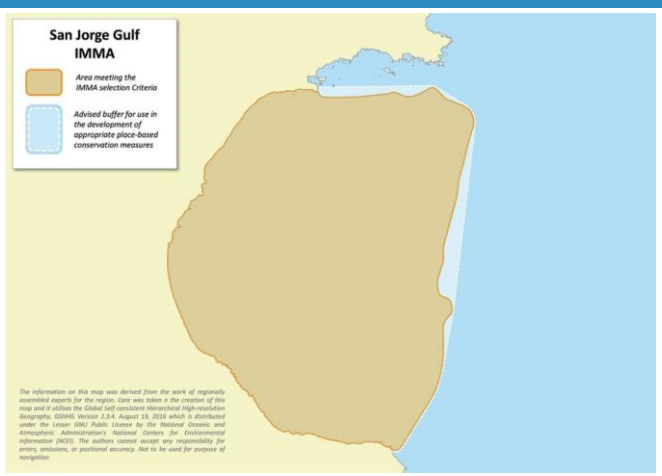

Area Size

28 617 km²

Qualifying Species and Criteria

Commerson's dolphin –
Cephalorhynchus commersonii
Criterion B (1)

Peale's dolphin – *Lagenorhynchus australis*
Criterion B (2)

Dusky dolphin – *Lagenorhynchus obscurus*
Criterion B (2)

Bottlenose dolphin – *Tursiops truncatus truncatus*
Criterion B (2)

Lahille´s bottlenose dolphin –
Tursiops truncatus gephyreus
Criterion A; B (2)

Southern right whale – *Eubalaena australis*
Criterion C (3)

Sei whale – *Balaenoptera borealis*
Criterion A; B (2); C (2)

Humpback whale – *Megaptera novaeangliae*
Criterion C (2, 3)

South American sea lion – *Otaria byronia*
Criterion B (2); C (1, 2)

San Jorge Gulf IMMA

Marine Mammal Diversity

Criterion D (2)
Cephalorhynchus commersonii, Lagenorhynchus australis, Lagenorhynchus obscurus, Orcinus orca, Grampus griseus, Tursiops truncatus truncatus, Tursiops truncatus gephyreus, Eubalaena australis, Balaenoptera borealis, Megaptera novaeangliae, Arctocephalus australis, Otaria byronia

Summary:

This IMMA includes a significant proportion of a highly productive ecosystem, which hosts an important diversity of marine mammals from Patagonia. The IMMA encompasses five coastal protected areas from two provincial states and partially overlaps with a Biosphere reserve. These include Rocas Coloradas, Punta Marqués, Costa Norte de Santa Cruz, Caleta Olivia, Barco Hundido and Monte Loayza. The area includes significant pupping, nursing and haul-out areas for South American sea lions (*Otaria byronia*), and provides feeding grounds and calving areas for several species of dolphins and whales, including, but not limited to Commerson's (*Cephalorynchus commersonii*), Risso's (*Grampus griseus*), dusky (*Lagenorhynchus obscurus*), Peale's (*Lagenorhyncus australis*), Lahille's (*Tursiops truncatus gephyreus*) and common bottlenose (*Tursiops truncatus truncatus*) dolphins, and the endangered sei whale (*Balaenoptera borealis*). It is also used as a migration corridor for humpback whales *(Megaptera novaeangliae*) and southern right whales (*Eubalaena australis*).

Description:

The San Jorge Gulf (Golfo San Jorge) IMMA is located in the Southwestern south Atlantic between 45° 15' and 47° S. It is an open gulf of approximately 40,000 km² and is the biggest coastal feature on the Argentine coast. Its geographical limits are Cabo Dos Bahías at the north and Cabo Tres Puntas at the south. San Jorge Gulf has depths of 100 m in the centre reaching to 80 m at the outer border. The water circulation in the gulf is characterised by a cyclonic gyro in its southern part and is influenced by a strong coastal current on the west and the Patagonian current on the east. During the warm period, the temperature at the surface is between 13 and 16°C, while the bottom is between 9 and 13°C. During the cold period, the water column is not stratified, and water temperatures range between 6 and 9°C. There is a strong upwelling near the coast during the whole year, due to the current circulation and during the winter when the stratification is absent (Dans et al., 2021). A suite of process-oriented numerical experiments indicates that the San Jorge Gulf circulation is mainly driven by tidal forcing and modulated by wind forcing and intrusions from the Patagonian Shelf. This area has a high primary production that is used as a habitat for many species of marine birds and mammals, and supports a large fishery based mainly on shrimp (*Pleoticus muelleri*) and Argentine hake (*Merluccius hubbsi*) (Dans et al., 2021). There is a recent increase in rorquals and other whales that are sighted close to the shore.

