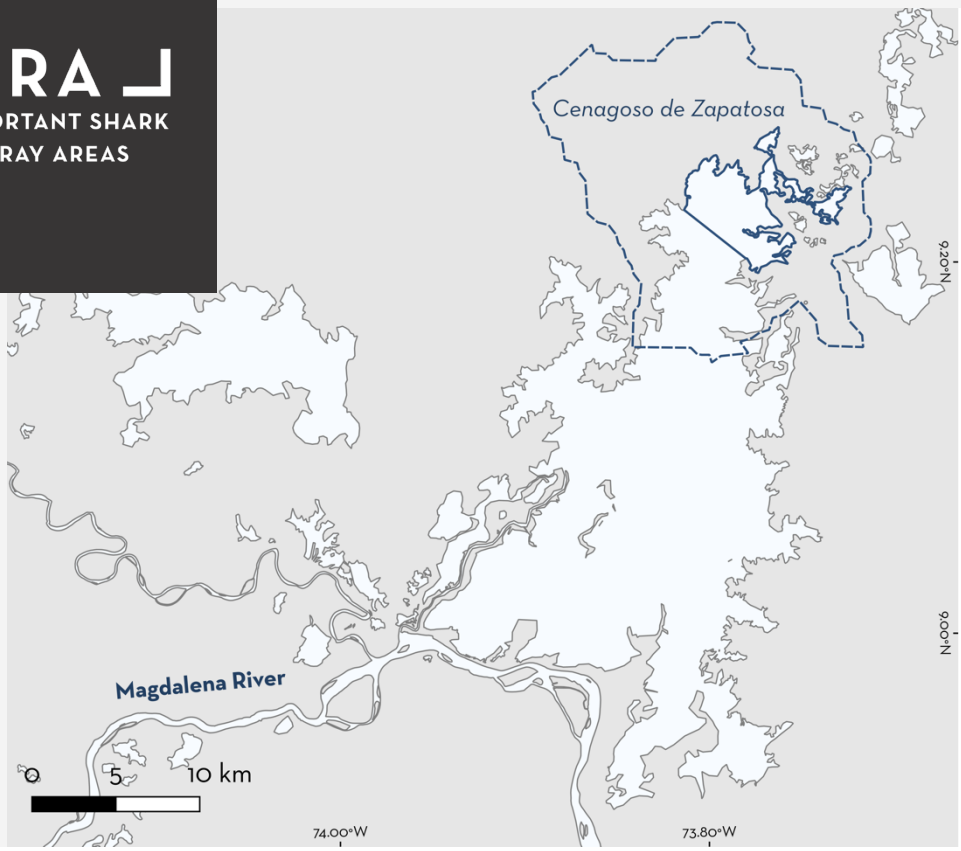
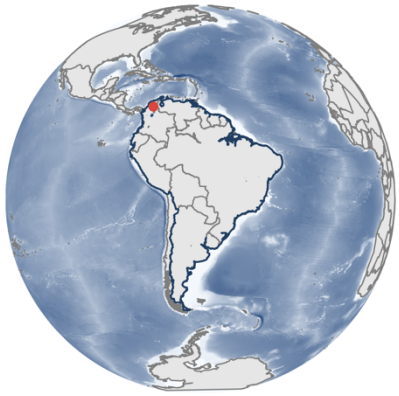
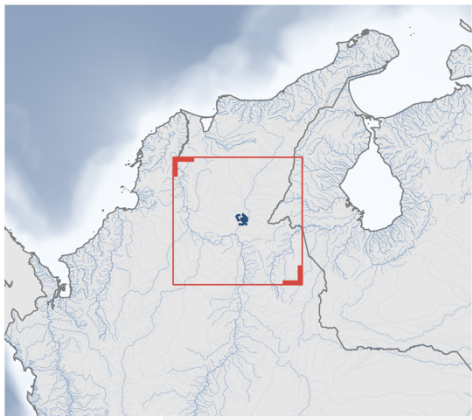
ISRA
IMPORTANT SHARK AND RAY AREAS





*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.*

## CENAGOSO DE ZAPATOSA ISRA

**South American Inland Waters Region**

**COLOMBIA**

**0–2 metres**

**28.34 km²**

## SUMMARY

Cenagoso de Zapatosa is located in the lower Magdalena River basin, in northern Colombia. The area is a swamp that is connected to the Cesar River, which provides the main flow to this area, and is also influenced by the Magdalena River during flood periods from March–June. The habitat is characterised by muddy substrate and shallow, turbid water. This area overlaps with the Complejo Cenagoso de Zapatosa Ramsar Site. Within this area there are: **range-restricted species** and **reproductive areas** (Magdalena Freshwater Stingray *Potamotrygon magdalenae*).

