

# Coral Coast IMMA

## Description:

The Coral Coast IMMA includes an area of approximately 413,500 hectares, which extends from the municipality of Tamandaré, on the south coast of Pernambuco, to Paripueira in Alagoas in Brazil (8°42'16"S and 35°04'40"W; 8°47'44"S and 34°47'20"W; 9°46'30"S and 35°25'W; 9°32'51"S and 35°36'59"W). The area is located on the continental shelf of the northeastern coast of Brazil, where the largest extensions of coastal coral reefs in the country are found. These reef environments support great biological diversity, including algae, corals, fish, crustaceans, molluscs, and other aquatic organisms, and especially the West Indian manatee (*Trichechus manatus*), an endangered species in Brazil.

The Coral Coast IMMA includes practically the entire continental shelf which has an average width of around 37 km, and a maximum width of 41 km (ICMBio, 2012). Channels cut into the continental shelf and recent studies indicate that these nutrient-rich channels serve as aggregation areas for fish (ICMBio, 2012).

Seagrass meadows contribute to the settlement of sediments on the seafloor, improving the transparency of the water. Furthermore, they have high rates of primary production (500 to 4,000 gC/m<sup>2</sup>/year) and are a direct food source for fish, sea urchins, crustaceans, among other organisms, including manatees (ICMBio, 2012).



## Area Size

4 282 km<sup>2</sup>

## Qualifying Species and Criteria

West Indian manatee – *Trichechus manatus*  
Criterion A; B (1); C (1,2)

## Summary

The Coral Coast IMMA is located at the southernmost limit of the current range of West Indian manatees (*Trichechus manatus*). The IMMA hosts a naturally occurring resident population of manatees as well as a number of individuals who have been rescued, rehabilitated and released. Within the IMMA there are important reproductive areas for manatees as well as relevant resting and feeding sites. The area is somewhat unique in that manatees use the coastal waters of the IMMA that are sheltered by coral reefs for resting and nursing. These coastal waters are also connected with the estuarine environments on which manatees are highly dependent for feeding, breeding, and other ecological requirements. In addition to its relevance for manatees, the Coral Coast IMMA encompasses habitat used by marine mammal species, such as humpback whales (*Megaptera novaeangliae*) and common bottlenose dolphins (*Tursiops truncatus*).



Figure 1: Coral reefs found in Coral Coast IMMA. Photo credit: Luciano Candisani / FMA Collection

## Criterion A: Species or Population Vulnerability

West Indian manatees (*Trichechus manatus*) are sensitive to changes in coastal environments, and are threatened by entanglement in fishing nets, boat strikes, and above all, the loss of habitat (Borges et al., 2007; Meirelles, 2008). Globally the species is classified as Vulnerable on the IUCN Red List of Threatened species (Deutsch et al., 2008). In Brazil, the frequent occurrence of stranded manatees, in particular neonates, reflects anthropogenic threats

including the degradation of the estuaries in which the species breeds, gives birth and nurses young (Lima et al., 1992 ; Aquasis, 2016; Medeiros et al., 2021). Given the considerable pressures on the surviving wild populations, the West Indian manatee is one of Brazil's most threatened aquatic mammals (MMA, 2022), with the total population in the Brazilian Northeast estimated to be just over 1,000 individuals (Alves et al., 2015). The coast of Alagoas, including the Coral Coast, comprises the southernmost area of the distribution of the remaining population.

## **Criterion B: Distribution and Abundance**

### **Sub-criterion B1: Small and Resident Populations**

The IMMA contains prime habitat for manatees and hosts both a resident native population and approximately 50 rehabilitated and re-introduced individuals, with several documented observations of interaction between wild and released animals. Aerial surveys conducted along Brazil's coast in 2010 yielded relatively high sighting rates in the IMMA in comparison with areas to the north and south, demonstrating the area's importance for the species (Alves et al., 2015).

The Coral Coast was chosen as the main release site for rehabilitated manatees based on the availability of a suitable food supply, sources of fresh water, and shallow and protected water. Since 1994 approximately 50 animals have been released into the waters of the IMMA (Normande et al., 2016). Satellite tracking of these released individuals demonstrates that the IMMA encompasses the home ranges and centres of activity of the tagged individuals, and that they move between the estuarine and coastal portions of the IMMA. The home range size, based on kernels that encompassed 95% of tracking points, varied from 4.24 to 30.96 km<sup>2</sup> (mean = 11.56 ± 8.60). (Normande et al., 2016). The maximum distance of satellite location points from the coast varied from 0.97 to 3.31 km (mean 1.93–0.71), and core areas were in locations nearby to coral and sand reefs or within estuaries or rivers, and the majority of these areas contained fresh water sources and/or seagrass beds (Normande et al., 2016). Although satellite tracking data is not available for the naturally occurring native population, it could be reasonably assumed that they have similar home ranges and habitat use patterns within the IMMA, although longer range movements may also be possible.

## **Criterion B: Key Life Cycle Activities**

### **Sub-criterion C1: Reproductive Areas**

Several estuaries on the Coral Coast provide connectivity between coastal and marine environments. The presence of these environments (estuaries) and the extensive coverage of coral reefs provides an environment with shallow, warm and protected waters, favourable for manatee calving and nursing young.

The naturally occurring population is observed annually with newborn offspring, while several reintroduced animals have already reproduced in the wild on the Coral Coast (Attademo et al., 2022). The births of 13 calves from six reintroduced females have been documented in this area. Six (37.5%) of the 16 females released in Alagoas have been confirmed to have calves post-release. Two of these six parturient females delivered their calves in the marine portion of the IMMA, and four in the estuarine portions of the IMMA (Attademo et al., 2022).

### **Sub-criterion C2: Feeding Areas**

Borges et al. (2008) analysed stomach content samples from manatees accidentally caught in the states of Rio Grande do Norte, Paraíba and Alagoas. A wide range of items were recorded, such as seagrass, algae and mangroves. Tropical seagrass meadows, situated between coral reefs, sand flats and estuaries, provide the main source of food for manatees in the region (Attademo et al., 2022). Macroalgae comprise another important component of the marine flora that occurs in the region (including the Caulerpaceae, Cladophoraceae, and Udoteaceae families) and many of these are constituents of the diet of West Indian manatees, and some of these species are abundant in the IMMA (Borges et al., 2008; Attademo et al., 2022).



Figure 2: Mangroves and connectivity between the ecosystems found in Coral Coast IMMA. These environments are part of the home range of manatees. Photo credit: Luciano Candisani / FMA Collection



Figure 3: Evidences of births and the presence of calves manatees from reintroduced females, confirming the importance of this area for the reproduction of the species. Photo credit: Maité Baratella / FMA Collection



Figure 4: Seagrass, considered one of the main food items for manatees and available on the Coral Coast IMMA.  
Photo credit: Luciano Candisani / FMA Collection

## Supporting Information

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