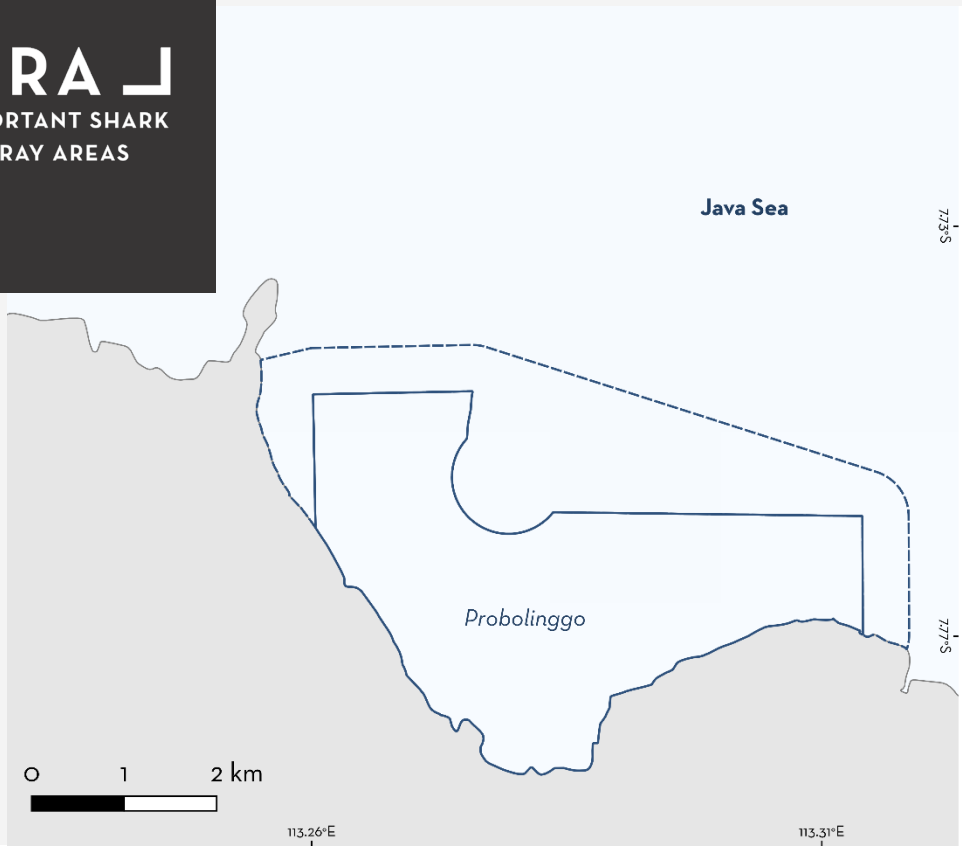
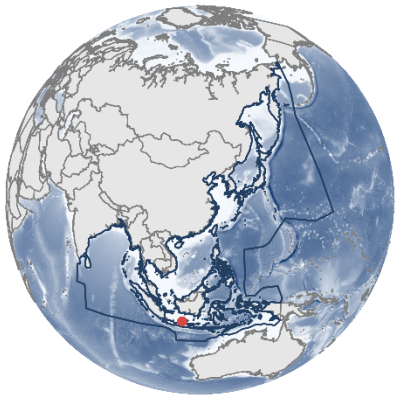
ISRA
IMPORTANT SHARK AND RAY AREAS





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

PROBOLINGGO ISRA

Asia Region

INDONESIA

0–20 metres

12.25 km²

SUMMARY

Probolinggo is situated in the Madura Strait on the north coast of Java, Indonesia. It is characterised by shallow turbid waters fringed with mangrove forests. The area overlaps with the Kawasan Konservasi Daerah Probolinggo protected area. Within the area there are: **threatened species** and **undefined aggregations** (Whale Shark *Rhincodon typus*).

CRITERIA

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

DESCRIPTION OF HABITAT

Probolinggo is situated in the Madura Strait on the north coast of Java, Indonesia. It is characterised by shallow turbid waters fringed with mangrove forests. Freshwater input originates through the Banger River estuary (Putri et al. 2022). The waters of Probolinggo are characterised by oceanographic features including sea surface temperature which ranges from 28.2–31.3°C, salinity between 23–31 ppt, and high chlorophyll-α levels (0–4 mg/m^3) (Wulandari et al. 2018).

