



First report of a Humpback Whale *Megaptera novaeangliae* (Borowski, 1781) (Cetartiodactyla: Balaenopteridae) stranding in the Gulf of Venezuela

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ABSTRACT

On February 04th, 2009, we recorded a male humpback whale (*Megaptera novaeangliae*) in the Gulf of Venezuela. This animal was found stranded alive by a few neighbouring fishers and died minutes later in Kazuzain village (11°36'08.5" N - 71°55'42.7" W), located in Venezuelan portion of the Güajira Peninsula at Zulia state. The specimen was a sub-adult male, with total length of 10.5 m and width of 3.04 ± 0.27 m. This is the first record of this species in the Gulf of Venezuela. This study allows us contributing to insight of biology and ecology to marine mammals across Gulf of Venezuela, where details of large cetaceans remain somewhat opaque.

KEYWORDS

Caribbean sea, cetaceans, indigenous communities, marine mammals, strandings.

Large marine animal stranding are a well-known source of information regarding mortality (disorientation, diseases, and others), threats (as whaling, transportation and shipping lanes, injuries from hooks, pollution, etc.), potential distribution, natural history (genetic structure, diet, etc.) and more about these species (Geraci *et al.*, 1999; González-Fernández, 2001; Romero *et al.*, 2001; Carwardine, 2002; Acevedo *et al.*, 2008; Bolaños-Jiménez *et al.*, 2015b; Rojas, 2016; Cooke, 2018). However, monitoring and recording of strandings are highly difficult tasks to perform, mostly due to the nature of where these are normally found, very isolated, remote, and difficult access locations (Rojas-Cañizales *et al.*, 2021).

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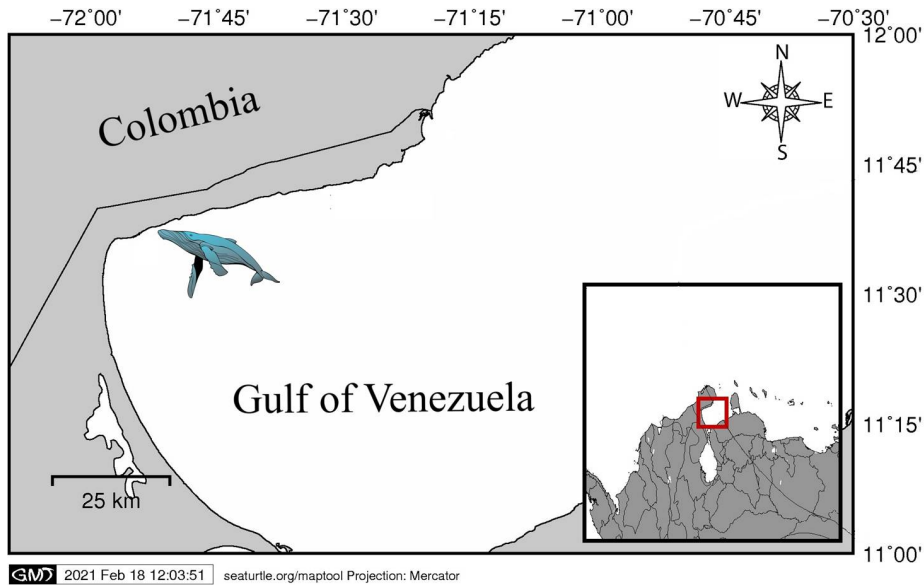


FIGURA 1 *Megaptera novaeangliae* stranding record in the Gulf of Venezuela. Whale graphic indicates the location Kazuzain village where the stranding event occurred (Source: MapTool – seaturtle.org).

In Venezuela, efforts to attend and compile stranding records of marine fauna, especially cetaceans started mid-90's. Several independent researchers and governmental agents created a series of entities to systematically record cetacean and other large marine fauna stranding and sightings alongside the Venezuelan coast (Romero *et al.*, 2001; Bolaños-Jiménez *et al.*, 2015b). But, today, these networks are not actively working, and there is no organized stranding network response. Thus, stranding records are now scarce, poorly documented, and limited to certain locations where some independent researchers and personnel from some universities and research centres have access to them opportunistically (Romero *et al.*, 2001; Lucke *et al.*, 2014; Bolaños-Jiménez *et al.*, 2015b; Barrios-Garrido *et al.*, 2021).

