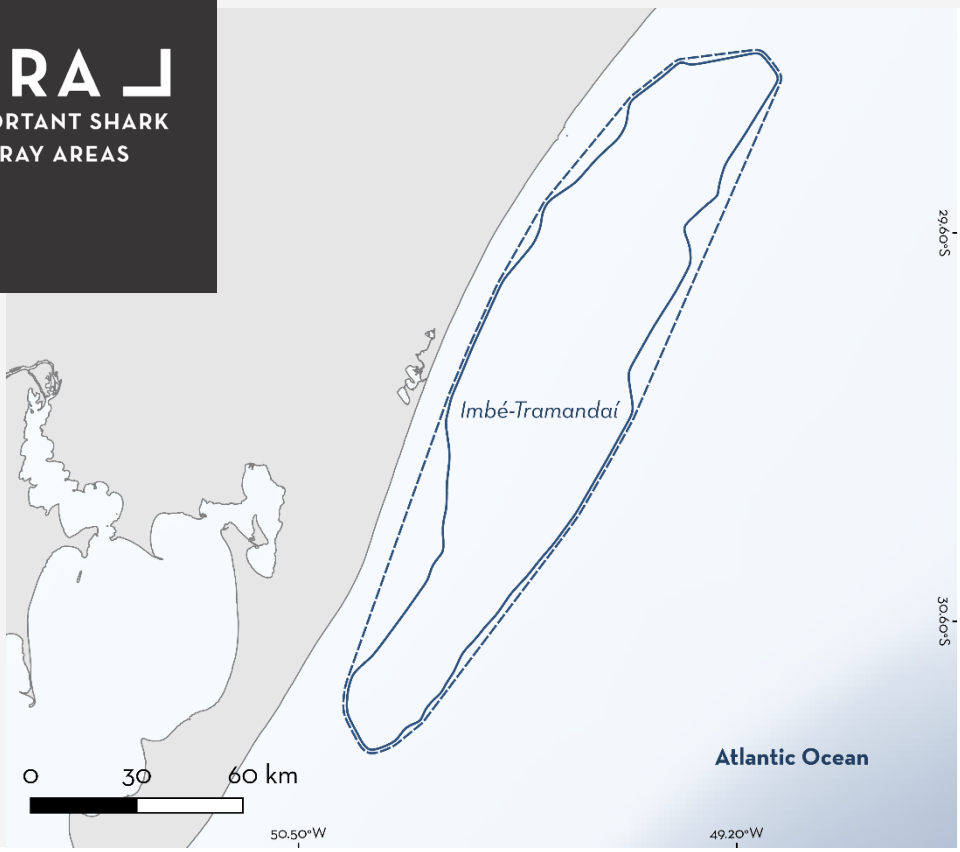
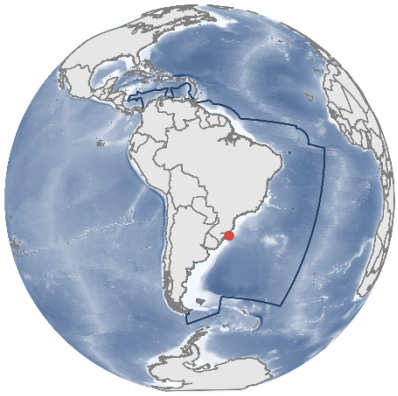
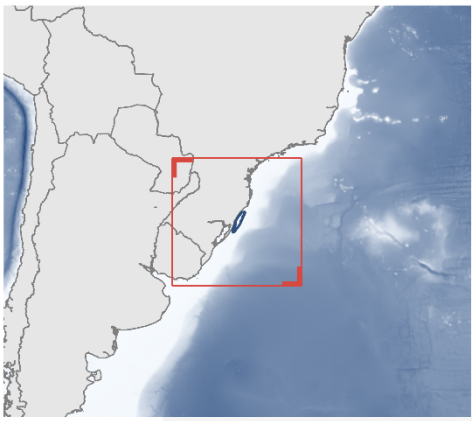
ISRA
IMPORTANT SHARK AND RAY AREAS







