

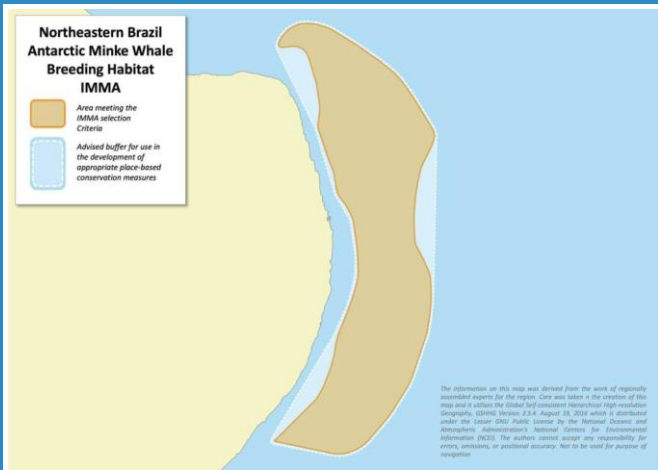
Northeastern Brazil Antarctic Minke Whale Breeding Habitat IMMA

Summary, continued.

Antarctic minke whales (*Balaenoptera bonaerensis*), as well as a calving area for the western South Atlantic humpback whale (*Megaptera novaeangliae*) population. Three additional large whale species have also been documented using this region: Bryde's whale (*Balaenoptera edeni*), sei whale (*B. borealis*), and sperm whale (*Physeter macrocephalus*). Because of large aggregations of these large whales, this area was an important low-latitude commercial whaling ground. Recent ship surveys in these deep waters confirm the seasonal occurrence of these species and also documented several small cetacean species, including Pantropical spotted dolphin (*Stenella attenuata*), Clymene's dolphins (*S. clymene*) and spinner dolphin (*S. longirostris*).

Description:

The Northeast Brazil IMMA encompasses known breeding habitat of Antarctic minke whales (*Balaenoptera bonaerensis*) and is located south of the Equator between the latitudes of 5 and 10°S, on the northeast corner of the South American continent. The continental shelf is narrow, about 30 km on average, with a steep slope, which results in depths greater than 2500-3000 m close to shore (Williamson, 1975). The warm equatorial current approaches the coast from the east and is divided into a north-flowing and a south-flowing stream at the tip of the continent near Cabo Calcanhar in the Brazilian state of Rio Grande do Norte. The south-flowing stream gives origin to the Brazil current which flows southwards along the east coast of South America. The biological productivity in the NE region



Area Size

74 261 km²

Qualifying Species and Criteria

Antarctic minke whale –
Balaenoptera bonaerensis

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

Sei whale – *Balaenoptera borealis*

Criterion A

Humpback whale – *Megaptera novaeangliae*

Criterion C (1)

Sperm whale – *Physeter macrocephalus*

Criterion A

Marine Mammal Diversity

Criterion D (1)

Balaenoptera bonaerensis, *Balaenoptera borealis*, *Balaenoptera edeni*, *Megaptera novaeangliae*, *Physeter macrocephalus*, *Stenella attenuata*, *Stenella clymene*, *Stenella longirostris*

Summary

The Northeast Brazil breeding habitat of Antarctic minke whales is a hotspot for cetacean diversity in offshore waters off the northeastern tip of South America. It provides important seasonal and year-round habitats for many large whales and small cetaceans. This area encompasses the only known low-latitude mating ground for

region of Brazil is relatively poor when compared to areas to the south (e.g., southeastern and southern Brazil) and to the northeast (e.g., the mouth of the Amazon River). During the winter and spring, the average sea surface temperature is about 27°C.

The NE coast of Brazil has long been recognized as a breeding ground for Antarctic minke whales and is an area where other baleen whales visit during the wintering season (Williamson, 1975; Andriolo et al., 2010). Commercial whaling operations took place in the region (at the whaling station of Costinha, Paraíba) between 1911 and 1986 (Williamson, 1975; da Rocha, 1983; Horwood, 1990). In addition to minke whales, blue whales (*B. musculus*), fin whales (*B. physalus*), sei whales (*B. borealis*), Bryde's whales (*B. edeni*), humpback whales (*Megaptera novaeangliae*) and sperm whales (*Physeter macrocephalus*) were taken (Williamson, 1975). This region is also an important

habitat for several small cetacean species, including three species of the genus *Stenella* (Moreno et al., 2005), short-finned pilot whales (*Globicephala macrorhynchus*), melon headed whales (*Peponocephala electra*) and common bottlenose dolphins (*Tursiops truncatus*) (Zerbini et al., 2000).

This IMMA, which has its boundary largely based on the most recent records of Antarctic minke whales in their breeding ground around the whaling station of Costinha (Andriolo et al., 2010), partially overlaps with the Northeastern Brazil Shelf-Edge Zone EBSA (Ecologically and Biologically Significant Area) (CBD, 2023). This EBSA also highlights as some of its important features the inclusion of a portion of the breeding ground of humpback whales off the northeastern coast of Brazil and the occurrence of various relatively low-density cetacean populations.



