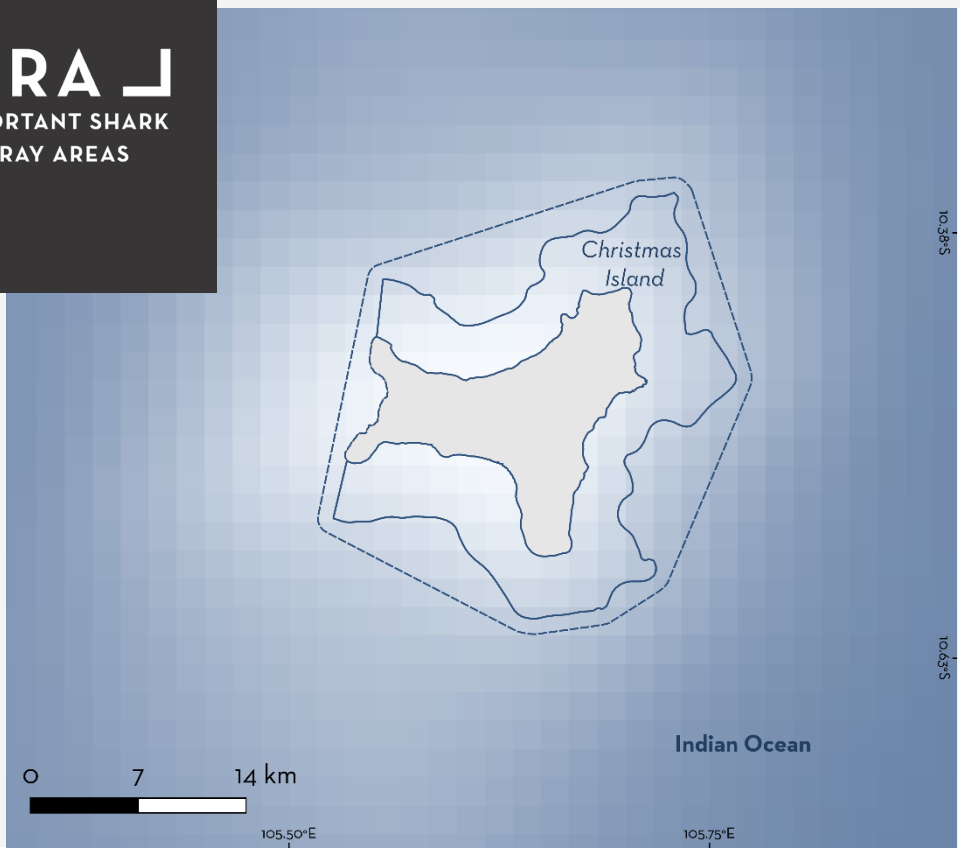
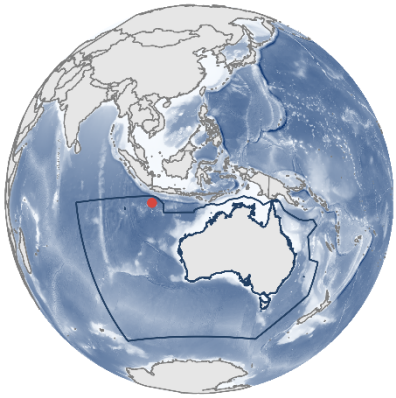
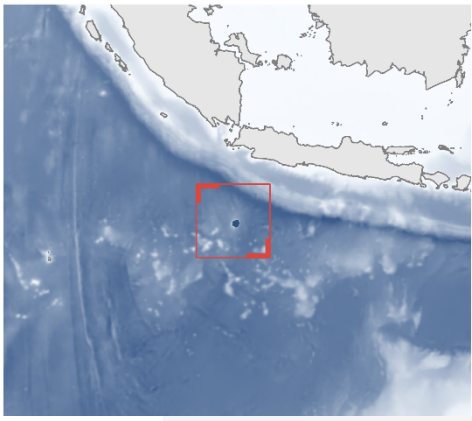
ISRA
IMPORTANT SHARK AND RAY AREAS







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

CHRISTMAS ISLAND ISRA

Australia and Southeast Indian Ocean Region

AUSTRALIA

0–1,250 metres

261.3 km²

SUMMARY

Christmas Island is located in the eastern Indian Ocean. It encompasses the surrounding waters of Christmas Island, an external territory of Australia. The area is characterised by pelagic waters over hard corals, several reef flats, and a steep drop-off. The area is influenced by the South Equatorial Current and the southeast trade winds. Within this area there are: **threatened species** and important **feeding areas** (Whale Shark *Rhincodon typus*).

CRITERIA

Criterion A – Vulnerability; Sub-criterion C2 – Feeding Areas

DESCRIPTION OF HABITAT

Christmas Island is located in the eastern Indian Ocean. It encompasses the surrounding waters of Christmas Island, an external territory of Australia. This isolated island sits along a chain of seamounts 1,500 km to the northwest of the Australian mainland. The area is characterised by pelagic waters over hard corals and several reef flats that are 10–100 m wide at 10–15 m depth and 40–60 m depth, and a steep drop-off that descends rapidly (Brewer et al. 2009). The area experiences calm waters in the northern part as it is sheltered from currents and the southeast trade winds for most of the year. However, strong currents are present in the northeast and northwest tips of the island (Brewer et al. 2009).

