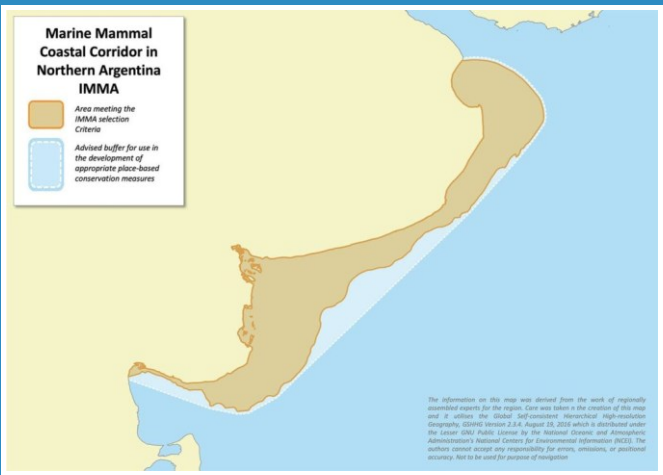

Area Size

93,116 km²

Qualifying Species and Criteria

Franciscana dolphin – *Pontoporia blainvillei*

Criterion A; B (1); C (1, 2); D (1)

Lahille's bottlenose dolphin – *Tursiops truncatus gephyreus*

Criterion A; B (1); C (2)

South American sea lion – *Otaria byronia*

Criterion C (2)

South American fur seal – *Arctocephalus australis*

Criterion C (2)

Common dolphin – *Delphinus delphis*

Criterion C (2)

Southern right whale – *Eubalaena australis*

Criterion C (3b)

Criterion D (2) - Marine Mammal Diversity

Arctocephalus australis, Delphinus delphis, Eubalaena australis, Megaptera novaeangliae, Otaria byronia, Pontoporia blainvillei, Tursiops truncatus gephyreus, Tursiops truncatus truncatus

Other Marine Mammal Species Documented

Aethalodelphis obscurus, Mirounga leonina, Orcinus orca, Phocoena spinipinnis

Marine Mammal Coastal Corridor in Northern Argentina IMMA

Summary:

The Marine Mammal Coastal Corridor in Northern Argentina IMMA encompasses a portion of the coastal continental shelf in northern Argentina's EEZ. The coastal habitat up to 50m depth is highly productive and serves as important habitat for marine turtles, birds and mammals. The area includes the southernmost distribution of franciscanas (*Pontoporia blainvillei*) and Lahille's bottlenose dolphins (*Tursiops truncatus gephyreus*), which are both classified as Vulnerable on both the IUCN and Argentina's Red Lists. Furthermore, the area hosts genetically differentiated subpopulations of both of these species. The IMMA also hosts six additional species of pinnipeds, small cetaceans and whales. South American sea lions (*Otaria byronia*) and fur seals (*Arctocephalus australis*) are present in this area year-round and are functionally connected with populations off Uruguay and Patagonia. The number of southern right whales (*Eubalaena australis*) using the IMMA is increasing, linking two breeding areas off Brazil and northern Patagonia. An increasing number of records of humpback whales (*Megaptera novaeangliae*) in the area includes records of entanglement and ship strikes. Coastal and mid-continental shelf fish assemblages (anchovies, sciaenids, squids) are the main prey items for most of the small cetaceans and pinnipeds in the IMMA, and are subject to fisheries pressure. Franciscana dolphins are the species most impacted by bycatch from artisanal fisheries in the Argentine EEZ while common dolphins are more impacted by midwater industrial trawl fisheries.

Description:

The IMMA includes a coastal corridor off northern Argentina, of approximately 1,200 km in length, limited by the La Plata River estuary in the north, and Golfo San Matías in the south. Coastal waters are usually homogeneous or have minor stratification, showing a strong interaction with inflowing freshwater and land sources, and the inner continental shelf is characterised by subantarctic water masses (Lucas et al., 2005).