## CRITERIA

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

## DESCRIPTION OF HABITAT

Cenagoso de Zapatosa is located in the lower Magdalena River basin, in northern Colombia. It is situated in the northern side of the Zapatosa swamp system. The Cesar River provides the main flow to this area, which is also influenced by the Magdalena River during flood periods. The Magdalena River is located on the southern side of the Zapatosa swamp system; while the Cesar River is on the northern side of this system, where this area is located.

The Cesar River has its source at 1,800 m above sea level in Sierra Nevada de Santa Marta and runs for 280 km, discharging into the Zapatosa swamp system (400 $km^2$) and from here into the Magdalena River (Graca et al. 2025). The flow of the Magdalena River increases from March and reaches its highest levels in May. During this time, and extending into June, the river becomes a contributor to the swamp. The central zone of the swamp has a maximum depth of 8 m, while the average depth of the swamp is between 3–4 m, which makes it a stable system without atypical floods (Aristizábal 2016). The northern side of the Zapatosa swamp system, where this area is located, has a depth of ~ 2 m (Sanchez et al. 2021). This area is made up of ~1,900 swamps, which classifies it as the largest continental swamp complex in Colombia.

This area overlaps with Complejo Cenagoso de Zapatosa Ramsar Site (Ramsar 2025).

This Important Shark and Ray Area is benthic and is delineated from surface waters (0 m) to 2 m based on the bathymetry of the area.

# ISRA CRITERIA

## CRITERION B – RANGE RESTRICTED

This area holds the regular presence of the Magdalena Freshwater Stingray as a resident range-restricted species. This species occurs year-round in the area and is regularly encountered and captured in local fisheries (Sanchez et al. 2021).

Between October 2015 and May 2016, seven pregnant females and two neonates were captured by artisanal fishers in this area next to Chimichagua (Lizcano-Gutiérrez & Ramírez-Pinilla 2022). Between 2012–2015, 35 individuals were also sampled in the Zapatosa swamp system (Ramirez-Hernandez 2018). This study aimed to assess the species' genetic variability by comparing samples from six locations across its distribution. The results revealed distinct sub-populations within the species, likely formed by geographic barriers and periods of isolation during the dry season.

Magdalena Freshwater Stingray sampling was carried out over a three-month period in April, May, and August 2018 in the Cenagoso de Zapatosa region (Sanchez et al. 2021). Fishing operations were carried out between 1–6 m depth, using 160 m long gillnets. Fishing trips were carried out from dusk until dawn the following day, with an average duration of ~12 hours. Catch-per-unit-effort (CPUE), standardised in kg/haul, was used as an index of the relative abundance of Magdalena Freshwater Stingrays. A total of 53 Magdalena Freshwater Stingrays were caught with a ratio of 1.42:1 (males:females). The proportion of rays from the total number of individuals of all species caught ranged between 50–89% per set. Results indicate that the highest relative abundance was found in the northern and central sectors of the Zapatosa swamp, and the lowest in the southern sector. In the positive sets for this species, CPUE ranged between 0.04–8.19 kg/haul. In addition, in 11 of the 25 sampled squares no ray catches were recorded, most of which were located in the southern Zapatosa swamp system, outside this area. The northern zone, where this area is located, had the

highest CPUE (8.19 kg/haul) (Sanchez et al. 2021). This confirms the regular presence of the species in this area, and its use across different life-stages.

Magdalena Freshwater Stingrays are endemic to Colombia where they are restricted to three basins: Magdalena-Cauca Basin including the Magdalena, Cauca, and San Jorge rivers; Atrato Basin composed of the Atrato River; and Sinú basin composed of the Sinú River (Mejia-Falla et al. 2024). This species is found in rivers, swamps, wetlands, and dams along these basins (Mejia-Falla et al. 2024). This area has regular reports of this species with different life-stages using the area, highlighting its importance within the small range of the species.

The preferred habitat of Magdalena Freshwater Stingrays is muddy substrates in turbid, warm, and shallow waters, with currents of medium intensity (Mejía-Falla et al. 2013, 2024). It commonly lives in swamps and ravines (Dahl 1971). This area exhibits these key characteristics, making it a suitable habitat for the species.

## SUB-CRITERION C1 – REPRODUCTIVE AREAS

Cenagoso de Zapatosa is an important reproductive area for one ray species.

