

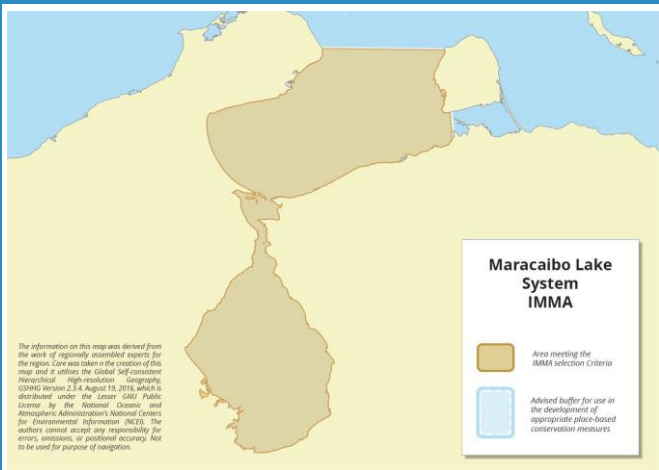
Maracaibo Lake System IMMA

Summary, continued.

the Guiana dolphin, including the mouths of the Catatumbo and Chama rivers, Barranquitas, and the southern Gulf of Venezuela. The system includes the Ciénaga de los Olivitos Wildlife Refuge in the southeastern portion of the Gulf of Venezuela, the Ciénaga de la Palmita and Isla de Pájaros Wildlife Reserve in the strait, and the Ciénagas de Juan Manuel Aguas Blancas y Aguas Negras National Park in the southwestern Lake of Maracaibo.

Description:

The Maracaibo Lake System is located on the southwestern coast of Venezuela, adjacent to the border with Colombia. The Maracaibo Lake System is an ecosystem made up of 4 bodies of water interconnected with each other, including -from north to south- the Gulf of Venezuela, El Tablazo Bay, the Strait, and the lake body (9°48'57"N 71°33'24"O). The maximum depth is reached in the Gulf at 55 m (Rodríguez, 2000). 135 tributaries flow into the lake, the largest being the Catatumbo River, providing almost 60% of fresh water to the ecosystem. These conditions favor a great diversity of its biota because north to south the salinity varies from 35 ppm to 0 ppm in the south of the lake. At each river mouth, turbidity increases, there is an increased presence of fish and it represents an ideal feeding area for the Guiana dolphin (Rossi-Santos et al., 2010) and also these are areas of freshwater resource for manatee (Manzanilla et al., 2024). The system includes the Ciénaga de los Olivitos Wildlife Refuge in the southeastern portion of the Gulf of Venezuela, the Ciénaga de la Palmita and Isla de Pájaros Wildlife



Area Size

29,394 km²

Qualifying Species and Criteria

Guiana Dolphin – *Sotalia guianensis*

Criterion A; B (2); C (2)

Greater Caribbean Manatee –

Trichechus manatus manatus

Criterion A; C (1, 2)

Other Marine Mammal Species Documented

Tursiops truncatus

Summary

The Maracaibo Lake System is located on the southwestern coast of Venezuela, adjacent to the border with Colombia. The system includes the marine waters of the Gulf of Venezuela, the estuarine waters of the Bahía el Tablazo and the strait, and the waters of the lake of Maracaibo. The area includes shallow waters up to 55 m deep, and several species assemblages from plants to fish, and others. The IMMA hosts Endangered Antillean/Greater Caribbean manatees (*Trichechus manatus manatus*), and Near-Threatened Guiana dolphins (*Sotalia guianensis*). Observations of mating and the presence of manatee mothers and calves have been widely documented throughout the year. At least four feeding areas have been identified for



Figure 1: Guiana dolphins (*Sotalia guianensis*), surfacing in southern Lake Maracaibo. Photo credit: Leonardo Sánchez, Proyecto Sotalia.



Figure 2: Guiana dolphins (*Sotalia guianensis*), mother and calves in southern Lake Maracaibo. Photo credit: Leonardo Sánchez, Proyecto Sotalia.

Reserve in the Strait, and the Ciénagas de Juan Manuel Aguas Blancas y Aguas Negras National Park in the southwestern Lake of Maracaibo.

Criterion A: Species or Population Vulnerability

The American manatee (*Trichechus manatus*) is red-listed globally as Vulnerable (Deutsch et al., 2008), while the Antillean, or Greater Caribbean subspecies (*Trichechus manatus manatus*) is listed as Endangered (Morales et al., 2024). At the national level in Venezuela, the species is considered Critically Endangered, with a population decimated by hunting, bycatch, and habitat loss and degradation (Boede et al., 2015).

The Guiana or “costero” dolphin (*Sotalia guianensis*) is red-listed as Near Threatened (Secchi et al., 2018) but as Vulnerable nationally (Barrios-Garrido et al., 2015). In the Maracaibo Lake System, the Guiana dolphin faces particular threats from bycatch and direct hunting, with annual removals of almost 200 individuals (Briceño et al., 2021; Sánchez et al., 2017).

Criterion B: Distribution and Abundance

Sub-criterion B2: Aggregations

Small boat surveys in the IMMA have yielded records of several groups of Guiana dolphins in the navigation channel (north Maracaibo Lake) with densities as high as 150 individuals in about 7 km² (Espinoza-Rodríguez et al., 2019). Strong winds, sea-surface temperatures around 25°C, and moderate concentrations of chlorophyll support a significant prey-base of different species of fish that can move in or out the area (Espinoza-Rodríguez et al., 2019). The species is also found in southern portions of Lake Maracaibo with a reported estimated abundance of up to 200 individuals (Briceño et al., 2017).