The La Plata River system is a funnel coastal plain tidal river with a semi-closed shelf at the mouth shared by Argentina and Uruguay. It drains the second largest river basin in South America. The marine coastal zone between the estuarine areas of the La Plata River and Bahía Blanca is characterized by extensive sandy beaches and urban development. The coastal marine ecosystem extends from the coast to approximately the 50 m isobath, and is characterised by fine sediment benthic areas and a particularly diverse ichthyofauna mainly represented by species of commercial interest and different from the mid and outer continental shelf (Diaz de Astarloa et al.,1999).

The second estuarine area is Bahía Blanca, a mesotidal coastal plain estuary, extending over about 2,300 km² and formed by several tidal channels, extensive tidal flats with salt marshes, and islands (Perillo & Piccolo 1999, 2001). The coastal area between 39°S and 41°S is characterised by the low salinity waters of the *El Rincón* estuarine system, from the mouth of the Río Negro to Bahía Blanca at 39°S (Acha et al., 2004), being a complex and highly productive area (Macchi & Acha 1998; Viñas et al., 2013).

The southern sector of the IMMA, includes the mouths of the two main rivers of Northern Patagonia (the Río Colorado and the Río Negro). The Río Negro is the largest watercourse in the Argentine province of Rio Negro and also in Patagonia in terms of its flow (1,014 m^3/s). In general, this area includes depths of less than 50 m. This corridor includes an extensive system of natural marshes in the southern Province of Buenos Aires (Ría Bahía Blanca and Bahía Anegada). It is a coastal wetland of unique geographical and biological characteristics and is considered one of the most important of its kind in Argentina. Its shores are low, made up of sand, silt or boulders. Towards the south of Bahía Anegada, the characteristic Patagonian cliffs appear, composed of Tertiary sedimentary rocks, outlined at their feet by rocky shoals exposed at low tide. The abrasion of the waters has created caves or small caverns in these cliffs.

The IMMA includes 10 MPAs (Bahía Samborombón, Rincón de Ajó, Restinga del Faro, Arroyo Zabala, Pehuén Co-Monte Hermoso, Bahías Blanca, Falsa y Verde, Bahía San Blás, Punta Bermeja, Caleta los Loros y Bahía San Antonio) and two Natural Monuments (Franciscana [State] and Southern Right Whale [National]). The IMMA also encompasses Franciscana Management Area (FMA) IV, (Ott et al., 2022; Hevia et al., 2022).

Criterion A: Species or Population Vulnerability

The IMMA provides coastal habitat for one Vulnerable dolphin species, the franciscana (*Pontoporia blainvillei* ; Vulnerable A3d; Zerbini et al., 2017), and one vulnerable subspecies, Lahille's bottlenose dolphin (*Tursiops truncatus gephyreus* ; Vulnerable D1 ; Vermeulen et al., 2019).

Figure 1: Franciscana dolphins (*Pontoporia blainvillei*). Photo credit: Daniel Danilewicz

Figure 2: Lahille's bottlenose dolphins (*Tursiops truncatus gephyreus*) sighted in Bahia Blanca, Bahía Falsa and Bahia Verde Marine Protected Area. Photo credit: Maria Victoria Massola

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

Lahille´s Bottlenose dolphins were previously reported to be continuous along the coast of Buenos Aires, Río Negro and Chubut provinces off Argentina. However, a considerable reduction in sightings was recorded in the last 20 years, with certain areas where dolphins have almost completely disappeared (Castello et al., 1983; Bastida & Rodríguez, 2003; Coscarella et al., 2012; Vermeulen & Bräger, 2015; Vermeulen et al., 2018). In the late-1970s to mid-1980s, approximately 100 Lahille's bottlenose dolphins were estimated to occur in the northern area of the IMMA (San Clemente del Tuyú and Miramar, but a marked decrease in sightings was noted in this area in the late 1980s, after which sightings dropped dramatically in the 1990s despite continued opportunistic survey effort (Bastida & Rodríguez, 2003; Lodi et al., 2016). Furthermore, there are no new coastal areas where the presence of this species has grown substantially over time, ruling out any hypotheses of distribution shifts.

