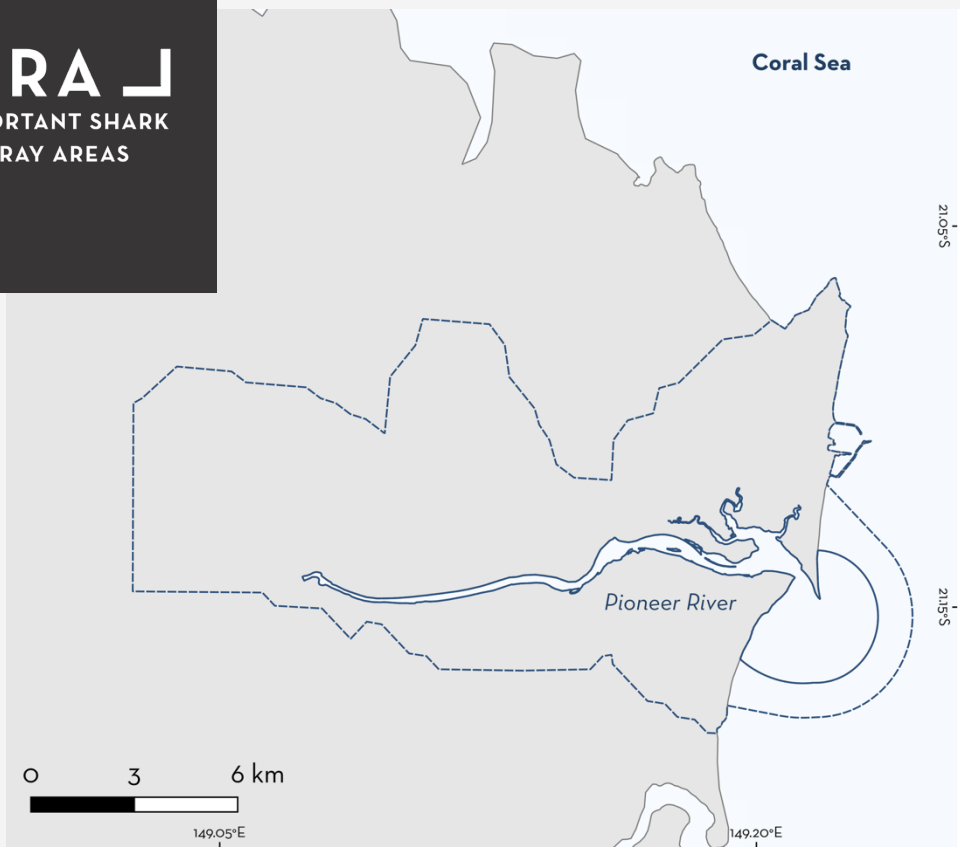
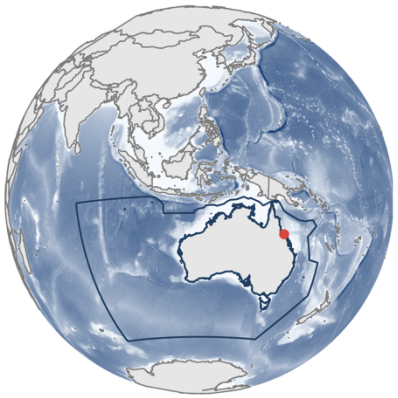
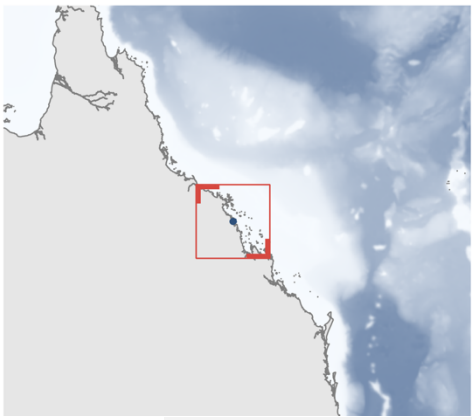
ISRA
IMPORTANT SHARK AND RAY AREAS







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

PIONEER RIVER ISRA

Australia and Southeast Indian Ocean Region

AUSTRALIA

0–15 metres

15.87 km²

SUMMARY

Pioneer River is located in Mackay, north Queensland, Australia. The area comprises the lower reaches of the Pioneer River, from Dumbelton Weir, ~16 km upstream, to the river mouth. The habitat is characterised by mangroves, intertidal sand flats, engineered rock walls, and urban and agricultural land adjoining the riverbank. The area is influenced by a large tidal amplitude with saltwater intrusion influencing all of the area, by storm surges in the lower part of the estuary, by seasonally higher rainfall in December–March, and by occasional flooding due to extreme rainfall events. Within this area there are: **threatened species** and **reproductive areas** (Bull Shark *Carcharhinus leucas*).

CRITERIA

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

DESCRIPTION OF HABITAT

Pioneer River is located in north Queensland, Australia. The area extends from the river mouth to Dumbelton Weir, ~16 km upstream. The Pioneer River drains a catchment of ~1,500 km^2 and enters the Coral Sea in the city of Mackay (Bradley et al. 2023). The habitat in this area is characterised by mangroves, intertidal sand flats, engineered rock walls, and urban and agricultural land adjoining the riverbank (Bradley et al. 2023).

The area is influenced by large tides with an amplitude of up to 6 m, leading to saltwater intrusion up to Dumbelton Weir at the upstream boundary (Bradley et al. 2023). It also experiences storm surges in the lower estuary. The river inputs freshwater and sediment, with a tropical climate and seasonally higher flow during the austral summer from December–March (Bradley et al. 2023). It is also influenced by floods from extreme rain events, with the river rising rapidly with heavy rainfall.

This Important Shark and Ray Area is benthic and pelagic and is delineated from inshore and surface waters (0 m) to 15 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

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

Neonate, young-of-the-year (YOY), and juvenile Bull Sharks are regularly observed in this area (Lubitz 2023; N Lubitz unpubl. data 2025). A research study captured and released 23 Bull Sharks in this area using rod-and-line during seven survey days in October and December 2021, February 2022, December 2023, and February and December 2024. Up to six individuals were captured within one hour on a single survey day, demonstrating their high abundance despite low survey effort. Total length (TL) was measured and used to determine the life-stage.

Captured Bull Sharks comprised nine females, 13 males, and one shark for which the sex was not determined (N Lubitz unpubl. data 2025). They ranged in size from 75–174 cm TL. Nine individuals were neonates (39% of the total) ranging from 75–81 cm TL, and eight sharks were YOY (35%) ranging from 82–95 cm TL. 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). The remaining six individuals were juveniles ranging 117–174 cm TL. Small Bull Sharks in eastern Australia remain in river and estuary habitats for up to five years (Werry et al. 2011), highlighting that at least the four small juveniles (<150 cm TL), in addition to the neonates and YOY, were also still constrained to this area. The two larger juveniles may also use coastal marine waters at this size. The species is also regularly captured by recreational fishers and reported on social media. Combined, this information shows that Pioneer River is an important area for the early life-stage Bull Sharks. Although the area is located only ~100 km south of the Proserpine River, which also hosts important habitat for young 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.

Acknowledgments

Nicolas Lubitz (Biopixel Oceans Foundation; James Cook University) and Christoph A Rohner (IUCN SSC Shark Specialist Group – ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2025 ISRA Region 08 – Australia and Southeast Indian Ocean workshop for their contributions to this process.

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												
Carcharhinus leucas	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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