The IMMA encompasses five coastal protected areas from two provincial states and partially overlaps with with a Biosphere reserve. These include Rocas Coloradas, Punta Marqués, Costa Norte de Santa Cruz, Caleta Olivia, Barco Hundido and Monte Loayza. In the north, the IMMA overlaps with the UNESCO Patagonia Azul Biosphere Reserve. The San Jorge Gulf (Golfo San Jorge) is a relatively unknown area regarding marine mammals, although the northern part is better studied than the rest of the area that has not been systematically studied. The boundaries of this IMMA are created on the basis of ocean currents that circulate in the gulf.

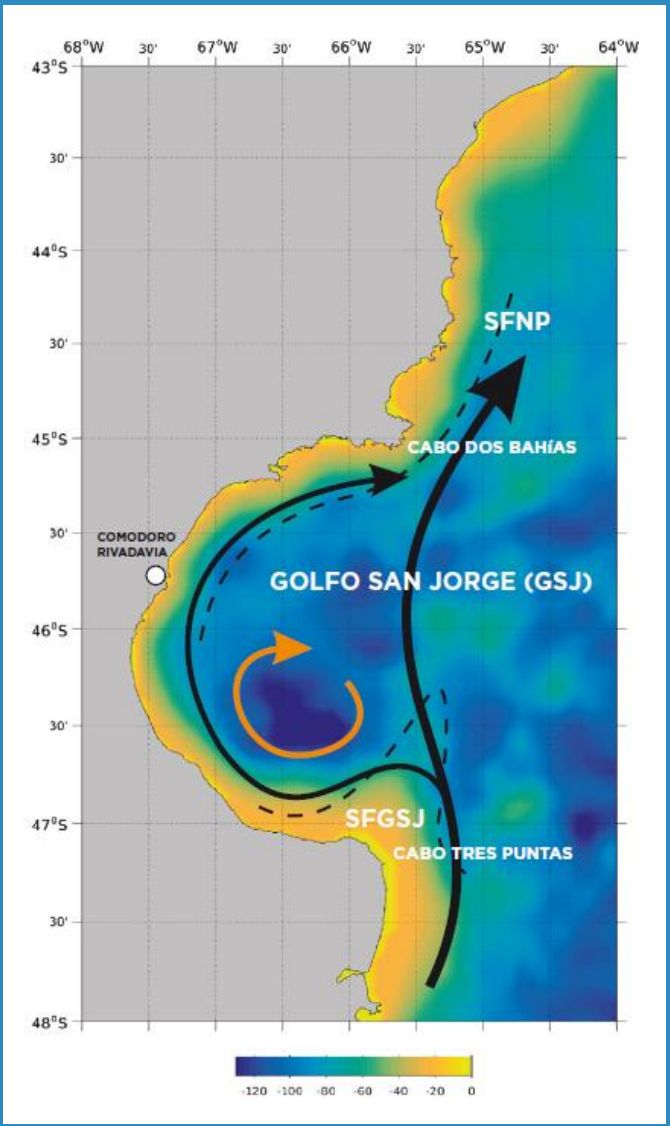

Figure 1: Schematic of the current circulation inside Golfo San Jorge. Colours represent the depth of the gulf. Black arrow is the Patagonian current that is divided in two, one branch entering the gulf and the other one defining the limit of the IMMA while flowing on its outer limit. Dotted lines are two tidal fronts, the Sistema Frontal Norpatagónico (SFNP) and the Sistema Frontal Golfo San Jorge. The orange arrow represents the cyclonic gyro. Excerpt from Dans et al. (2021).

Figure 2: Sei whale (*Balaenoptera borealis*) sighted near coastal water of San Jorge Gulf. Photo credit: Diego Cabanas

Criterion A: Species and Population Vulnerability

There are populations of both common bottlenose dolphins (*Tursiops truncatus truncatus*), and Lahille's bottlenose dolphins (*T. t. gephyreus)* in the San Jorge Gulf (Golfo San Jorge), and it is probably the southern border for the later sub-species' distributions (Fruet et al., 2014). Small groups of both subspecies are sighted regularly within the IMMA, and sporadically large groups of approximately 50 individuals (putative common bottlenose dolphins) are sighted with calves (Coscarella et al., 2021a). Lahille's bottlenose dolphins are listed as Vulnerable by the IUCN (Vermeulen et al., 2019), but are not assigned to a category at the national level in Argentina.

Although the common bottlenose at the international level is listed as Least Concern, at the national level in Argentina it is listed as Vulnerable.