The largest concentration of Lahille's bottlenose dolphins in this IMMA is Bahía San Antonio and adjacent areas (Río Negro; Svendsen, 2013; Vermeulen et al., 2018). The presence of a resident community ranging from Bahía San Antonio to El Cóndor was reported (Vermeulen & Cammareri, 2009; Vermeulen et al., 2016; Failla et al., 2016). Photo-identification studies of Lahille's bottlenose dolphins in the estuary of Bahía Blanca, conducted between October 2020 and April 2023 showed that bottlenose dolphins were sighted year-round on 30 different occasions, with a cumulative identification of 190 unique individuals. The overall sighting per unit effort (SPUE) was 0.34 dolphin group/hour. Observed group sizes ranged from one to 20 individuals, but most (76.6%) of the groups observed contained between one to eight dolphins (Petracci et al., 2023). The occurrence of bottlenose dolphins in the northern area Bahía Samborombon is low, with few annual sightings of solitary or pairs of dolphins.

Roughly 15% of the Lahille's bottlenose dolphin groups observed in the Bahia Samborombon contained calves, but never more than one calf per group (Vermeulen et al., 2017). Ad hoc observations off Bahía Blanca reported regular sightings of calves. Off San Antonio, up to 72% of the Lahille's bottlenose dolphin groups encountered contained calves and neonates, and these could be seen throughout the year, suggesting that the shallow waters (<10 m) of the bay are used by the dolphins as a calving and nursing area (Vermeulen & Cammareri, 2009). Franciscanas are present year-round in the area (Crespo et al., 2010), and genetic information suggests some site fidelity in females (Mendez et al., 2010). Wells et al. (2022) reported that satellite tagged dolphins had relatively small home range sizes, ranging from 132.9 km² (SD = 102.8 km², range = 51–312 km², n = 5) in Bahía Samborombon to 463.5 km² (SD = 344.1, range = 49–1,013, n = 7) in Bahía San Blás. Use of the water column is fairly consistent along its distribution, spending nearly all of their time-at-depth <10 m, and mostly <5 m, with suggested residency over periods of weeks. The latest published franciscana abundance estimates from the area are based on monitoring carried out in 2003 and 2004, which yielded an estimate of 14,695 individuals for Argentina but excluding Bahía Samborombón (Crespo et al., 2010). The International Whaling Commission's Scientific Committee is currently coordinating a review of the species and a new abundance estimate is expected to be approved in 2023. The most recent bycatch mortality estimate is between 369-539 animals per year in the area (Negri et al., 2012), a removal that would represent between 2.5-2.7% per year of the population size. It is suggested that removal should not exceed the

population growth rate by more than 0.5% (Crespo et al., 2020).

Criterion C: Key Life Cycle Activities Sub-Criterion C1: Reproductive Areas

Stranded (alive and freshly dead) and entangled franciscana calves are documented annually in the southern part of Bahía Samborombon. This suggests the bay is a calving area. The calving period of the franciscana – defined by the period of occurrence of live stranded calves with umbilical cords combined with milk in the stomach – extends over ca. 4 months, from early October to late January, with the highest frequency in November (Denuncio et al., 2013). During an aerial survey performed in March 2022 along the coast of Buenos Aires province to Mar del Plata, 10% of sighted groups were composed of mothers and calves (Coscarella, unpublish data). In Bahía Anegada, the majority of recorded sightings have been mother-calf pairs and adult individuals near the coast during spring-summer, also suggesting a recurrent breeding area (Bordino et al., 1999). For the Río Negro estuary, a total of 10 calves were recorded from January 2002 to December 2011 (Failla et al., 2012).