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

IMBÉ-TRAMANDAÍ ISRA

South American Atlantic Region

BRAZIL

0–50 metres

7,471.8 km²

SUMMARY

Imbé-Tramandaí is located off the southernmost coast of Brazil. It encompasses the area around Imbé and Tramandaí, in Rio Grande do Sul. The area is characterised by a gentle slope and fine sand. It includes a lagoon-estuarine system that is influenced by freshwater influx from the Tramandaí River and the Camarão Channel. Within this area there are: **threatened species** (e.g., Bignose Fanskate *Sympterygia acuta*); **range-restricted species** (e.g., La Plata Skate *Atlantoraja platana*); and **reproductive areas** (Scalloped Hammerhead *Sphyrna lewini*).

CRITERIA

Criterion A – Vulnerability; Criterion B – Range Restricted; Sub-criterion C1 – Reproductive Areas

DESCRIPTION OF HABITAT

Imbé-Tramandaí is located off the southernmost coast of Brazil. It encompasses the area around Imbé and Tramandaí, in Rio Grande do Sul province. The area is characterised by gentle slopes on the continental shelf (Zappes et al. 2011) and fine sand (Kapusta et al. 2005). It includes a lagoon-estuarine system that is influenced by freshwater influx from the Tramandaí River and the Camarão Channel (Zappes et al. 2011), which are characterised by mangrove forests (Kapusta et al. 2005). The area is influenced by upwelling and downwelling circulation patterns (Andrade et al. 2016).

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

ISRA CRITERIA

CRITERION A – VULNERABILITY

Six Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occur in the area. Threatened sharks comprise one Critically Endangered species; threatened rays comprise two Critically Endangered species and three Endangered species (IUCN 2024).

CRITERION B – RANGE RESTRICTED

This area holds the regular presence of La Plata Skate, Groovebelly Stingray, Brazilian Guitarfish, Bignose Fanskate, Smallnose Fanskate, and Shortnose Guitarfish as resident range-restricted species. All species occur in the Patagonian Shelf and the South Brazil Shelf Large Marine Ecosystems.

These species were regularly recorded between 2022–2023 by observers aboard commercial coastal pair trawlers operating along Santa Catarina and Rio Grande do Sul states of Brazil (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). Of 324 sets monitored, 30 were within this area (between 30–55 m depth), in 2022 (June = 3) and 2023 (April = 10; May = 3; June = 4; September = 3; November = 7) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). Commercial pair trawl headrope and footrope lengths in south Brazil vary from 17.4–28.2 m and 19.4–31.5 m, respectively. Mesh size ranged between 9–12 cm, measured from knot-to-knot (Queirolo et al. 2016). Data comprised the number of individuals and total weight (kg) per species in each pair trawl haul, and the total length (TL) was calculated based on the length-weight relationship using parameters for each species available on FishBase (Froese et al. 2013; Froese & Pauly 2024). All species were captured in higher numbers within this area than in adjacent areas highlighting its importance.

Fifty-four interviews were conducted with artisanal fishers in two fishing regions. Of these, 23 took place in this area and in Torres (~30 km north of Imbé). The interviews in this area were conducted during eight field visits in 2020–2023, with five occurring in austral summer, two in autumn, and one in winter. During the interviews, a catalogue containing photographs of ray species was presented to the fishers to confirm their familiarity with the species. If confirmed, animals were identified to species-level, where possible, and respective season-of-capture and capture frequency (estimated average number of individuals caught per month) were recorded. Using this information, catch-per-unit-effort (CPUE) was calculated as the number of animals captured per 100 m^2 of net per month to assess the relative abundance of each species in the study areas. The CPUE was estimated by

dividing the number of individuals captured per month by each fisher by the total effort, calculated as the net size (height x length) multiplied by the total fishing hours per month (Bennemann 2023).