The area is influenced by a peak in productivity during September–October, when the South Equatorial Current is flowing strongest at the end of the southeast trade wind season (1.9 ml plankton/m^3). The productivity is low during the rest of the year with very little surface plankton (<0.1 ml plankton/m^3; Davies & Beckley 2010). However, annual Red Crab *Gecarcoidea natalis* spawning events result in a marked peak in prey availability within the surrounding waters. Between November–January, 15–20 million Red Crabs migrate from the forest to the shoreline to spawn, with females releasing up to 100,000 eggs each into nearshore waters, amounting to as many as 1.5 trillion eggs per season (Adamczewska & Morris 2001). The crab larvae develop into megalopae over about a month before returning to the island (Hicks 1985). The sea surface temperature ranges from 25–30°C (Brewer et al. 2009).

The Important Shark and Ray Area is pelagic and is delineated from inshore and surface waters (0 m) to a depth of 1,250 m based on the bathymetry of 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 Endangered Whale Shark (Pierce et al. 2025).

SUB-CRITERION C2 – FEEDING AREAS

Christmas Island is an important feeding area for one shark species.

Seasonal aggregations of juvenile Whale Sharks feeding on Red Crab larvae and mysids occur in the area in the austral summer (Wilson et al. 2001; Hobbs et al. 2009; Meekan et al. 2009; C Bray pers. obs. 2019; BM Norman pers. obs. 2025). Between 1994–2025, both opportunistic and year-round observations (1994–1995 and 2007–2008) were conducted in the area (Norman 1999; Hobbs et al. 2009; Meekan et al. 2009; C Bray pers. obs. 2019; BM Norman pers. obs. 2025). Additionally, in 1996 a plankton tow (333 nm mesh) was conducted and in 2008 a single opportunistic Whale Shark faecal sample was collected and analysed using genetic techniques (PCR and rDNA amplification) to determinate prey species within the sample (Meekan et al. 2009).

Despite patchy records and surveys from the area, there is strong evidence to indicate that Whale Sharks are regularly and predictably using the waters around Christmas Island to feed. Between November 1994–May 1995, a total of 128 Whale Shark observations were recorded in the area (Norman 1999). Between 1996–2008, Whale Sharks were observed aggregating near the surface

along the edge of the reef drop-off within the area, with >90% of records observed between November to March (Hobbs et al. 2009; Meekan et al. 2009). Between November 2007–April 2008, the size of 82 Whale Sharks was visually estimated with total length (TL) ranging between 250–800 cm TL (mean = 460 cm TL), with a sex ratio of 1:3.3 male:female for 13 individuals (Hobbs et al. 2009). Size-at-maturity ranges between 800–900 cm TL (Dove & Pierce 2021), indicating that these individuals were all immature. Whale Sharks were observed feeding horizontally and vertically, up to 74 days after the Red Crab mass spawning event (Hobbs et al. 2009). Between 2010–2025, a total of 151 observations of Whale Sharks in the area were recorded, mainly concentrated between the months of November–January (Sharkbook 2025; BM Norman unpubl. data 2025). Feeding behaviour is frequently observed but not always recorded (Sharkbook 2025). However, several records of feeding aggregations have been documented between 2012–2023. In November 2012, a total of four Whale Sharks were observed aggregating while feeding at the surface within the area (James 2012). In December 2019, an aggregation of 20 individuals feeding on mysids was recorded at nighttime, with individuals ranging from 300–700 cm TL (C Bray pers. obs. 2019). Finally, in 2023 four Whale Sharks were satellite tagged in the area while feeding at night (ECOCEAN Inc unpubl. data 2025).

The diet of Whale Sharks in the area was inferred from a plankton tow conducted in January 1996 in front of an individual feeding on a dense mysid patch, showing the presence of *Anisomysis spinata* (Norman 1999). Additionally, genetic analysis of a faecal sample confirmed that the sampled individual had been feeding on Red Crabs in the area (Meekan et al. 2009). The spawning period of Red Crabs in conjunction with other zooplankton and with fish species spawning during summer in the area coincides with the seasonal arrival and aggregations of Whale Sharks (Wilson et al. 2001; Hobbs et al. 2009; Meekan et al. 2009; BM Norman unpub. data 2019). This is further supported by several satellite-tagged Whale Sharks migrating through Christmas Island (Brewer et al. 2009; Bignell et al. 2025).

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We acknowledge the Traditional Owners of Country throughout Australia and recognise the continuing connection to land, waters, and culture. We pay our respects to Elders past, present, and emerging.

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QUALIFYING SPECIES

Scientific Name	Common Name	IUCN Red List Category/ EPBC Act	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met								
				A	B	C1	C2	C3	C4	C5	D1	D2
SHARKS												
Rhincodon typus	Whale Shark	EN/VU	0–1,928	X			X					

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
Carcharhinus amblyrhynchos	Grey Reef Shark	EN
Carcharhinus falciformis	Silky Shark	VU
Galeocerdo cuvier	Tiger Shark	NT
Hexanchus griseus	Bluntnose Sixgill Shark	NT
RAYS		
Mobula birostris	Oceanic Manta Ray	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.

Australian Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) categories are available at: https://www.dcceew.gov.au/environment/epbc/our-role/approved-lists Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; CD, Conservation Dependent.

SUPPORTING INFORMATION

There are additional indications that Christmas Island is a potential aggregation area for one shark species.

In November 2012, an aggregation of 30–40 Silky Sharks was observed alongside four Whale Sharks feeding at the surface (James 2012). The Silky Sharks were lifting out of the water as they swam over the heads of the Whale Sharks, while feeding on the spilling over fishes (James 2012). Further information is needed to determine the importance of this area for such aggregations.

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