Sub-Criterion C2: Feeding Areas

This IMMA's oceanographic conditions promote high levels of productivity and marine diversity, providing an ample prey base for marine mammals. The fish assemblage of the IMMA (locally called *variado costero*) is composed of *circa* 30 species of bony, cartilaginous fish and small squids, with a persistent occurrence in time and specific composition. Biologically, it is defined as a demersal fish association that gives rise to a multi-species fishery, both artisanal and industrial. The distribution area of this association of species ranges from the coastline to 50 m isobath, extending from 34°S northern limit (Chuy, Uruguay) to 41°S, southern limit of the Province of Buenos Aires, although some species have a wider distribution. All the marine mammal species in this IMMA prey on the same assemblage, with the addition of the northern anchovy (*Engraulis anchoita*) stock that inhabits mid shelf (depths of 30-90m; north of 41°S) and it is currently considered underexploited (Buratti et al., 2020; Ciancio et al., 2020).

Species feeding on this assemblage include the resident Lahille´s bottlenose and franciscana dolphins. It has been suggested that local movements of Lahille´s bottlenose dolphins to the Rio Negro estuarine areas are related to prey occurrence (Vermeulen et al., 2017). Stable isotope analysis of carbon (δ13C) and nitrogen (δ15N) from bone samples of Lahille's bottlenose dolphins showed historical differences in foraging ecology between animals from Argentina and those of Uruguay and Brazil. Their considerably broad isotopic niche was maintained over decades, with a high proportion of demersal prey, mainly from coastal marine waters. Lahille´s bottlenose dolphins from Argentina and Uruguay showed a total isotopic niche segregation in the last 40 years, probably reflecting a spatial/ecological structuring in this region (Campos Rengel et al., 2021).

Figure 3: Lahille's bottlenose dolphin (*Tursiops truncatus gephyreus*). Photo credit: E. Zuazquita / Fundación Cethus

Franciscana prey on *circa* 20 fish, 2 squid of the *variado costero* and 4 crustacean species in the area, most of them juvenile stages of commercially targeted species (Rodríguez et al., 2002; Paso Viola et al., 2014). The differences in their diet suggest at least three different foraging habitats, including estuarine and two main marine areas. Across this area, franciscanas have diets with different protein energy and water mass compositions, but similar protein-to-lipid energy ratios. These results suggest that the different estuarine and marine habitats are associated with different prey composition niches, but similar realised nutritional niches (Denuncio et al., 2017).

Stomach content and isotopic analyses of Common dolphins (*Delphinus delphis*) in this IMMA indicate that they prey mainly on pelagic schooling fish and squid, with the Argentine anchovy as the main prey and a high diversity of small pelagic fishes and squids (Romero et al., 2012; Saporiti et al., 2015; Loizaga de Castro et al., 2016).

South American sea lions (*Otaria byronia)* and fur seals (*Arctocephalus australis*), are considered as dietary generalists that opportunistically feed on several prey species found in this IMMA (Naya et al., 2002; Suarez et al., 2005) while showing a horizontal overlap in foraging areas (Gonzalez Carman et al., 2016). Diet analysis showed that sea lions prefer demersal species (Franco-Trecu et al., 2014; Frau-Martinez, 2009; Szteren et al., 2004, 2018) while fur seals mostly consume pelagic prey (Drago et al., 2017; Franco-Trecu et al., 2014; Szteren et al., 2018; Vales et al., 2014; Machado et al., 2020), suggesting a potential dietary niche segregation. The sea lions consume at least 12 species, while for the fur seals' diet includes ten species, sharing 4 prey species (2 demersal and 2 pelagic), all of them part of the *variado costero* and anchovies. Nutritional niche analysis reports that both species exhibit a high prey composition niche overlap, demonstrating that they consumed different prey species but with similar macronutrient composition ranges (Denuncio et al., 2021).