Figure 1: Antarctic minke whale (*Balaenoptera bonaerensis*) sighted off Northeastern Brazil . Photo credit: Alex Zerbini

Criterion B: Distribution and Abundance

Sub-criterion B2: Aggregations

Ship based line transect surveys demonstrate that Antarctic minke whales (*Balaenoptera bonaerensis*) aggregate off the northeast coast of Brazil during the breeding season, increasing in number from winter to spring (Andriolo et al., 2010). Whaling data from the 1960s also confirm the seasonal occurrence of the species in the region from July to December, with a peak of catches of both males and females in October and November (Williamson, 1975; Lucena, 2006). Data from this period also revealed a relatively high density (6.57 whales per 100km²) in the whaling area (Lucena, 2006). More recent data from line transect ship surveys suggests that Antarctic minke whales are also regularly found to the north and to the south of the historical whaling ground, with a relatively high encounter rate (SR = 0.031 individuals/nm) (Andriolo et al., 2010).



Figure 2: Antarctic minke whales (*Balaenoptera bonaerensis*) sighted off the northeast coast of Brazil. Photo credit: Alex Zerbini

Criterion C: Key Life Cycle Activities

Sub-criterion C1: Reproductive Areas

The NE coast of Brazil has long been considered a breeding ground for Antarctic minke whales (Williamson, 1975). Examination of reproductive organs of whales caught in this area and processed in the whaling station of Costinha in the 1960s showed that both males and females were reproductively active off Brazil (Williamson, 1975; Lucena, 2006). More recently, Andriolo et al. (2010) reported a relatively high density of Antarctic minke whales in this area, with the observation of animals exhibiting mating behaviour. However, the number of calves recorded in this area was relatively low based on both whaling records (Williamson, 1975; Lucena, 2006) and ship surveys (Andriolo et al., 2010). These findings strongly suggest that this region is an important mating ground for the species and that females give birth in a different area (Lucena, 2006; Andriolo et al., 2010). Finally, western South Atlantic humpback whales (*Megaptera novaeangliae*) are found in this region in relatively high densities. Ship-based line transect surveys conducted in the early 2000s estimated the number of humpback whales inhabiting this region in the winter/spring to be around 600 individuals (Zerbini et al., 2004). The presence of females with calves suggests that this region is used as a calving ground for the species (Zerbini et al., 2004).



Figure 3: Antarctic minke whales (*Balaenoptera bonaerensis*) breaching. Photo credit: Alex Zerbini

Criterion D: Special Attributes

Sub-criterion D1: Distinctiveness

The Northeast Brazil breeding habitat of Antarctic minke whales represents the only known breeding ground of the species in low latitude waters. Minke whales were heavily exploited in the Antarctic, but lower latitude areas of concentration are only known off NE Brazil and near Durban in South Africa (Horwood, 1990). In NE Brazil, a large percentage of males and females caught by whaling operations in the early 1970s were mature (100% of males and 90% of females) and reproductively active (Williamson, 1975). Immature animals were seen (but not taken) in a relatively smaller proportion, primarily early in the season. In Durban the catches consisted of a mix of mature and immature animals, and the proportion of sexually active whales was much smaller (Williamson, 1975). As such the waters of this IMMA are exceptional as they are the principal known mating ground for this species.

Sub-criterion D2: Diversity

In addition to Antarctic minke whale, four other large whale species have been documented in this region, including Bryde's whale (*Balaenoptera edeni*), sei whale (*B. borealis*), sperm whale (*Physeter macrocephalus*) (Andriolo et al., 2010) and humpback whale (*Megaptera novaeangliae*) (Zerbini et al., 2004). This relatively high diversity indicates this is a suitable habitat for several migratory whale species during their breeding season in low latitudes. All of these species were caught offshore of Costinha during the whaling period (Williamson, 1975; Andriolo et al., 2010) in relatively large numbers, suggesting that they were relatively abundant at the onset of commercial whaling in the region. Moreover, at least three offshore delphinids have been regularly recorded in these deep waters in more recent ship surveys: Pantropical spotted dolphins (*Stenella*

attenuata), Clymene's dolphins (*S. clymene*) and spinner dolphins (*S. longirostris*) (Moreno et al., 2005).



Figure 4: Pantropical spotted dolphins (*Stenella attenuata*) breaching. Photo credit: Alex Zerbini



Figure 5: Clymene's dolphins (*Stenella clymene*). Photo credit: Alex Zerbini



Figure 6: Spinner dolphins (*Stenella longirostris*). Photo credit: Alex Zerbini

Supporting Information

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MARINE MAMMAL
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WHALE AND
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INTERNATIONAL
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