

Gulf of Chiriquí IMMA

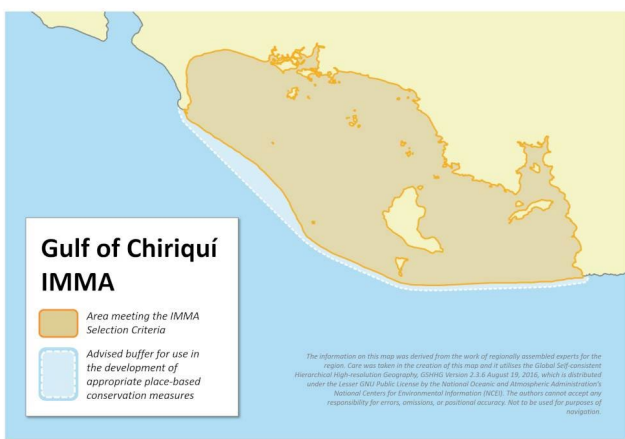
Summary, continued.

the bottlenose dolphin (*Tursiops truncatus*) and the humpback whale (*Megaptera novaeangliae*). The area serves as a nursing, calving and mating area for both Southern and Northern Hemisphere humpback whale populations during different times of the year.

Description:

The Gulf of Chiriquí, Panama lies east of the Azuero Peninsula and west of Punta Burica (Fundación MarViva, 2013). It offers several protected habitats in the form of bays, estuaries, and archipelagos within the waters of the continental shelf, which are important for humpback whales (Rasmussen et al. 2017). The North Equatorial Counter-current that prevails in the Gulf of Chiriquí comes from Costa Rica and travels in a west-east direction, it begins its journey in the Burica Peninsula and ends in the geographic region known as the Azuero Peninsula (Instituto Geográfico Nacional Tommy Guardia [IGNTG], 1988). The whole area is characterized by waters less than 300 m in depth and includes many island groups and rocky outcroppings (Fundación MarViva, 2013).

The wider Gulf of Chiriquí includes important areas such as the Coiba National Park and the Gulf of Montijo, both located in the southwestern region of the Panamanian Pacific. The Coiba National Park includes Coiba, the largest island in the Central American Pacific, with an area of 503.14 km², as well as 38 other smaller islands, islets, and rocky promontories that together with Coiba, cover 537.32 km² (Fundación MarViva, 2014a; Fundación MarViva, 2014b). The Gulf of Montijo, which was designated as a Ramsar site or Wetland of International Importance,



Area Size

15,079 km²

Qualifying Species and Criteria

Humpback whale – *Megaptera novaeangliae*

[Southern – *M. n. australis*]

Criterion C (1)

[North Pacific – *M. n. kuzira*]

Criterion A; C (1)

Pantropical spotted dolphin – *Stenella attenuata*

Criterion C (1, 2)

Common bottlenose dolphin – *Tursiops truncatus*

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

Other Marine Mammal Species

Documented

Balaenoptera edeni, *Orcinus orca*, *Pseudorca crassidens*

Summary

This IMMA is located in the Gulf of Chiriquí, in western Panama. It includes formally protected areas such as Coiba National Park and its Special Zone of Marine Protection, the Gulf of Chiriquí National Marine Park, and the Gulf of Montijo Ramsar Site. These zones are made up of a wide variety of gulfs, bays, estuaries and archipelagos within the continental shelf, which dolphins and whales use as breeding and feeding grounds. The most important species in this IMMA are the pantropical spotted dolphin (*Stenella attenuata*),

has an area of 209.1 km² that includes the entire marine portion, flooded areas, estuaries, beaches, reefs and mangroves (Fundación MarViva, 2021; Venegas-Ayana et al., 2019). It has a humid tropical climate, with an average annual temperature of 27°C and annual rainfall of 2,000 mm to 3,200 mm.