Figure 4: South American sea lion (*Otaria byronia*).
Photo credit: Joaquin Gana

Figure 5: South American fur seal (*Arctocephalus australis*).
Photo credit: Joaquin Gana

The La Plata River estuary and the nearby coastal marine area is a foraging habitat for lactating South American sea lion females that breed in the island complex of Isla de Lobos (Uruguay), as they regularly perform foraging trips to the IMMA (Rodríguez et al., 2013). During the autumn–winter period, sea lions, fur seals, Green (*Chelonia mydas*), Loggerhead (*Caretta caretta*) and Leatherback turtles (*Dermochelys coriacea*), as well as Black-browed albatrosses (*Thalassarche melanophris*), regularly forage in the

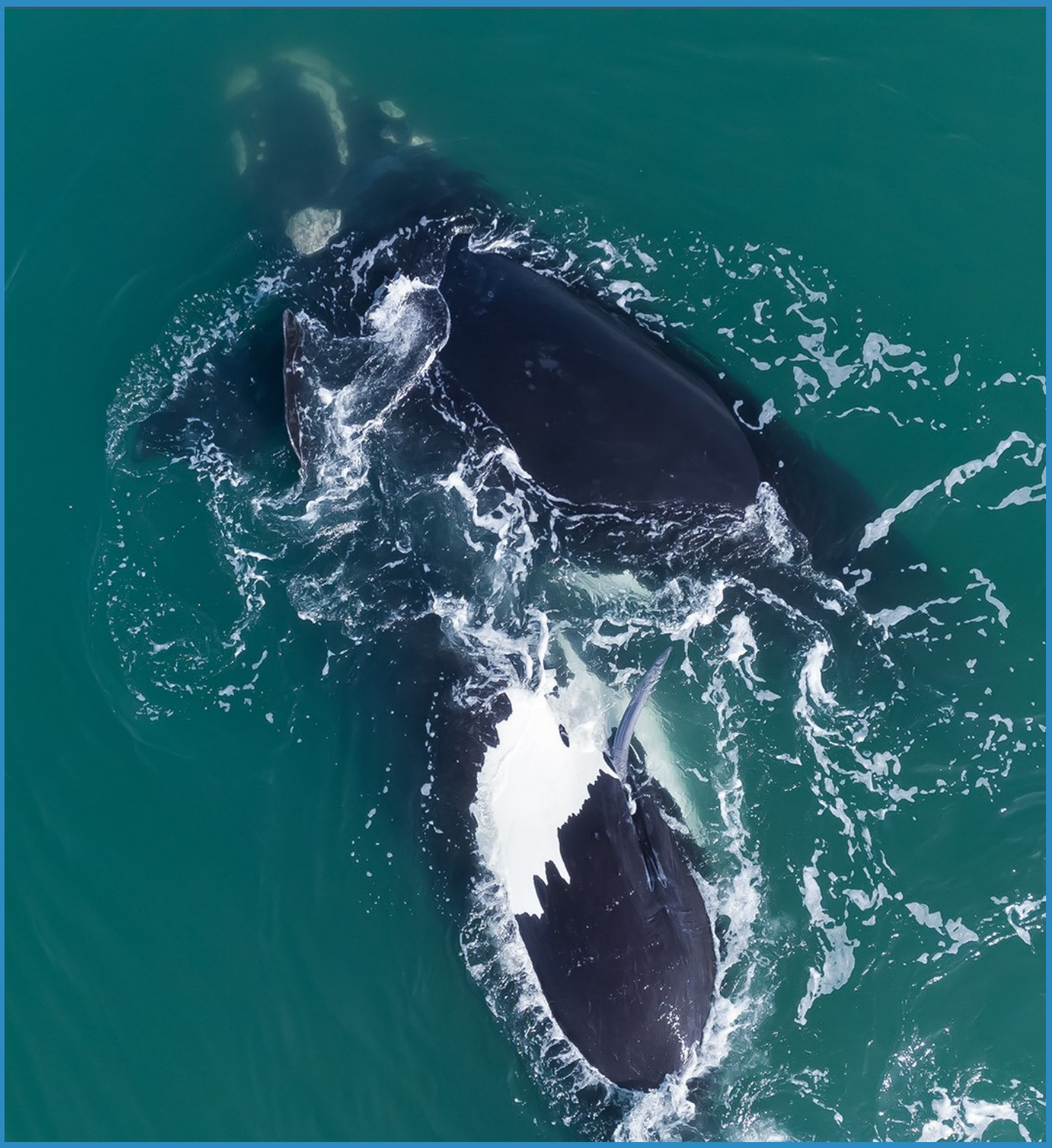

Figure 6: First mating record of southern right whales (*Eubalaena australis*) off Mar del Plata. Photo credit: Andrei Alekseev

continental shelves of Argentina, Uruguay, and Brazil, mainly over the Argentine Exclusive Economic Zone and the Argentina-Uruguay Common Fishing Zone. All these megafaunal species share waters shallower than 50 m in the Río de la Plata as the habitat with the highest suitability (Rodríguez et al., 2013; Gonzalez Carman et al., 2016).

Sub-Criterion C3: Migration Routes

C3b – Migration / Movement Area

Southern right whales concentrate off the SW Atlantic in two main reproductive areas (Península Valdés-Argentina and Santa Catarina-Brazil). Sightings of this species in intermediate areas, such as Southern Brazil, Uruguay and northern Argentina

have increased since the 1990s (IWC, 2013) with sightings occurring between July and September, a period correlating to the northward migration from high latitude feeding grounds. During this time they are typically observed at depths of up to 50 m and demonstrate short residency times typical of migratory stopovers (< 7 days). The species is also observed in areas beyond the 200m contour line between October and December, a period corresponding to the southward return migration from low latitude breeding grounds to high latitude feeding grounds (Mandiola et al., 2020).

Criterion D: Special Attributes
Sub-Criterion D1: Distinctiveness

