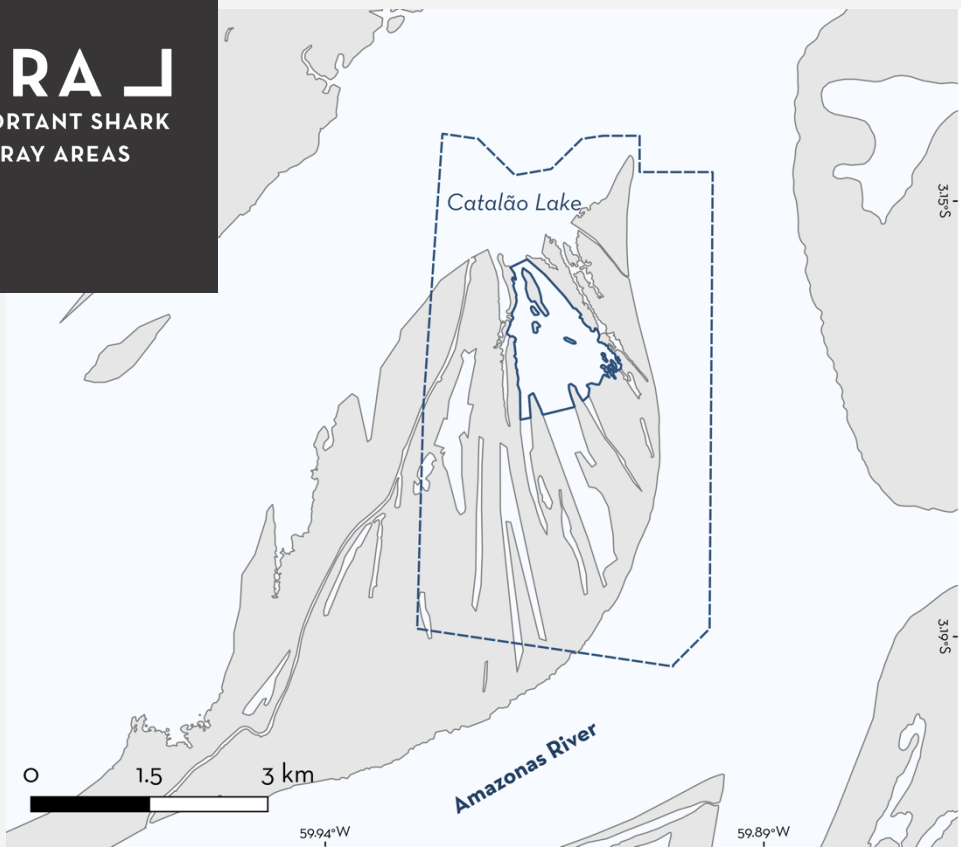
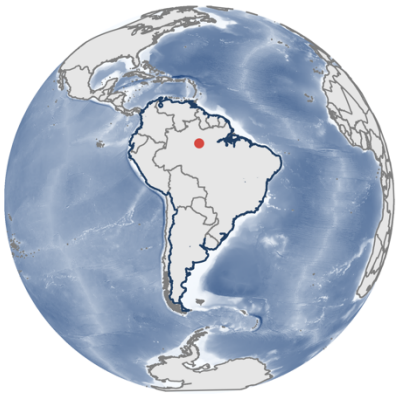
ISRA
IMPORTANT SHARK AND RAY AREAS





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.

CATALÃO LAKE ISRA

South American Inland Waters Region

BRAZIL

0–19 metres

1.5 km²

SUMMARY

Catalão Lake is located at the confluence of the Solimões and Negro rivers, in the Amazonas state of Brazil. This floodplain lake experiences significant water level fluctuations due to seasonal flooding. This area overlaps with the Regional Center Rio Negro Ramsar Site. Within this area there are: **reproductive areas** (Ocellate Freshwater Stingray *Potamotrygon motoro*).

CRITERIA

Sub-criterion C1 – Reproductive Areas

DESCRIPTION OF HABITAT

Catalão Lake is located at the confluence of the Solimões and Negro rivers, in the municipality of Iranduba, Amazonas State, Brazil. This floodplain lake experiences significant water level fluctuations due to seasonal flooding from the Amazon River. The water in the lake is turbid and sediment-rich (Shibuya & Duncan 2022).

The maximum and minimum water level of the lower Rio Negro, where this area is located, occurs in June and October–November, respectively (Graca et al. 2025). The typical depth in the lake during the low-water season is between 17–19 m, while levels under 17 m occur in abnormally dry years (Bittencourt & Amadio 2007). In moderately or strongly dry years, Catalão Lake can maintain a narrow and shallow channel connecting to the Negro River or can become completely disconnected from the river (Röpke et al. 2018).

This area overlaps the Rio Negro Ramsar Site (Ramsar 2025).

This Important Shark and Ray Area is benthic and is delineated from surface waters (0 m) to 19 m based on the bathymetry of the area.

ISRA CRITERIA

SUB-CRITERION C1 – REPRODUCTIVE AREAS

Catalão Lake is an important reproductive area for one ray species.