At least 33 species of marine mammals (six baleen whales, 24 toothed whales, one sirenian, and two pinnipeds) have been documented from the Wider Caribbean Region (Mignucci-Giannoni, 1998; Ward & Moroscop, 1999; Debrot *et al.*, 2001; Ward *et al.*, 2001). According to the most recent list, there are 26 species (grouped on 5 families and 19 genera) of cetacean species occurring in Venezuela marine, estuarine, and/or fresh-water habitats (Sánchez & Lew, 2012). With only three species of mysticetes, the humpback whale (*Megaptera novaeangliae*

Borowski, 1781) is the least frequently sighted whale across country. In fact, historical reports showed that a total of 53 records gathered between 1853 to 2006 were documented mainly over shallow waters (0 – 100m in depth) of the continental coast from the north-eastern region of Venezuela (Boher & García, 1990; Naveira & Díaz, 1996; Romero *et al.*, 2001; Acevedo *et al.*, 2008).

The Gulf of Venezuela is part of four interconnected aquatic ecosystems to form the Maracaibo Lake System (Rodríguez, 2000). It is located in the external portion of this system, at the western coast of Venezuela (Fig. 1). Its shape is approximately rectangular, with depths between 15 and 80 m, and it is highly influenced by the Caribbean Sea (Rodríguez, 2000). Several authors have cited up to 14 species of cetacean across the Gulf of Venezuela, either by direct observations or strandings records (Agudo *et al.*, 1994; Bolaños-Jiménez *et al.*, 2015b; Espinoza-Rodríguez *et al.*, 2019). From this species list, Eden's whale (*Balaenoptera edeni*, Anderson 1879) is currently the only confirmed mysticeti (Agudo *et al.*, 1994; Romero *et al.*, 2001; Rojas, 2016). However, on February 04th 2009, a male humpback whale *M. novaeangliae* (Borowski, 1781) was found stranded alive (Fig. 2) in Kazuzain, a small artisanal fishery community (11°36'08.5" N - 71°55'42.7" W)



FIGURA 2 Photographic evidence of the humpback whale stranding in Kazuzain, Gulf of Venezuela. (A) Detail of the head; (B) Left pectoral flipper; (C) Fluke; (D) Left side of the specimen. Photos: N. Espinoza-Rodríguez (2009).

located in Mid-Guajira (Fig. 1). This locality is characterized by its arid-semiarid climate, which is marked seasonally in its precipitation and the action of the northeast trade winds (Masciangioli & Febres, 2000)). It presents extensive seagrass meadows with short leaves and some scattered coral patches, with depths up to 5 m (López-Hernández *et al.*, 2010; Barrios-Garrido & Montiel-Villalobos, 2016; Espinoza-Rodríguez *et al.*, 2021). This study addresses the first report of a stranding event of a humpback whale (*M. novaeangliae*) in the Gulf of Venezuela (WoRMS, 2021).

The Humpback whale populations at a global scale are categorized as Least Concerned according to the International Union for Conservation of Nature's Red List (Cooke, 2018) and Vulnerable according to the Venezuelan Fauna Red List (Bolaños-Jiménez *et al.*, 2015a). This species is also included in the appendix I from CITES (2021). Unfortunately, there are still some uncertainties regarding their projections of future recovery due to the threats they face today (Cooke, 2018; IWC, 2018). A major threat for humpback whale populations was

commercial whaling, which seriously depleted all populations globally in the 1960's. Therefore, since 1982, the International Whaling Commission (IWC) decided to establish a commercial whaling moratorium, which is in place today to avoid the continue whale population decrease (IWC, 2018). Fortunately, the humpback whale has demonstrated remarkable resilience with substantial population increases in the North Atlantic, North Pacific, and Southern Hemisphere (Cooke, 2018). In the Southern Caribbean Sea, humpback whale populations exhibit a notably regular and consistent use of the windward Dutch Exclusive Economic Zone (EEZ), but they are uncommon in the leeward sector (Debrot *et al.*, 2001). It is in this latter zone (leeward) where higher stranding incidence and frequency of man-caused mortalities tend to take places. However, the majority of causes for these stranding incidences and mortalities remain unknown; therefore, it is relevance documenting them whenever and wherever occurs.

The specimen died minutes after being found. Local personnel recorded and documented through photographs and/or

TABLE 1 Morphological dimensions of the humpback whale (*Megaptera novaeangliae*) stranded in the Gulf of Venezuela.

