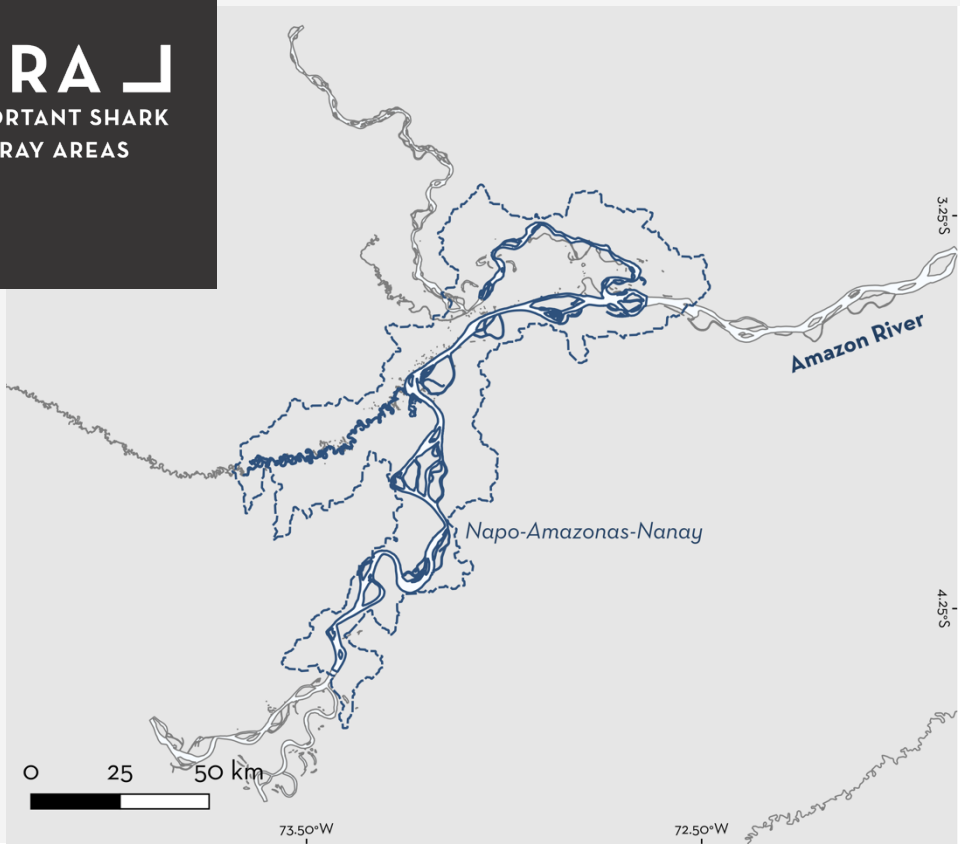
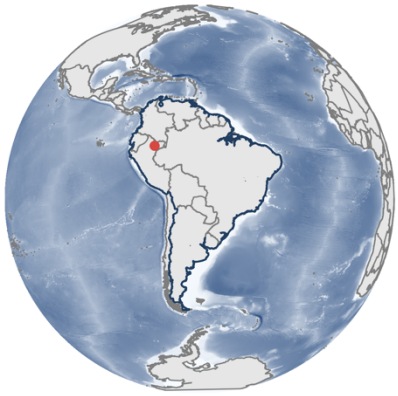
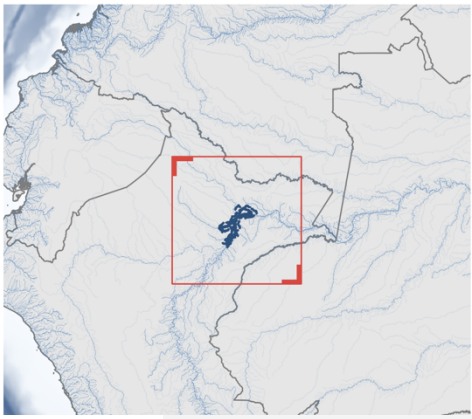
ISRA
IMPORTANT SHARK AND RAY AREAS







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.

NAPO-AMAZONAS-NANAY ISRA

South American Inland Waters Region

PERU

0–50 metres

551.3 km²

SUMMARY

Napo-Amazonas-Nanay is located in the upper Amazon River Basin in the Loreto region of northeastern Peru. This area encompasses the upper section of the Amazon River, and the lower sections of the Nanay and Napo rivers, both of which are tributaries of the Amazon River. These rivers meander across a broad floodplain. This area overlaps with the Reserva Nacional Allpahuayo Mishana y Cuenca Río Nanay Key Biodiversity Area. Within this area there are: **threatened species** (e.g., Gome's Round Ray *Heliotrygon gomesi*); **range-restricted species** (e.g., Tiger Freshwater Stingray *Potamotrygon tigrina*); and the **area sustains a high diversity of rays** (six species).