In April, May, and August 2018, 53 Magdalena Freshwater Stingrays were captured in a gillnet fishing survey conducting 25 overnight hauls in different parts of the Zapatosa swamp system (Sanchez et al. 2021). These rays had a body size between 8–23.8 cm disc width (DW) (Sanchez et al. 2021). In the lower Magdalena River, where this area is located, females mature at 17–24 cm DW and size-at-birth is 8.7–10 cm DW (Teshima & Takeshita 1992; Ramos-Socha & Grijalba-Bendeck 2011). Therefore, individuals from different life-stages were reported, including neonates. Additionally, between October 2015 and May 2016, seven pregnant females and two neonates with an open umbilical scar were captured by artisanal fishers in this area next to Chimichagua (Lizcano-Gutiérrez & Ramírez-Pinilla 2022), indicating that this area is important for gestation and for the early life-stages of the species.

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Sergio A Lizcano-Gutiérrez (Instituto Politécnico Nacional, Universidad Industrial de Santander) and Adriana Gonzalez-Pestana (IUCN SSC Shark Specialist Group – ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2025 ISRA Region 13 – South American Inland Waters workshop for their contributions to this process.

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**Suggested citation**

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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 magdalenae* | Magdalena Freshwater Stingray | NT | 0–2 | | 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.*

# REFERENCES


**Aristizábal VM. 2016.** Lineamientos hidrológicos para la delimitación de humedales. Casos de estudio: Ciénaga de la Zapatosa y Complejo de Esteros Paz de Ariporo. Unpublished MSc Thesis, Universidad Nacional de Colombia sede Manizales, Bogotá.

**Dahl G. 1971.** *Los peces del Norte de Colombia*. Bogotá: Ministerio de Agricultura.

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

**Lizcano-Gutiérrez SA, Ramírez-Pinilla MP. 2022.** Caracterización morfológica de los estadios embrionarios de la raya dulceacuícola *Potamotrygon magdalenae* (Elasmobranchii: Potamotrygonidae). *Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales* 46(180): 697–713. https://doi.org/10.18257/raccefyn.1650

**Mejia-Falla PA, Márquez-Velázquez V, Navia AF. 2024.** *Potamotrygon magdalenae*. *The IUCN Red List of Threatened Species* 2024: e.T161385A124475262. https://dx.doi.org/10.2305/IUCN.UK.2024-1.RLTS.T161385A124475262.en

**Mejia-Falla PA, Muñoz-Osorio LA, Galindo E, Lopez J, Perez JG, Navia AF. 2013.** Evaluacion de la dinámica pesquera y la distribución de *Potamotrygon magdallenae* en la cuenca del Magdalena y aportes a su historia de vida. Informe del Proyecto Evaluación de aspectos ecológicos, biológicos y pesqueros de elasmobranquios de importancia comercial en dos regiones de Colombia, costa Pacífica y cuenca del Magdalena. Cali: Squalus.

**Ramirez-Hernandez AM. 2018.** Variabilidad genética de la raya de agua dulce *Potamotrygon magdalenae* (Elasmobranchii: Potamotrygonidae) en el Río Magdalena, Colombia. Unpublished MSc Thesis, Universidad Nacional Autónoma de México, Ciudad de Mexico.

**Ramos-Socha HB, Grijalba-Bendeck M. 2011.** Bioecología de la raya de agua dulce *Potamotrygon magdalenae* (Duméril, 1865) (Myliobatiformes) en la Ciénaga de Sabayo, Guaymaral, Colombia. *Revista U.D.C.A Actualidad & Divulgación Científica* 14(2): 109–118. https://doi.org/10.31910/rudca.v14.n2.2011.781

**RAMSAR. 2025.** Complejo Cenagoso de Zapatosa. Available at: https://rsis.ramsar.org/ris/2521 Accessed February 2025.

**Sanchez EC, Cuello, F, Pacheco M, Altamar J. 2021.** Distribución y abundancia de la raya del Magdalena (*Potamotrygon magdalenae*: Potamotrygonidae) en el Complejo Cenagoso de Zapatosa, Colombia. *Intropica* 16(1): 72–82. https://doi.org/10.21676/23897864.3857

**Teshima K, Takeshita K. 1992.** Reproduction of the Freshwater Stingray, *Potamotrygon magdalenae* taken from the Magdalena River System in Columbia, South America. *Bulletin of the Seikai National Fisheries Research Institute* 70: 11–27.