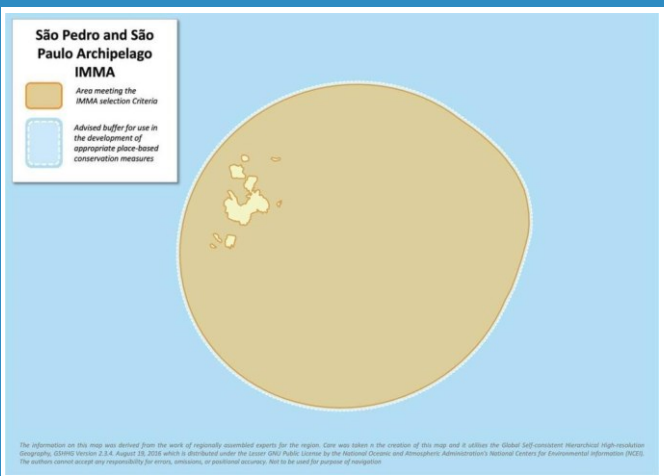

Area Size

1 km²

Qualifying Species and Criteria

Common bottlenose dolphin – *Tursiops truncatus*

Criterion B(1), D(1)

Other Marine Mammal Species Documented

Megaptera novaeangliae, Orcinus orca, Physeter macrocephalus, Ziphius cavirostris

Summary

The São Pedro and São Paulo Archipelago is an isolated group of barren islets located in the middle of the equatorial Atlantic Ocean around 1,000 km from the Brazilian mainland. The IMMA encompasses the waters surrounding the islands, which due to the influence of local upwellings, represent one of the rare productive areas over a vast region in the deep waters of the equatorial Atlantic Ocean. These productive waters host a very small (25 individuals) resident population of common bottlenose dolphins (*Tursiops truncatus*). Genetic studies have shown that this population is distinct from any other known population of common bottlenose dolphins from Brazilian waters, suggesting that they should be recognized as a distinct Management Unit. Some deep-feeding cetacean species, such as the sperm whale (*Physeter macrocephalus*) and Cuvier's beaked whale (*Ziphius cavirostris*), have also been recorded around the archipelago.

São Pedro and São Paulo Archipelago IMMA

Description

The São Pedro and São Paulo Archipelago is an isolated group of ten small rocky islands located in the middle of the equatorial Atlantic Ocean around 1,000 km from the Brazilian mainland (Edwards & Lubbock, 1983). The archipelago is part of the world's longest seamount chain and rises from abyssal depths near 5,000 m. The archipelago has been recognized as a distinct marine ecoregion (Spalding et al., 2007), due to its distance from the coast and its unique biodiversity (Edwards & Lubbock, 1983). When Darwin visited the archipelago in the Beagle Expedition in 1832, he noted "*a vast multitude of sea-fowl*".

This habitat is characterized by the prevailing surface waters of the South Equatorial Current, which flows westwards when passing by the rocks (Edwards & Lubbock, 1983). It also lies on the northern edge of the Atlantic Equatorial Undercurrent, a shallow (40–150 m deep), eastward flowing current derived from the North Brazilian Coastal Current (Koettker et al., 2010). Both main currents interact with the islets of the archipelago, resulting in a complex hydrological pattern that drives upwellings, which increase nutrient availability and thus primary productivity. This provides favourable conditions to support many different top predators in the region, including birds (Nunes et al., 2018), sharks (Macena & Hazin, 2016) and cetaceans, such as the resident common bottlenose dolphins (*Tursiops truncatus*) (Milmann et al., 2017; Wingert et al., 2021). The waters around the archipelago are also one of the most important fishing areas off northeastern Brazil.