CRITERIA

Criterion A – Vulnerability; Criterion B – Range-Restricted;
Sub-criterion D2 – Diversity

DESCRIPTION OF HABITAT

Napo-Amazonas-Nanay is situated in the upper Amazon River Basin in the Loreto region of northeastern Peru. This area includes the upper reaches of the Amazon River (from the confluence of the Ucayali and Marañón rivers) and the lower sections of the Nanay and Napo rivers, both of which are tributaries of the Amazon River. These rivers meander across a broad floodplain, connecting water, and sediment flows from the Andes mountains to the lowlands of the Amazon Basin (Graca et al. 2025).

Río Nanay is formed by the confluence of the Quebrada Agua Blanca and Quebrada Agua Negra streams. This is a moderate blackwater river due to the high concentration of dissolved organic matter that leaches from decaying plant material. It features a sandy substrate and is notable as the only known blackwater river in Peru that supports a flooded forest or *igapó* (Lozano 2022).

The Napo River originates as small stream in springs and glaciers and quickly flows down a steep mountainous topography (Graca et al. 2025). It is distinguished by its white-water characteristics, carrying a high load of suspended sediments that give it a milky, nutrient-rich appearance. This sediment, derived from the Andean highlands, deposits a bottom composed primarily of sand intermingled with lime, clay, and plant material such as leaf litter (Ortega et al. 2016).

The climate in this area is influenced by multiple meteorological drivers including the Intertropical Convergence Zone, North and South American monsoon systems, and El Niño-Southern Oscillation (Graca et al. 2025). The area is also subject to extreme events (floods and droughts), which are largely influenced by the El Niño-Southern Oscillation. There is a wet (March–November) and dry (December–February) season (Graca et al. 2025).

This area overlaps with the Reserva Nacional Allpahuayo Mishana y Cuenca Río Nanay Key Biodiversity Area (KBA 2025).

This Important Shark and Ray Area is benthic and is delineated from surface waters (0 m) to 50 m based on the bathymetry of the area.

ISRA CRITERIA

CRITERION A – VULNERABILITY

Five Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occur in the area. These are the Critically Endangered Discus Stingray (Araújo et al. submitted); Endangered Tiger Freshwater Stingray (Torres et al. submitted); and the Vulnerable Gome's Round Ray (Charvet et al. submitted a), Rosa's Round Ray (Charvet et al. submitted c), and Antenna Ray (Charvet et al. submitted b).

CRITERION B – RANGE-RESTRICTED

This area holds the regular presence of Gome's Round Ray, Rosa's Round Ray, Antenna Ray, Dwarf Antenna Ray, and Tiger Freshwater Stingray as resident range-restricted species (García-Dávila et al. 2021).

Between 2015–2019, three to seven individuals of each species were collected in this area to accurately identify the species through molecular techniques (García-Dávila et al. 2021). The location was chosen based on scientific records, aquarium records, and conversations with fishers reporting

where animals were regularly collected for commercial purposes (for exports of live animals for the aquarium trade). Export data for freshwater rays in the Peruvian Amazon Basin were obtained from official records of the Regional Directorate of Production in the Loreto Region (García-Dávila et al. 2021). These five species were regularly collected for exports from this area between 2000–2017 (García-Dávila et al. 2021).

Gome's Round Ray and Rosa's Round Ray are exported together under the name 'Chinese skate'. Between 2000–2017, a total of 473 individuals of both species were collected from this area for commercial purposes by fishers (García-Dávila et al. 2021). Export sizes ranged between 20–30 cm disc width (DW) (García-Dávila et al. 2021). For Gome's Round Ray, males were reported to reach sexual maturity between 35–40 cm DW, and females were considered mature usually when >57.8 cm DW (Carvalho et al. 2013). For Rosa's Round Ray, males mature at 48–58 cm DW and female size-at-maturity is unknown (Charvet et al. submitted c). For both species, size-at-birth is at ~12 cm DW (Carvalho et al. 2013; Charvet et al. submitted c). Besides these commercial data, the Gome's Round Ray and Rosa's Round Ray have been rarely reported in scientific surveys. In the description of Gome's Round Ray, a total of 13 animals (males = 5, females = 8) were examined, 10 were from this area (Carvalho & Lovejoy 2011). These were collected between August 1999–August 2001, and in October 2009. Gome's Round Ray occurs in the Upper Amazon Basin in Peru and parts of Brazil and was suspected to possibly reach the lower portion of most tributaries of the Amazon River, and also reach the lower Amazon River Basin (Carvalho & Lovejoy 2011). Rosa's Round Ray is found in a few localities in the upper to lower Amazon River Basin (Carvalho et al. 2013). The species is usually associated with the Amazon River main channel but also occurs in the lower segments of major tributaries (Carvalho et al. 2013).