A total of 231 La Plata Skates were captured in seven hauls (23% of 30 hauls) from this area. La Plata Skates were recorded in both survey years (April, May, and June). Although this species was recorded in 26% of hauls outside of this area (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025), the highest number of individuals per set was 56 and the average was 7.7 individuals inside the area. This was higher than the average recorded outside of this area (6.7 animals). The estimated CPUE from interviews for La Plata Skates was ~30 individuals per 100 m^2 of net per month, and an interquartile range of 10–60 individuals (Bennemann 2023).

A total of 222 Groovebelly Stingrays were recorded in nine hauls (30%) in this area; a higher percentage than records outside of this area (20%, n = 59 hauls). Groovebelly Stingrays were recorded in 2022 and 2023 (April, May, June, and November) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). The highest number of individuals per set inside the area was 111 and the average was 7.5. This average is much higher than the average outside of this area (2.1 animals), highlighting the importance of this area for the species. The estimated CPUE from interviews for Groovebelly Stingrays was ~20 individuals per 100 m^2 of net per month, and an interquartile range of 10–40 individuals (Bennemann 2023).

A total of 552 Brazilian Guitarfish were recorded in 11 hauls (37% of 30 hauls). This is a higher percentage of records than from hauls outside this area (32%, n = 92 hauls). Brazilian Guitarfish were captured in 2022 and 2023 (April, May, June, September, and November) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). The highest number of individuals per set inside the area was 260 and the average was 18.4. This was more on average compared to outside of this area (n = 5.9 animals). In an earlier study conducted between November 2013–March 2014, 50 sets of four boats (5–7 m length) from the artisanal fishery within the area were monitored. Fishers operated between 5–21 m depth, using bottom (n = 41 sets) and surface (n = 9) gillnets (200–750 m length). The mesh size ranged from 7–20 cm in bottom gillnets and was 20 cm in surface gillnet. Onboard observers recorded the species, sex, and TL of individuals (Vieira 2014). A total of 125 Brazilian Guitarfish were recorded (12.5% of the total shark and ray catch). Of these, 122 were sexed (73 females and 49 males) and 65 were measured (72–125 cm TL). Pregnant females were observed in February. One pregnant female aborted 12 embryos (average = 25 cm TL) with yolk sacs (Vieira 2014). In addition, the landing of sharks and rays from two commercial boats (10–14 m length) operating in this area in September 2011–May 2012 and November–December 2012 was monitored (Sampaio 2013). Brazilian Guitarfish catches comprised 36.9% (n = 48) of the total rays captured (Sampaio 2013).

A total of 81 Bignose Fanskates were recorded in six hauls (20% of 30 hauls). This is a higher percentage of records than from outside of this area (16%, n = 48 hauls). Bignose Fanskates were recorded in 2022 and 2023 (April, June, September, and November) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). The highest number of individuals per set inside the area was 27 and the average was 2.7. This is higher than the average outside of this area (1.9). The estimated CPUE from interviews for the Bignose Fanskate was ~30 individuals per 100 m^2 of net per month, and an interquartile range of 10–70 individuals (Bennemann 2023).

A total of 98 Smallnose Fanskates were recorded in four hauls (13 % of 30 hauls). This is a higher percentage than records from outside of this area (9%, n = 26 hauls). Smallnose Fanskates were captured in 2022 and 2023 (April, June, and September) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). The highest number of individuals per set inside the area was 85 in April 2023, and the average was 3.3. This was higher than the respective average outside this area (0.6 animals). The estimated CPUE from interviews for the Smallnose Fanskate was ~40 individuals per 100 m^2 of net per month, and an interquartile range of 10–80 individuals (Bennemann 2023).

