

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. Buffers for freshwater areas are determined based on hydroBASINS to capture watershed boundaries.

HASTINGS RIVER ISRA

Australia and Southeast Indian Ocean Region

SUMMARY

Hastings River is located in Port Macquarie on the mid-north coast of New South Wales, Australia. The area comprises the lower reaches of the river, including the river mouth. The habitat is characterised by sandy substrates, mangroves, and urban and agricultural riverbanks. It is influenced by tidal water movement and by freshwater and sediment input from the river. Within this area there are: **threatened species** and **reproductive areas** (Bull Shark *Carcharhinus leucas*).

CRITERIA

Criterion A - Vulnerability; Sub-criterion C1 - Reproductive Areas

— AUSTRALIA —

— 0-10 metres —

— 24.88 km² —





DESCRIPTION OF HABITAT

Hastings River is located in Port Macquarie on the mid-north coast of New South Wales, Australia. The area comprises the lower reaches of the Hastings River, including the river mouth. The river drains a catchment of 3,700 km² and receives an annual rainfall of ~1,500 mm with a peak from December–May (NSW Government 2006). The habitat is characterised by sandy substrates, mangroves, and urbanised and agricultural riverbanks.

The area is influenced by freshwater and sediment input from the river, and by tidal saltwater intrusions. The tidal limit is just upstream of the area boundary, ~32 km from the river mouth, leading to a gradient in salinity levels in this area (Hastings Estuary Management Committee 2001). Water turbidity increases during high rainfall events and is also influenced by wind-driven waves (Hastings Estuary Management Committee 2001).

This Important Shark and Ray Area is benthic and pelagic and is delineated from inshore and surface waters (0 m) to 10 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 Vulnerable Bull Shark (Rigby et al. 2021).

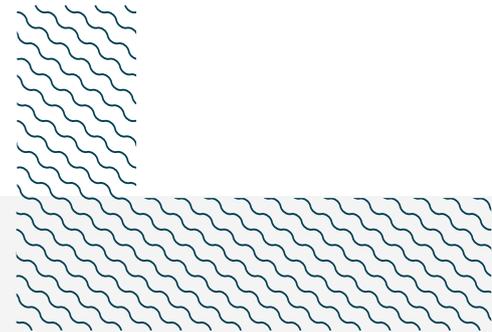
SUB-CRITERION C₁ – REPRODUCTIVE AREAS

Hastings River is an important reproductive area for one shark species.

Neonate and young-of-the-year (YOY) Bull Sharks are regularly encountered in this area (N Lubitz unpubl. data 2025). A research study using rod-and-line captured and released 16 individuals on two survey days each in January 2022 and January 2024 (N Lubitz unpubl. data 2025). The total length (TL) was measured and the presence of an umbilical scar recorded. Captured sharks included nine females, six males, and one for which the sex was not recorded. Most of the captures were neonates (n = 12; 75%) ranging 60–81 cm TL. The remaining four individuals were YOY (25%) ranging from 82–93 cm TL. Almost all individuals (n = 13) had a visible umbilical scar (open or healed). The size-at-birth for the species is 56–81 cm TL and YOY can be up to 99 cm TL (Pillans et al. 2020; Ebert et al. 2021). Additionally, Bull Sharks captured by recreational fishers are regularly reported on social media, including captures of pregnant sharks. Fishers often capture several individuals on a trip, particularly during the night. Many of the records were from January, indicating a seasonal peak in abundance during the austral summer. Fishers regularly capture juveniles >100 cm TL.

Bull Sharks in eastern Australia remain in river and estuary habitats for up to five years (Werry et al. 2011; Niella et al. 2022), highlighting that juveniles, in addition to neonates and YOY, are still largely restricted to the area, with the larger juveniles potentially making some movements into adjacent marine waters (Smoothey et al. 2023). Although there are other rivers on the New South Wales coast that also regularly host small Bull Sharks, these river systems are individually important. Bull Sharks in Australia display natal philopatry, with females returning to particular river systems to pup (Tillett et al. 2012; Lubitz 2023). For example, half-sibling pairs were found within a river on Australia's east coast up to seven cohorts apart, highlighting the long-term natal philopatry of females (Lubitz 2023).

Therefore, individual rivers in this region represent discrete portions of habitat that are important to Bull Sharks.



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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	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met									
				A	B	C1	C2	C3	C4	C5	D1	D2	
SHARKS													
<i>Carcharhinus leucas</i>	Bull Shark	VU	0-256	X		X							

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.



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