Dwarf Antenna Ray and Antenna Ray are exported together under the trade name 'Antenna ray'. Between 2000–2017, a total of ~2,500 individuals for both species were collected within this area for commercial exporting purposes by fishers (García-Dávila et al. 2021). The export body sizes fluctuate between 15–25 cm DW (García-Dávila et al. 2021). For the Dwarf Antenna Ray, males mature at ~18–20 cm DW and female size-at-maturity is unknown (Charvet & Torres submitted). Size-at-birth is ~7 cm DW (Charvet & Torres submitted). Besides these commercial data, the Dwarf Antenna Ray has been rarely reported in scientific surveys. Dwarf Antenna Ray has a patchy distribution and is known from the upper Amazon River Basin, in Peru (Nanay, Pachitea, Ucayalí, Amazonas rivers; in the Huánuco and Loreto regions) and Colombia (Putumayo River, Isla Nueva; Amazonas River, Puerto Nariño-lago El Correo) (Carvalho & Ragno 2011; Ortega et al. 2016; Lasso et al. 2013; Charvet & Torres submitted). The Dwarf Antenna Ray does not seem to be a common species (Lasso et al. 2013). Therefore, this species has a low density (Charvet & Torres submitted). Antenna Ray is found mainly along the Amazon River and some of its tributaries, from Ecuador to Brazil, including Peru (Charvet et al. submitted b).

Between 2000–2017, a total of 9,435 Tiger Freshwater Stingrays, with a body size of 20–50 cm DW, were collected within this area for commercial exporting purposes by fishers (García-Dávila et al. 2021). The largest exports were recorded in the first 11 years (2000–2010), with 8,306 Tiger Freshwater Stingrays, while between 2011–2017, 1,129 individuals were collected (García-Dávila et al. 2021). It is speculated that the Tiger Freshwater Stingray could reach up to 100 cm DW and reach maturity size at ~40 cm DW for both sexes (Carvalho et al. 2011). Size-at-birth is unknown. However, the sizes of animals collected suggests that this species is captured in this area across several life-history stages (juveniles and adults). Besides these commercial data, the Tiger Freshwater Stingray has rarely been reported in scientific surveys, with its confirmed geographic range limited to the Nanay River in Peru, where two individuals were collected (Carvalho et al. 2011; Torres et al. submitted). Between July–October 2013, fishery independent research surveys were conducted

using bottom gillnets to study the freshwater rays in the rivers surrounding Iquitos (Nanay, Itaya, and Amazonas rivers) (Ortega et al. 2016). This species was reported in Nanay River, in this area.

SUB-CRITERION D2 – DIVERSITY

Napo-Amazonas-Nanay sustains a high diversity of Qualifying Species (six species). This exceeds the regional diversity threshold (three species) for the South American Inland Waters region (García-Dávila et al. 2021). The regular presence of Qualifying Species has been documented through fisheries data between 2000–2017 (García-Dávila et al. 2021). Between 2000–2013, 235 Discus Stingrays were collected within this area for commercial exporting purposes by fishers (García-Dávila et al. 2021).

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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												
Heliotrygon gomesi	Gome's Round Ray	VU	0–50	X	X							X
Heliotrygon rosai	Rosa's Round Ray	VU	0–50	X	X							
Paratrygon aiereba	Discus Stingray	CR	0–50	X								
Plesiotrygon iwamae	Antenna Ray	VU	0–50	X	X							
Plesiotrygon nana	Dwarf Antenna Ray	NT	0–50		X							
Potamotrygon tigrina	Tiger Freshwater Stingray	EN	0–50	X	X							

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
RAYS		
Potamotrygon falkneri	Paraná Freshwater Stingray	LC
Potamotrygon motoro	Ocellate Freshwater Stingray	LC
Potamotrygon orbignyi	Reticulate Freshwater Stingray	LC

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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