A total of 94 Shortnose Guitarfish were captured in four hauls (13% of 30 hauls). This is a higher percentage than records from outside of this area (11%, n = 33 hauls). Shortnose Guitarfish were recorded in 2022 and 2023 (April, May, and June) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). The highest number of individuals per set inside the area was 50, and the average was 3.1. This is higher than the average recorded from outside of this area (2.1 animals). The estimated CPUE from interviews for Shortnose Guitarfish was ~90 individuals per 100 m^2 of net per month, and an interquartile range of 40–200 individuals (Bennemann 2023).

SUB-CRITERION C1 – REPRODUCTIVE AREAS

Imbé-Tramandaí is an important reproductive area for one shark species.

The landing of sharks and rays from two commercial boats (10–14 m length) operating in this area in September 2011–May 2012 and November–December 2012 was monitored. A total of 4,558 kg of sharks and rays were landed. Of this, 4,022 kg were Scalloped Hammerheads and 110 kg was Smooth Hammerheads. Of the total catch, 3,911 kg were from one boat that fished for three days using surface gillnets within the area in December 2011; the vast majority (3,860 kg) was hammerheads (*Sphyrna* spp.). Neonates/ young-of-the-year (YOY) animals comprised most of this catch (3,620 kg of animals measuring 32.6–60 cm TL) and juveniles (240 kg of animals measuring 60–95 cm TL [n = 135]) (Sampaio 2013). The size-at-birth of the species is 31–57 cm TL (Ebert et al. 2021).

Between November 2013–March 2014, 50 sets of four artisanal fishery boats (5–7 m length) within the area were monitored. Fishers operated between 5–21 m depth, using bottom (n = 41 sets) and surface (n = 9) gillnets (200–750 m length). The mesh size ranged from 7–20 cm in bottom gillnets and was 20 cm in surface gillnets. Onboard observers recorded the species, sex, and TL of individuals (Vieira 2014). Between 2022–2023, observers of commercial coastal pair trawl fleets operating along Santa Catarina and Rio Grande do Sul recorded the number and weight of species captured as incidental catch (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). Of 324 sets monitored, 30 were within this area, in 2022 (June = 3) and 2023 (April = 10; May = 3; June = 4; September = 3; November = 7) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). Data comprised the number of individuals and total kilograms per species in each pair trawl haul, and TL was calculated based on the length-weight relationship using parameters for each species available on FishBase (Froese et al. 2013; Froese & Pauly 2024).

Between November 2013–March 2014, 775 Scalloped Hammerheads were captured within this area, representing 77.4% of the total shark and ray catch. Scalloped Hammerheads were present in 85% of fishing trips. Of these, 552 (67.35%) were captured in a bottom gillnet (mesh size = 20 cm) in December 2013. Only neonates and YOY (determined by an open or healed umbilical scar) and juveniles (umbilical scar absent, 60–78 cm TL) were captured. Of 243 individuals measured, 213 (87.65%) were neonates. Neonates measured 42.5–59 cm TL. YOY with a healed umbilical scar measured 38–62.5 cm TL. Scalloped Hammerheads with open umbilical scars were captured mainly in November and December, and those with healed scars mainly in January and February. In March, the catch was comprised mainly of juveniles (Vieira 2014).

Between December 2018–August 2019, pier-based amateur fishing in this area was monitored. Four neonates/YOY Scalloped Hammerheads (average = 44.5 cm TL) were captured during the summer (January and December) (Rocha-Neto 2019).

A total of 90 Scalloped Hammerheads were captured in four hauls during the 2022/2023 survey (13% of 30 hauls). All individuals were captured in April (n = 89) and May (n = 1) 2023. These were neonates/ YOY measuring 59.22–65.34 cm TL. This represents 52% of the total neonate/YOY Scalloped

Hammerheads (<75 cm TL) captured in the broader region (total hauls = 324), highlighting that this is the hotspot for the early life stages of the species. In addition, the average number of neonate Scalloped Hammerheads per trawl within this area was three, which is higher than the average recorded outside of this area (0.3) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025).