Within the wider Gulf of Chiriquí, the smaller Gulf of Montijo is fed by four watersheds: the San Pablo River watershed, the San Pedro River watershed, the watershed located between the Tabasará and San Pablo Rivers, and the watershed located between the San Pedro and Tonosí Rivers. (Autoridad de los Recursos Acuáticos de Panamá [ARAP], 2010). In this area, the predominant west-east current comes from Costa Rica; additionally, this area is influenced by the South Equatorial Current, which is responsible for the presence of species from the South Pacific (Kwiecinski & Chial, 1983; Wyrteki, 1965). Humpback whales from both the Northern and Southern Hemispheres use the gulf as a breeding area at different times of year. Bryde's whales have also been sighted here on a regular basis, although little is known about this species in these waters. Other species of marine mammals sighted include spotted dolphins, bottlenose dolphins, false killer whales, and rough-toothed dolphins (Rasmussen et al., forthcoming; Autoridad de los Recursos Acuáticos de Panamá [ARAP], 2014).



Figure 1: Humpback whale in the Gulf of Chiriquí. Photo credit: Matt Leslie, Panacetacea

Criterion A: Species or Population Vulnerability

The Northern Pacific humpback whales (*Megaptera novaeangliae kuzira*) that use the IMMA are part of the Central America Distinct Population Segment (DPS), which is classified as 'Endangered' by the United States Endangered Species Act (81 FR 62260, September 8, 2016). The Central America DPS is one of 14 DPSs of humpback whales around the world, and one of only four listed as endangered (Bettridge et al., 2015). A DPS is made up of whales that share the same low-latitude breeding area but migrate seasonally to specific mid-to high-latitude feeding areas that may differ among individuals (Bettridge, 2019). The Central America DPS is composed of whales that breed along the Pacific coast of Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama (Bettridge et al., 2015; Curtis et al., 2022). This DPS wintering area now is understood to extend into southern Mexico (Wade, 2016; Curtis et al., 2022; Martinez-Loustalot et al., 2022). The population estimate for the Central America DPS varies between 500-700 individuals depending on the mark-recapture method used (Calambokidis et al., 2008; Barlow et al., 2011; Wade, 2016). In comparison, the abundance of humpback whales off the United States West Coast, which includes some of the Central America DPS whales, is estimated to be approximately 5,000 individuals (Calambokidis & Barlow, 2020). The Gulf of Chiriquí is used as a breeding area by humpback whales from the Central America DPS, although fewer whales are seen from the Central America during the boreal winter, than individuals from the Southern Hemisphere's Southeastern Pacific population during the austral winter (Rasmussen et al., 2017).