Two field surveys were conducted in October 2014 and November 2015 (Shibuya & Duncan 2022). A total of 20 Ocellate Freshwater Stingrays (9 females, 11 males) were captured using bottom longlines over muddy substrate, with 10 individuals caught during each sampling year. Body sizes ranged between 25.5–50 cm disc width (DW) for females, and 25–48 cm DW for males. As size-at-maturity for this species is ~25 cm DW, all individuals were considered mature (Last et al. 2016). Bite wounds on the surface of the pectoral fins (i.e., those which could be clearly identified as bites and abrasion marks) were reported for 10 specimens (4 females, 6 males) with a total of 128 wounds for all specimens assessed (Shibuya & Duncan 2022). This high number of bite wounds on the posterior quadrants compared to the anterior quadrants of females supports previous findings that males grasp the females near the cloaca during pre-copulatory behaviour (Chapman et al. 2003; Arnés-Urgellés et al. 2018; McCallister et al. 2020). Males had a large amount of bite wounds, distributed randomly throughout the body, while females had more bite wounds on the posterior region. The higher number of wounds in males is assumed to indicate aggressive interactions among males in competition for females, caused by attempts to prevent other males from mating with the target female (Shibuya & Duncan 2022). The behaviour is likely due to the confinement of the rays in the lake during the low-water period (Shibuya & Duncan 2022). These observations are mostly related to copulatory behaviour, as Ocellate Freshwater Stingrays reproduce in the low-water period (Charvet-Almeida et al. 2005). Furthermore, one of the animals captured in 2014 was a pregnant female with embryos, which supports the importance of this area for reproductive purposes (Shibuya & Duncan 2022).

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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
RAYS												
Potamotrygon motoro	Ocellate Freshwater Stingray	LC	0–19			X						

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
RAYS		
Paratrygon aiereba	Discus Stingray	CR
Plesiotrygon iwamae	Antenna Ray	VU
Potamotrygon scobina	Whitespotted Freshwater Stingray	NT

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.

SUPPORTING INFORMATION

There are additional indications that Catalão Lake may be an important feeding area for one ray species.

During the transition from the period of receding to low water, rays remain in the lake, likely due to the increase in prey abundance (A Shibuya unpubl. data 2022). Samples collected at Catalão Lake in the dry season (2013–2015) contained only Ocellate Freshwater Stingrays (Shibuya 2022). In 2014, four of the six individuals of Ocellate River Stingray were caught by bottom longline on muddy substrates and had fish (unidentified fish and catfish), shrimp, crab, and insect larvae (Ephemeroptera) in their stomachs. Some fish species remain in the lake throughout the low water period. This area offers favourable conditions for piscivorous species during low water periods (Röpke et al. 2018). The seasonal abundance (increased density in a restricted area) of fish prey in the lake may attract Ocellate Freshwater Stingrays and cause them to become trapped at low water which does not appear to affect their survival (Shibuya 2022). Further information is required to determine if this behaviour is regular and predictable.

REFERENCES

Arnés-Urgellés C, Hoyos-Padilla EM, Pochet F, Salinas-de-León P. 2018. First observation on the mating behaviour of the marbled ray, *Taeniurops meyeni*, in the tropical Eastern Pacific. *Environmental Biology of Fishes* 101: 1693–1699. https://doi.org/10.1007/s10641-018-0818-z

Bittencourt MM, Amadio SA. 2007. Proposta para identificação rápida dos períodos hidrológicos em áreas de várzea do rio Solimões-Amazonas nas proximidades de Manaus. *Acta Amazonica* 3: 303–308.

Chapman DD, Corcoran MJ, Harvey GM, Malan S, Shivji MS. 2003. Mating behavior of southern stingrays, *Dasyatis americana* (Dasyatidae). *Environmental Biology of Fishes* 68: 241–245. https://doi.org/10.1023/A:1027332113894

Charvet-Almeida P, Araújo MLG, Almeida, MP. 2005. Reproductive aspects of Freshwater Stingrays (Chondrichthyes: Patamotrygonidae) in the Brazilian Amazon Basin. *Journal of Northwest Atlantic Fishery Science* 35: 165–171. https://doi.org/10.2960/J.v35.m502

Graca MAS, Callisto M, Teixeira de Mello F, Rodriguez-Olarte D. 2025. *Rivers of South America, First Edition*. Amsterdam, London, Cambridge: Elsevier.

Last PR, White WT, de Carvalho MR, Séret B, Stehmann MFW, Naylor GJP. 2016. *Rays of the world*. Clayton South: CSIRO Publishing.

McCallister M, Mandelman J, Bonfil R, Danylchuk A, Sales M, Ajemian M. 2020. First observation of mating behavior in three species of pelagic myliobatiform rays in the wild. *Environmental Biology of Fishes* 103: 163–173. https://doi.org/10.1007/s10641-019-00943-x

Ramsar. 2025. Rio Negro. Available at: https://rsis.ramsar.org/ Accessed February 2025.

Röpke CP, Pires THS, Winemiller KO, Wolf DF, Deus CP, Amadio S. 2019. Reproductive allocation by Amazon fishes in relation to feeding strategy and hydrology. *Hydrobiologia* 826: 291–305. https://doi.org/10.1007/s10750-018-3740-7

Shibuya A. 2022. A review of the ecological role of the Neotropical freshwater stingrays (Chondrichthyes: Potamotrygoninae). *Food Webs* 32: e00244. https://doi.org/10.1016/j.fooweb.2022.e00244

Shibuya A, Duncan WP. 2022. Pre-copulatory bite wounds as evidence of aggressive competition for mating in the neotropical freshwater stingray *Potamotrygon motoro*. *Acta Amazonica* 52(1): 45–48. http://dx.doi.org/10.1590/1809-4392202101762