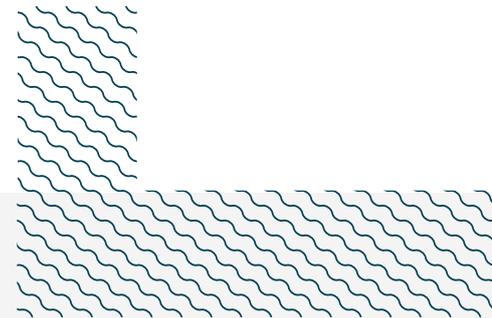
Holmes Reefs is an important area for undefined aggregations of one shark species.

Passive acoustic telemetry data show that Grey Reef Sharks regularly aggregate in this area (N Lubitz et al. unpubl. data 2025). A total of 19 Grey Reef Sharks tagged with acoustic transmitters were detected on the wider Holmes Reefs array, with 16 individuals recorded on the receivers within this area between February 2021 and October 2024. Aggregations were defined as three or more tagged individuals detected on a receiver within five minutes. The approximate range in which receivers detect tagged sharks 100% of the time on Coral Sea reefs is ~400 m (Barnett et al. 2012). Aggregations in consecutive five-minute bins were grouped into an event and its duration was calculated.

There were ~650,000 detections recorded at Holmes Reefs, but two receivers had few detections (1% and 1.2%, respectively) and these were excluded. The remaining two receiver locations were used to define the boundary of the area. There were 27,588 five-minute bins with aggregations recorded within the area, grouped into 9,121 aggregation events that lasted between 0.2–339 min (mean = 13.7 min). Aggregations comprised 3–5 individuals (mean = 3.2 individuals) or 19–31% of the 16 tagged Grey Reef Sharks that were detected in this area. There was a seasonal signal, with more aggregations and aggregation events persisting longer during March–July. Most aggregations were recorded between 7:00–13:00 (51%), with fewer records at night (28.5%). While aggregations were recorded in both

sections of this area, they were more numerous in the narrow pass between two reefs in the western section, although receiver coverage also lasted longer there (N Lubitz et al. unpubl. data 2025). Combined, the data show that specific locations (i.e., this area) at this large offshore reef regularly host aggregations of Grey Reef Sharks that last up to ~5.5 h. Only 6 of 81 Grey Reef Sharks tagged in the broader Coral Sea region (Holmes Reefs, Osprey Reef, Flinders Reefs, Bougainville Reef) were detected at multiple reefs, highlighting their high residency and site fidelity, and the individual importance of each reef (N Lubitz et al. unpubl. data 2025).

Additionally, a community-led underwater visual count survey of sharks on Coral Sea reefs conducted in December 2007 recorded most Grey Reef Sharks at Holmes Reefs, with 127 individuals counted in 8 h of surveying (Smith et al. 2008). The survey was a stationary point count that used flashers and berley to attract sharks to the observer. Most Grey Reef Sharks were seen at Holmes Reef (i.e., eastern reef; 102 sharks in 5 h) compared to the western reef (25 sharks in 3 h). Observers also noted the smallest individuals of ~50 cm total length on the eastern reef, indicating that it may be important for the reproduction of the species. More information is required to understand the nature and function of these aggregations.



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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	D2	
<b>SHARKS</b>													
<i>Carcharhinus amblyrhynchos</i>	Grey Reef Shark	EN	0-280	X							X		

## SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
<b>SHARKS</b>		
<i>Carcharhinus albimarginatus</i>	Silvertip Shark	VU
<i>Triaenodon obesus</i>	Whitetip Reef Shark	VU

*IUCN Red List of Threatened Species Categories are available by searching species names at [www.iucnredlist.org](http://www.iucnredlist.org) Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient.*





## REFERENCES

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