The sei whale (*Balaenoptera borealis*) is listed as EN both by the IUCN (Cooke, 2018) and the Red List of Argentina (Hevia et al., 2019). These whales have increased their presence in the last ten years in the area, and still increase according to the sighting per unit effort presented in Coscarella et al. (2023). Their main activity in the IMMA is feeding, so it may be a previously unknown feeding ground for the species, particularly important since these behaviours are performed very close to the shore (Coscarella et al., 2022).

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

There is a small population of Commerson's dolphins (*Cephalorhynchus commersonii*) that are regularly sighted in the IMMA (Coscarella et al., 2021a; Mermoz, 1980). There is no abundance estimation available, but in recent aerial surveys more than 50 individuals were sighted (Coscarella, unpublished information). Commerson's dolphins are sighted during the whole year from a land station in Punta Marqués, with the highest sighting rate during the summer months (Coscarella, 2021a).

Figure 3: A pair of Commerson's dolphins (*Cephalorhynchus commersonii*) sighted in San Jorge Gulf.
Photo credit: Diego Cabanas

Sub-criterion B2: Aggregations

There are two rookeries of South American sea lions (*Otaria byronia*) (also known as *Otaria flavescens* in Argentina) present in the IMMA at Monte Loayza and Punta Marqués, with more than 12,000 individuals in total (Grandi et al., 2014; Páez et al., 2017).

There is a population of sei whales regularly present in the coastal zone of the area from October until July. A preliminary abundance estimation from aerial surveys conducted during the 2021-2022 season, estimated 706 sei whales were present in the area in November 2021, and a total of 2776 in May 2022 (Coscarella et al., 2023).

The San Jorge Gulf IMMA also provides breeding habitat for dusky (*Lagenorhynchus obscurus*), Peale's (*Lagenorhynchus australis*), Risso's (*Grampus griseus*) and both bottlenose subspecies all of which have been sighted in groups including calves during the summer months (Coscarella et al., 2021). The productive waters in this IMMA provide abundant food resources on which these species depend.

Figure 4: Risso's dolphins (*Grampus griseus*) sighted with sei whale in San Jorge Gulf. Photo credit: Daniel Lucchetti

Figure 5: Dusky dolphins (*Lagenorhynchus obscurus*), sighted with sei whale in San Jorge Gulf. Photo credit: Daniel Lucchetti

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

The IMMA hosts two South American sea lion rookeries, where pups are regularly documented. The main area of reproduction is Monte Loayza within the IMMA where 245 pups were recorded in 1995 and 1415 recorded in 2012 making this one of the biggest breeding areas for this species in southern Patagonia (Crespo et al., 2021; Grandi et al., 2014).

Sub-criterion C2: Feeding Areas

The San Jorge Gulf is a very rich area that provides prey for sea lions and all dolphin species. It is likely to be the productive habitat and abundant food resources that attract such large numbers of marine mammals.

Coscarella & Riera (2022) reported that sei whales devote 30% of their time budget to feeding, mainly on squat lobsters (*Munida gregaria*) in the area, very often near the coast. The estimate is obtained from the frequency this behavior is observed from a vantage point in the top of a cliff in the center of the area, particularly in Punta Marquès, where they can be observed very close to the shore (Coscarella et al., 2023).

Humpback whales frequently feed on silversides near the coast (Riera et al., 2022).

Sub-criterion C3: Migration Routes

Several species of balaenopterids use the area for transit between feeding grounds in the Antarctic / sub-Antarctic and breeding grounds in the tropics, and many can be observed very close to the shore in Punta Marquès (Coscarella et al., 2023). The San Jorge Gulf is an important stop off point for the southern right whale during its migration (IWC, 2013; Coscarella et al., 2021; Iñíguez et al., 2010).

Criterion D: Special Attributes
Sub-criterion D1: Distinctiveness

Recently humpback whales have been reported feeding in the Punta Marqués Protected Area. The whales swim very close to the shore, and the feeding technique named *natural barrier feeding*, presented as a cultural trait, consists of the whale forcing prey against a barrier (a wave-cut platform) and then accelerating towards the prey using, generally, a lateral lunge-feeding approach to capture small fishes (Riera et al., 2022).

Sub-criterion D2: Diversity

This IMMA includes habitat that supports an important diversity of marine mammal species, both pinnipeds and cetaceans. Nineteen marine mammal species are sighted in the area, with 12 that are sighted more frequently, some during the whole year and others during a specific season every year. The rest of the species are sighted once or twice a year (Hevia et al., 2022; Coscarella et al., 2021a; Retana & Lewis, 2017; Iñíguez et al., 2010; Reyes, 2006).

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