Criterion C: Key Life Cycle Activities

Sub-criterion C1: Reproductive Areas

Records of manatee mothers with calves are frequent both in the northern and southern sides of the lake throughout the year, including the Ciénaga de la Palmita and Isla de Pájaros Wildlife Reserve in the north, and the Birimbay Lagoon in the southwest (Briceño et al., 2024b). Although not direct observations of mating have been recorded, recent research has conducted a total of 407.14 hours of manatee visual surveys recording 18 direct sightings of manatees with an average RIA of 0.068 sightings per hour (Manzanilla-Fuentes et al., 2024).

Sub-criterion C2: Feeding Areas

The lake's environmental conditions (freshwater sources, shallow and calm areas) and patches of *Ruppia maritima* and *Regnellidium diphyllum* provide ideal feeding habitat for manatees (Briceño et al., 2024b; Manzanilla-Fuentes et al., 2024).

At least four feeding Guiana dolphin feeding areas have been identified in the IMMA, including the mouth of the Catatumbo River, Chama River, Barranquitas, and the southern Gulf of Venezuela, respectively. Feeding was the predominant behaviour recorded in at least 75% of the dolphin observations (on average 300 to 800 sightings in different sites both north and south of the system). Groups of between 10 and 200 individuals have been observed in feeding behaviour, with fast movements, aerial activity, and herding of prey (De Turris et al., 2010; Espinoza-Rodríguez et al., 2015; Briceño et al., 2017; 2024a).



Figure 3: Greater Caribbean manatees (*Trichechus manatus manatus*) surfacing near the mangroves at North of Lake Maracaibo. Photo credit: Leonardo Sánchez, Proyecto Sotalia.

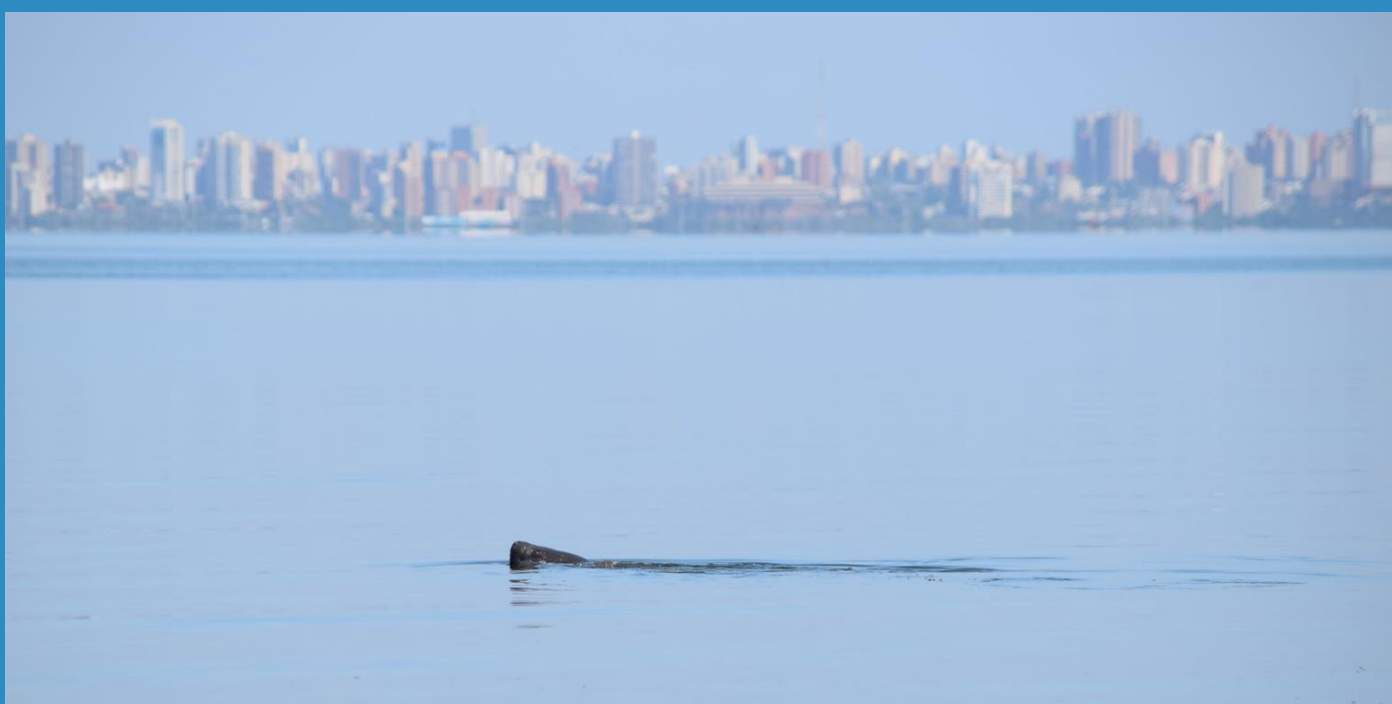


Figure 4: Greater Caribbean manatee (*Trichechus manatus manatus*) surfacing at North of Lake Maracaibo. Photo credit: Leonardo Sánchez, Proyecto Sotalia.

Supporting Information

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