Different genetic and morphological data for the Franciscana dolphin have indicated that there is population structuring throughout its range, leading to the designation of new subdivisions within each Franciscana Management Area (FMA) (Cunha et al. 2014). Within FMA IV, the region that includes Argentina's coastline, five regions have been identified, each with high levels of genetic differentiation (Gariboldi et al. 2015; 2016):

1. Samborombón Oeste / Samborombón Sur (FMAa)
2. Cabo San Antonio / Buenos Aires Este (FMAb)
3. Necochea / Claromecó / Buenos Aires Suroeste (FMAc)
4. Monte Hermoso (FMAd)
5. Río Negro (FMAe).

In 2023 the International Whaling Commission recognized these new subdivisions for the FMAIV. Of particular importance for the definition of this IMMA, is the genetic differences found between the Bahía Samborombon genetic unit (FMA IV-a; Gariboldi et al., 2015; 2016) and Uruguay (FMA III; Costa Urrutia et al., 2012). Although the La Plata River estuary is an environmental continuum between the coasts of Uruguay and Argentina, this micro-geographic differentiation supports the separation of franciscanas found in this IMMA and those occurring in Southern Brazil and Uruguay coastal ecosystem.

Sub-Criterion D2: Diversity

The IMMA is characterised by year-round residence of Lahille's bottlenose dolphins and the Franciscanas, which are the two most endangered species of small cetaceans in the Southwest Atlantic. Other sympatric species are included under the IMMA criteria including south American sea lions, South American fur seals, southern right whales and common dolphins.

Additional species that are regularly recorded in the IMMA include killer whales (*Orcinus orca*), dusky dolphins (***Aethalodelphis obscurus***), southern elephant seals (*Mirounga leonina*), and Burmeister's porpoises (*Phocoena spinipinnis*) and humpback whales (*Megaptera novaeangliae*) (Bastida & Rodríguez, 2003).

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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) Marine Mammal Coastal Corridor in Northern Argentina IMMA Factsheet. IUCN Joint SSC/WCPA Marine Mammal Protected Areas Task Force, 2023.

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