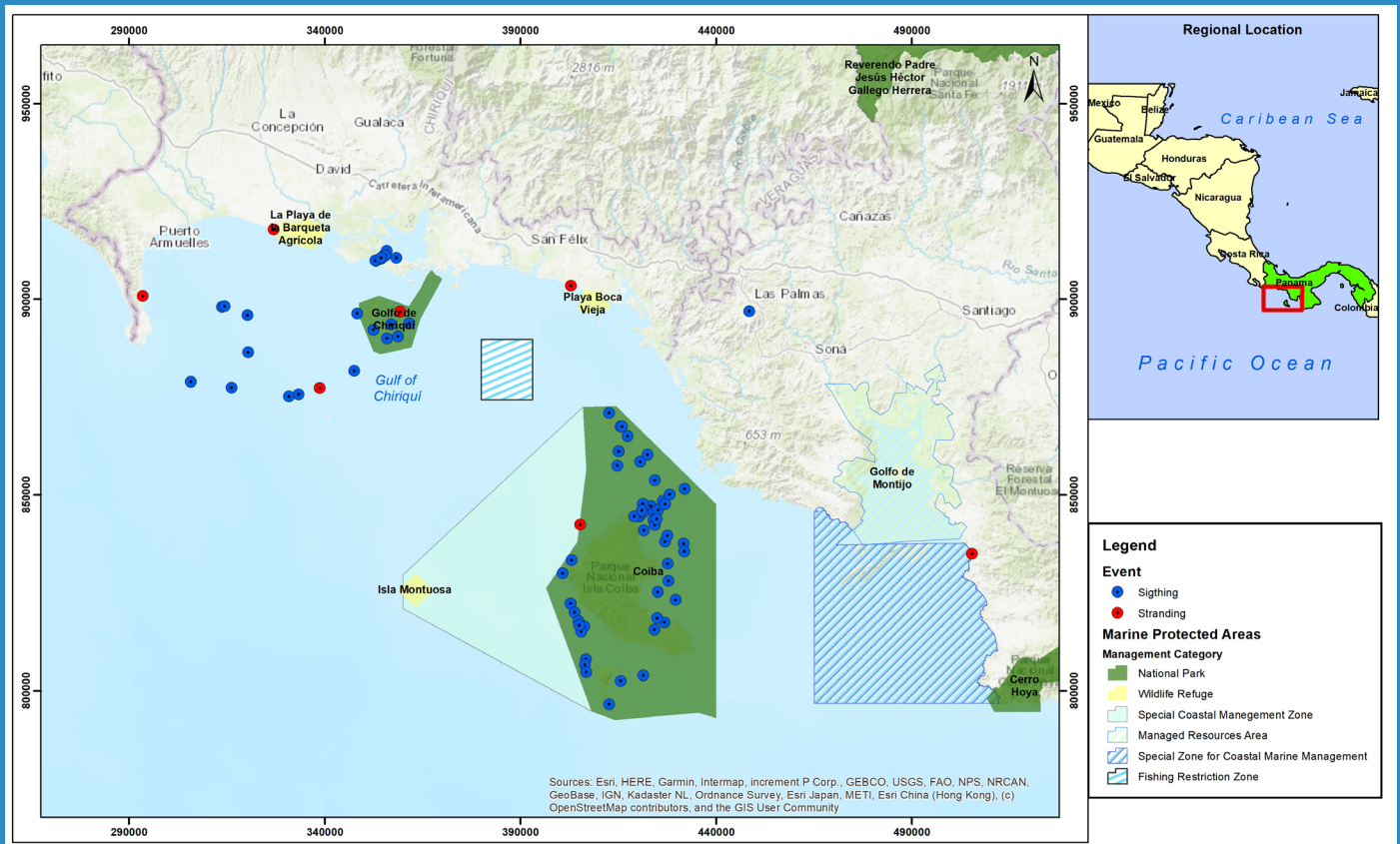


Figure 2: Marine Protected Areas within in Gulf of Chiriquí. Cetaceans sightings are represents by the blue dots an stranding events by the red dots in surveys between 2018 and 2023 (database MiAmbiente), prepared by the DIAM/DICOMAR-MiAmbiente 2023.

Criterion B: Distribution and Abundance

Sub-criterion B1: Small and Resident Populations

Small and resident populations of common bottlenose dolphins (*Tursiops truncatus*) have been identified in Bahía de los Muertos in the Gulf of Chiriquí, with three photographic recaptures documented between 2016 and 2021 (Casas et al., forthcoming); and in the Gulf of Montijo wetland where another four recaptures were documented between February 2022 and March 2022 (Casas et al., forthcoming). In both locations populations are estimated to number fewer than 50 individuals (Casas et al., forthcoming).

Criterion C: Key Life Cycle Activities

Sub-criterion C1: Reproductive Areas

There are critical calving and reproductive habitats for both northeast and southeast Pacific humpback whales all along the Pacific coast of Panama (Guerra,

2022; Rasmussen & Palacios, 2013; Rasmussen & Palacios, 2015; Rasmussen et al., 2017). This IMMA is specifically important for humpback whale mothers and calves (Rasmussen, 2014). The majority of all humpback whale sightings (57%, n=177 sightings) in the austral breeding season in the Gulf of Chiriquí contained calves. In the boreal season, the proportion of sightings that contained calves represented 17% of all sightings (n=179 sightings) (Rasmussen et al., 2017; Rasmussen & Palacios, 2013; Rasmussen & Palacios, 2015). In the Coiba National Park 62% of the sightings (n= 58) were of mother-calf pairs (Casas & Trejos, forthcoming; Guerra, 2022).