This area overlaps partially with the Kawasan Konservasi Daerah (KKD) Probolinggo regional marine protected area (SIDAKO 2024).

This Important Shark and Ray Area is delineated from inshore and surface waters to a depth of 20 m based on the bathymetry of the area and observations of the Qualifying Species in the area.

ISRA CRITERIA

CRITERION A – VULNERABILITY

The one Qualifying Species within the area is considered threatened with extinction according to the IUCN Red List of Threatened Species. The Whale Shark is assessed as Endangered (Pierce & Norman 2016).

SUB-CRITERION C5 – UNDEFINED AGGREGATIONS

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

Regular and predictable Whale Shark aggregations have been reported in this area based on visual census (Kamal et al. 2016; BPSPL Denpasar unpubl. data 2024). During 2021–2022, Whale Sharks were observed at the water surface from dedicated observers aboard motorboats. There were 55 observations of aggregations (i.e., two or more individuals at a time; 383 individuals in total, based on photo-identification). Of these 55 observations, 28 were of three or more animals together. The estimated mean Whale Shark aggregation size was 5.54 individuals, with a maximum of 11 individuals sighted together. Whale Sharks are present seasonally in the coastal waters of the area, from December to May (BPSPL Denpasar unpubl. data 2024) but are most frequently observed in February and move from west to east of this area from January to March (Syah et al. 2018). The highest cumulative monthly sighting of Whale Sharks was 196 individuals in February 2022 (BPSPL Denpasar unpubl. data 2024). Whale Sharks may be aggregating in this area for feeding purposes. Their presence appears to be significantly influenced by the availability of food (0.5–0.9 mg/m^3 plankton), and sea surface temperature (29–30°C). The high abundance of Whale Sharks (maximum of 14 individuals observed in one day) in the area in 2016 was thought to be driven by feeding (Kamal et al. 2016). The wind-driven oceanographic conditions cause food to be in high abundance (Kamal et al. 2016) and the occurrence of this species nearby to the area is positively correlated with copepods and fish larvae (Kamal et al. 2020). Further information is required to determine the nature and function of these aggregations.

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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												
Rhincodon typus	Whale Shark	EN	0–1,928	X						X		

REFERENCES

Conservation Database System (SIDAKO). 2024. KKD Probolinggo, Available at: https://sidakokkhl.kkp.go.id/sidako/kawasan-konservasi-perairan/429?key=-7.74491289176201,113.28432247016828 Accessed February 2024.

Kamal MM, Wardiatno Y, Noviyanti NS. 2016. Habitat conditions and potential food items during the appearance of whale sharks (*Rhincodon typus*) in Probolinggo waters, Madura Strait, Indonesia. *Qscience Proceedings* 2016(2): 27. https://doi.org/10.5339/qproc.2016.iwsc4.27

Kamal MM, Ardania D, Hartanto MT. 2020. Abundance and composition of potential food items of whale shark (*Rhincodon typus* Smith, 1828) in Probolinggo waters, East Java Province. *Ecology, Environment & Conservation* 2020 26: 37–41.

Pierce SJ, Norman B. 2016. *Rhincodon typus. The IUCN Red List of Threatened Species* 2016: e.T19488A2365291. https://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T19488A2365291.en

Putri A, Bengen DG, Zamani NP, Salma U, Kusuma NP, Diningsih NT, Kleinertz S. 2022. Mangrove habitat structure of Mud Crabs (*Scylla serrata* and *S. olivacea*) in the Bee Jay Bakau Resort Probolinggo, Indonesia. *Indonesian Journal of Marine Sciences* 27(2): 124–132. https://doi.org/10.14710/ik.ijms.27.2.124-132

Syah AF, Musrifah M, Cahyono H. 2018. Pemodelan Daerah Potensial Kemunculan Hiu Paus (*Rhincodon typus*) menggunakan Data Penginderaan Jauh di Perairan Probolinggo, Jawa Timur. *Jurnal Penelitian Perikanan Indonesia* 24(3): 209–216. https://doi.org/10.15578/jppi.24.3.2018.209-216

Wulandari U, Wirawan I, Agustini M. 2018. Karakteristik oseanografi di perairan Probolinggo sebaga iDaerah potensial penangkapan Ikan Tembang (*Sardinella fimbriata*). *Samakia: Jurnal Ilmu Perikanan* 9(2): 37–44. https://doi.org/10.35316/jsapi.v9i2.224