Figure 1: Common bottlenose dolphin (*Tursiops truncatus*) sighted close to the rocks of São Pedro and São Paulo Archipelago.
Photo credit: Paulo H. Ott – GEMARS / Uergs

Since 2018, the archipelago belongs to a mosaic of Brazilian marine protected areas, consisting of two parts: a Natural Monument (WDPA ID 555635928) that encompass the islands and the surrounding waters (47,191.8 km^2) and is designated as a no-take zone, and a larger (384,565 km^2) Environmental Protection Area (WDPA ID 555635931) where some sustainable fishing is allowed.

Criterion B: Distribution and Abundance Sub-criterion B1: Small and Resident Populations

A very small population of common bottlenose dolphins (*Tursiops truncatus*) inhabits the offshore waters surrounding São Pedro and São Paulo Archipelago. Data collected during line-transect and photo-identification surveys conducted in different seasons from 2011 to 2013, were used to estimate a population of 23 individuals (19–28, CI 95%). Dolphins were observed on most sampling days (>90% of surveys) across seasons (Milmann et al., 2017). Multiple studies indicate that these dolphins are present throughout the year and occupy a restricted area around the archipelago (Moreno et al., 2009; Ott et al., 2009; Hoffmann & Freitas, 2018). The minimum convex polygon (MCP, 95%) method revealed strong site fidelity, with movements, based on the 95% kernel density, restricted to a 0.5 km^2 area across seasons and a 0.99 km^2 area across years (Milmann et al., 2017). Long-term fidelity of photo-identified dolphins to the area of São Pedro and São Paulo Archipelago has also been reported. Comparisons of photographs taken since 2004 yielded resighting intervals of over 9 years or some individuals (Milmann et al., 2017).

Figure 2: Common bottlenose dolphins (*Tursiops truncatus*) sighted in the offshore waters of São Pedro and São Paulo Archipelago. Photo credit: Paulo H. Ott – GEMARS / Uergs

Figure 3: Common bottlenose dolphins (*Tursiops truncatus*) mother and calf sighted around São Pedro and São Paulo Archipelago. Photo credit: Lucas Milmann – GEMARS

Figure 4: Common bottlenose dolphin (*Tursiops truncatus*) sighted around São Pedro and São Paulo Archipelago. The natural marks on the dorsal fin are used to recognize the distinctive individuals in the area. Photo credit: Rodrigo Machado – GEMARS

Criterion D: Special Attributes
Sub-Criterion D1: Distinctiveness

Oliveira et al. (2019) found significant genetic differences between common bottlenose dolphins sampled at the São Pedro and São Paulo Archipelago and those sampled along the Brazilian coast. Results from mtDNA revealed that this small offshore population presented only two haplotypes, which are not shared with any other individual from the Brazilian coastal regions. Moreover, microsatellite data also showed a clear genetic differentiation between this offshore and other coastal Brazilian populations. Molecular data suggest that this population is part of, or was recently colonized by, migrants from a large oceanic North Atlantic population, which includes individuals from the archipelagos of Madeira and the Azores (Oliveira et al., 2019).

This genetic data in conjunction with the biogeographic location of the archipelago strongly suggest that the dolphins from São Pedro and São Paulo Archipelago are genetically isolated from other Brazilian populations (Oliveira et al., 2019). Based on these findings, Oliveira et al. (2019) proposed that this population should be considered as a distinct Management Unit in the southwestern Atlantic Ocean.

Supporting Information

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Acknowledgements

We would like to thank the participants of the 2023 hybrid IMMA Regional Expert Workshop for the identification of IMMAs in the South West Atlantic Ocean. Funding for the identification of this IMMA was provided by the Global Ocean Biodiversity Initiative funded by the German government's International Climate Initiative (IKI). Additional funds were provided by OceanCare and the Animal Welfare Institute. Local support and hosting for the workshop was provided by the Instituto Baleia Jubarte. Support to the IMMA programme is provided by Whale and Dolphin Conservation, and the Tethys Research Institute.

Suggested Citation: IUCN-MMPATF (2023) São Pedro and São Paulo Archipelago IMMA Factsheet. IUCN Joint SSC/WCPA Marine Mammal Protected Areas Task Force, 2023.

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