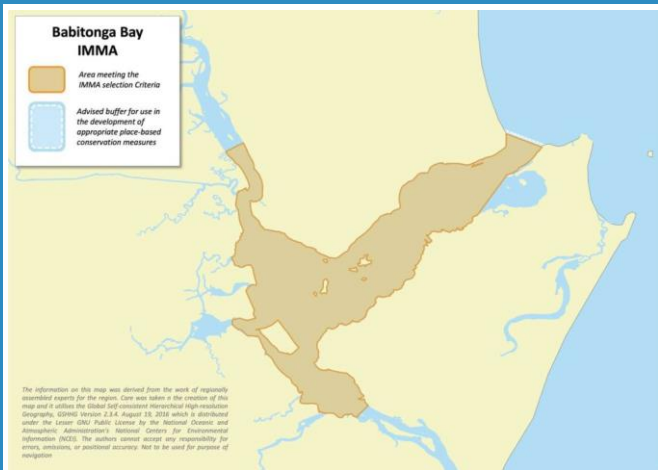


Babitonga Bay IMMA

Description:

The Babitonga Bay IMMA is a small estuarine region on the northern coast of the Brazilian state of Santa Catarina. Babitonga Bay is connected to the Atlantic Ocean through a 1.7 km wide channel; its average and maximum depth are 6 and 28 m, respectively (Cremer & Simões-Lopes, 2008). Maximum depth occurs in the main canal used to access the port of São Francisco do Sul. Shallower areas are seen near sandbanks, where depths reach a few dozen centimeters. The Bay receives water flows from several rivers and is considered a homogenous estuary based on its physical-chemical characteristics (IBAMA, 1998). The bay is surrounded by many different habitats, including mangroves, rocky shores and muddy/sandy beaches and there are many small islands within the estuary. The bay receives large amounts of contaminated water on the west side, which comes from the city of Joinville through the Saguauçú Lagoon and the Cubatão River. The Linguado Channel, to the south, closed in the late 1930s and has been going through an intense process of siltation that affects the entire bay (Oliveira et al., 2006).

Babitonga bay is the home of a small, isolated population of the threatened franciscana dolphin (*Pontoporia blainvillei*) (Cremer & Simões-Lopes, 2005; Wells et al., 2022) and of a small population of the near threatened Guiana dolphin (*Sotalia guianensis*) (Cremer et al., 2011) for which population structure and connectivity remains poorly understood.



Area Size

135 km²

Qualifying Species and Criteria

Franciscana – *Pontoporia blainvillei*
Criterion A; B (1); D (1)

Guiana dolphin – *Sotalia guianensis*
Criterion A; B (1)

Summary

This IMMA encompasses important habitat of two dolphin species in Babitonga Bay, state of Santa Catarina, southern Brazil. The bay includes a relatively shallow estuarine habitat surrounded by mangroves, muddy/sandy beaches, and rocky shores. The Babitonga Bay has been experiencing degradation caused by chemical pollution and the development of many harbours. A franciscana population of nearly 50 individuals inhabits this increasingly-impacted estuary year-round. This population is likely the smallest within the species range and is genetically isolated from franciscanas in the adjacent coastal habitat. Guiana dolphins are also found throughout the year within the bay and this population, estimated at less than 200 individuals, is near the southern limit of the species' distribution.



Figure 1: Franciscana dolphin (*Pontoporia blainvillei*) sighted in Babitonga Bay. Photo credit: Toninhas do Brasil / UNIVILLE

Considering the ecological importance of the area, in 2005, the federal environmental agency of the Brazilian government, the Chico Mendes Institute for Biodiversity Conservation (ICMbio) initiated a process for the creation of a Fauna Reserve, a sustainable use protected area (equivalent to IUCN Category IV), including all the surface area of the bay and the adjacent coastline. Currently, the process at the federal level remains stalled, but some initiatives have proposed a change of category, suggesting the creation of an Environmental Protection Area (IUCN Category V), a category of marine protected area that offers a greater flexibility in terms of human use (Ott et al., 2022).

Criterion A: Species or Population Vulnerability

The franciscana is an endemic species to coastal waters of Brazil, Uruguay and Argentina and is listed as "Vulnerable" (VU) on the IUCN Red List of Threatened Species (Zerbini et al., 2017) and "Critically Endangered" (CR) nationally in Brazil (MMA, 2022). The population of franciscanas in Babitonga Bay is small and genetically isolated (see below). The Guiana dolphin is endemic to the east coast of central and South America and is listed as "Near Threatened" (NT) on the IUCN Red List (Secchi et al., 2019) and "Vulnerable" (VU) nationally in Brazil (MMA, 2022). The population of Guiana dolphins in Babitonga bay is relatively small, but population connectivity is not well understood.

Criterion B: Distribution and Abundance

Sub-criterion B1: Small and Resident Populations

The franciscana population in Babitonga Bay is small (it was estimated in 2001-2003 at 48 individuals, CV = 0.3, Cremer & Simões-Lopes, 2008) and it is restricted to the bay (Wells et al., 2022). Analysis of photo-identification data also indicates that the population has a high degree of residence (Sartori et al., 2017; Cremer et al., 2018). Because of the small range and year-round residency, feeding and the reproductive cycle of franciscanas in this region occurs within the bay. Data on movements of six satellite-tagged

franciscanas inside the Babitonga Bay revealed that the animals remained in a very small portion of the bay, primarily over or near shallow interior flats and adjacent channels (Cremer & Simões-Lopes, 2008; Cremer et al., 2018). None of the tagged animals were recorded outside the bay (Wells et al., 2022).

The Guiana dolphin population was estimated in 2003 at 179 individuals (CV = 0.33) (Cremer et al., 2011) and has a high degree of residence (Hardt et al., 2010; Cremer et al., 2018). Systematic boat surveys indicate that Guiana dolphin groups aggregate in preferred habitats within Babitonga Bay (Cremer et al., 2011; Cremer et al., 2018).



Figure 2: Guiana dolphins (*Sotalia guianensis*) sighted in Babitonga Bay. Photo credit: Toninhas do Brasil / UNIVILLE



Figure 3: Franciscana dolphins (*Pontoporia blainvillei*) sighted in Babitonga Bay. Photo credit: Toninhas do Brasil / UNIVILLE



Figure 4: Guiana dolphins (*Sotalia guianensis*) mother and calf sighted in Babitonga Bay. Photo credit: Toninhas do Brasil / UNIVILLE

Criterion D: Special Attributes

Sub-Criterion D1: Distinctiveness

Based on the reviewed mitochondrial and nuclear DNA data available related to stock structure across the range of the franciscana, Cunha et al. (2020) proposed the existence of 11 Franciscana Management Areas (FMAs). These areas have been recognized as appropriate units for assessment of the species by the International Whaling Commission (IWC, in press). The Babitonga Bay population is unique because it corresponds to one of these management areas and is genetically differentiated and geographically isolated from franciscanas in adjacent coastal habitats. Franciscanas occupy a relatively limited habitat in the bay (Cremer et al., 2018) and animals instrumented with satellite transmitters remained within this habitat for the duration of their tracking (as many as six months, Wells et al., 2022). In addition, analysis of mtDNA and microsatellites revealed that franciscanas in Babitonga Bay are distinct from animals from nearby coastal habitats, and kinship analysis showed a high degree of philopatry for both males and females (Cunha et al., 2020; Nara et al., 2022).

Supporting Information

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