Acknowledgments

Danielle da Silveira Monteiro (Universidade Federal do Rio Grande), Luis Gustavo Cardoso (Universidade Federal do Rio Grande), Luciano Gomes Fischer (Universidade Federal do Estado do Rio de Janeiro), Emiliano García Rodríguez (IUCN SSC Shark Specialist Group – ISRA Project), Vanessa Bettcher Brito (IUCN SSC Shark Specialist Group – ISRA Project), and Ryan Charles (IUCN SSC Shark Specialist Group – ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2025 ISRA Region 05 – South American Atlantic workshop for their contributions to this process.

This factsheet has undergone review by the ISRA Independent Review Panel prior to its publication.

This project was funded by the Shark Conservation Fund, a philanthropic collaborative pooling expertise and resources to meet the threats facing the world's sharks and rays. The Shark Conservation Fund is a project of Rockefeller Philanthropy Advisors.

Suggested citation

IUCN SSC Shark Specialist Group. 2025. Imbé-Tramandaí ISRA Factsheet. Dubai: IUCN SSC Shark Specialist Group.

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												
Sphyrna lewini	Scalloped Hammerhead	CR	0–1,043	X		X						
RAYS												
Atlantoraja platana	La Plata Skate	EN	0–320	X	X							
Dasyatis hypostigma	Groovebelly Stingray	EN	5–80	X	X							
Pseudobatos horkelii	Brazilian Guitarfish	CR	0–150	X	X							
Sympterygia acuta	Bignose Fanskate	CR	0–188	X	X							
Sympterygia bonapartii	Smallnose Fanskate	NT	0–500		X							
Zapteryx brevirostris	Shortnose Guitarfish	EN	0–140	X	X							

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
Mustelus schmitti	Narrownose Smoothhound	CR
Rhizoprionodon lalandii	Brazilian Sharpnose Shark	VU
Rhizoprionodon porosus	Caribbean Sharpnose Shark	VU
Sphyrna zygaena	Smooth Hammerhead	VU
Squatina guggenheim	Angular Angelshark	EN
RAYS		
Atlantoraja castelnaui	Spotback Skate	CR
Myliobatis goodei	Southern Eagle Ray	VU
Myliobatis ridens	Shortnose Eagle Ray	CR

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 this area may be important for two shark and two ray range-restricted species. Further information is required to determine the regularity and predictability of the observation of these species, and the relative importance of this area within their range-restricted geographic range.

A total of 36 Narrownose Smoothhound were captured in one haul in June 2023 within this area. In the total survey, this species was only captured in 3% of the total hauls (n = 8) and the average per haul was 0.2 animals. The average number of Narrownose Smoothound captured within this area was 1.2 animals (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025).

A total of 541 Angular Angelsharks were captured in 33% of 30 hauls (n = 10). This is higher than outside this area, where it was captured in 32% (n = 98) of all hauls. Individuals were captured in 2022 and 2023 (April, May, June, and September) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). The highest number of individuals per set was 280 (average = 18.0 animals). This is higher than the average outside this area (5.0 animals) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025).

A total of 244 Southern Eagle Rays were captured in 13% (n = 4) of 30 hauls. Individuals were captured in 2022 and 2023 (April, May, and June) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). The highest number of individuals per set was 188 (average = 8.1). This was higher than the average outside this area (2.6) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025).

A total of 88 Shortnose Eagle Rays were captured in 17% of 30 hauls (n = 5). This is higher than outside of this area, where it was captured in 12% (n = 36) of all hauls. Individuals were captured in 2022 and 2023 (April, May and June) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025). The highest number of individuals per set was 62 (average = 2.9). This is higher than the average outside this area (0.8) (DS Monteiro, LG Cardoso, LG Fischer unpubl. data 2025).

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