Pantropical spotted dolphins (*Stenella attenuata*) observed during surveys conducted between 2018 and 2022 totalled 102 sightings, of which 50% (n=51) were groups with calves, including neonates. Similarly, of 48 documented common bottlenose dolphin sightings, 40% (n=19) were groups with calves, (Casas & Trejos, unpublished;

Casas et al., 2022a, 2022b). This is evidence that this area is highly important to all three species for reproductive and breeding behaviours. Although it must be acknowledged that calves of spotted dolphins and bottlenose dolphins accompany their mothers for at least 11.2-12 months (Perrin et al., 1976; Gubbins et al., 1999), during which time the mothers could move into and out of the IMMA.

Sub-criterion C2: Feeding Areas

Pantropical spotted dolphins are distributed in shallow waters near coral reefs, where they forage. They are sighted throughout the Gulf of Chiriqui (Rasmussen, 2022, Rasmussen et al., forthcoming), with a significant distribution in the northeast portion of the Coiba National Park (Guerra, 2022). They are also present near the coast in the Honda Bay (Garcia and Dawson, 2003), and they even reach Cebaco Island in the Gulf of Montijo (Casas et al., forthcoming). Of the 102 spotted dolphin sightings reported in this area, 15% were observed feeding (Casas et al., forthcoming; Casas & Trejos-Lasso, forthcoming).

Two ecotypes of common bottlenose dolphin are present in the Gulf of Chiriquí. In the Coiba National Park the inshore ecotype is mostly distributed in estuaries near the coast, but the oceanic ecotype has also been observed in deeper waters near islands and coral reefs where they presumably forage (Guerra, 2022). Rasmussen and Palacios (2014) present sightings inside the estuaries and near the islands, while Casas et. al. (forthcoming) provide data on sightings inside the estuaries (Bahía Muertos). In Coiba National Park there is also this dual distribution, with dolphin presence in the mouth of rivers and near islands (Guerra, 2022). In the Gulf of Montijo the bottlenose dolphin is inside the gulf, mostly in the zone where the river water and the ocean come together (Casas et al., forthcoming).

Between 2018 and 2022 29% of sightings of bottlenose dolphin encounters (n=48), included observation of feeding behaviour (Casas et al., forthcoming; Casas & Trejos-Lasso, forthcoming).

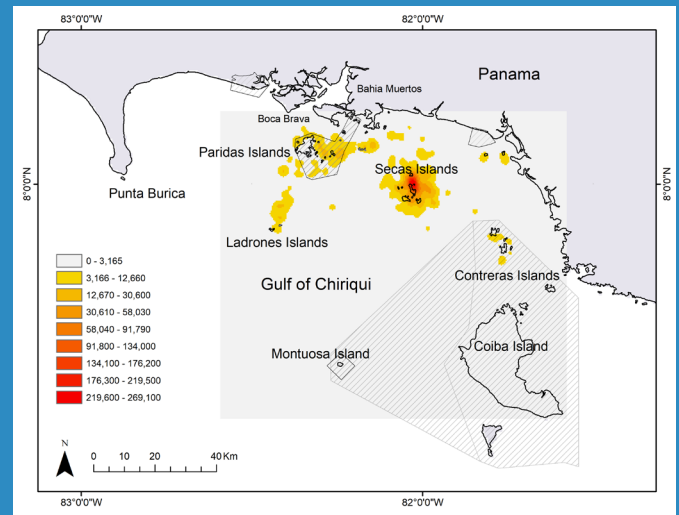


Figure 3: Kernel density distributions of mother/calf humpback whale pairs from the Southeastern Pacific population (n=813, 2002-2019) indicating the most important areas of concentration. Marine protected areas represented by hatched overlays. (Reproduced from Rasmussen, 2022)

Supporting Information

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