Measurements recorded	Meters (m)
Total length	10.50
Body width 30%	3.34
Body width 40%	3.00
Body width 50%	2.80
Left pectoral flipper length	2.50
Left pectoral flipper width	0.81
Right pectoral flipper length	2.41
Right pectoral flipper width	0.75
Caudal flipper total length	3.76
Caudal flipper width (right side)	0.98
Caudal flipper width (left side)	1.38

videotape recordings of this specimen to confirm both species and decomposition stage (Meager & Limpus, 2014; Barrios-Garrido & Montiel-Villalobos, 2016). This reports type on marine megafauna across the Maracaibo Lake System have been documented following the Opportunistic Notification Network (RAO, by its Spanish acronym) methodology (Barrios-Garrido *et al.*, 2012). It is initiated by a community member who finds the stranded specimen, calls, and reports all evidence observed (Pirela, 2009; Barrios-Garrido *et al.*, 2012). In this sense, for every stranding event, the date, location, species, and decomposition stage are recorded. In addition, when specimens were found alive, a veterinarian must conduct a preliminary examination (Wilkinson & Worthy, 1999; Geraci & Lounsbury, 2005).

Several authors have registered in previous research high numbers of stranded marine animals in the western coast of the Gulf of Venezuela (Barrios-Garrido *et al.*, 2009, 2012, 2021; Rojas-Cañizales *et al.*, 2021). While these numbers might be the reflection of extensive recent monitoring thanks to the RAO, it also could indicate the importance of this coast as habitat for several marine animals, with emphasis in marine species (Bolaños-Jiménez *et al.*, 2015b; Rojas, 2016; Espinoza-Rodríguez *et al.*, 2019; Barrios-Garrido *et al.*, 2021). For instance, Kazuzain and other localities in this coast present very

unique local currents, winds, and tides that converge significantly, which have been linked to the recruitment of different marine fauna; and potentially the cause of several stranding events (Espinoza-Rodríguez *et al.*, 2019; Barrios-Garrido *et al.*, 2021; Rojas-Cañizales *et al.*, 2021). The Humpback whale specimen found in Kazuzain was initially alive (Palmar, *J. pers.comm.*), and observers explained that got stranded due to changes in the tides and the soft bottom of the area (Rodríguez, 2000; Espinoza-Rodríguez *et al.*, 2021), making it impossible for the whale to return to deeper waters.

Even though the presence of a stranding event does not assure the existence of a species in these coasts, these events can be considered as an important suggestion of its actual existence (González-Fernández, 2001). Updates of stranded animals, sightings, and other information can be useful to know species' range and distribution, habitat use, among others; that will potentially help in the implementation of management programs (Wilkinson & Worthy, 1999; Lucke *et al.*, 2014). It is recommended for future research, organise, coordinate, and conduct marine mammal monitoring efforts on an international level (Barrios-Garrido *et al.*, 2021); it is important to standardize these efforts, study the effects of anthropogenic threats on marine mammals, involve local stakeholders and the public, which will result in the amplification of the marine mammal

researcher's network at least at a regional level (Debrot *et al.*, 2001; Lucke *et al.*, 2014; Espinoza-Rodríguez *et al.*, 2019; Barrios-Garrido *et al.*, 2021).

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CONFLICTS OF INTEREST

The authors of this manuscript certify that Héctor Barrios-Garrido is a member of the ECOTRÓPICOS's editorial team, and this did not alter or conditioned its fulfilment with the editorial policies and criteria of the journal.

RESUMEN

Primer reporte de un varamiento de ballena jorobada *Megaptera novaeangliae* (Borowski, 1781) (Cetartiodactyla: Balaenopteridae) en el Golfo de Venezuela.

El 4 de febrero de 2009 fue registrado el varamiento de una ballena jorobada (*Megaptera novaeangliae*) en el Golfo de Venezuela. El ejemplar fue encontrado varado con vida por algunos pescadores locales, en la aldea de Kazuzain (11°36'08,5"N - 71°55'42,7"W), ubicada en la parte Vene-

zolana de la Península de La Güajira, estado Zulia. El espécimen correspondió a un macho sub-adulto de 10,5 m de largo y 3,04 ± 0,27 m de ancho. La muerte del animal ocurrió poco después de haber sido encontrado y representa el primer registro de esta especie en el Golfo de Venezuela. Este estudio contribuye a la comprensión de la biología y ecología de los mamíferos marinos en el Golfo de Venezuela, una región donde los aspectos asociados a los grandes cetáceos marinos siguen siendo aún poco estudiados.

Palabras clave: Mar Caribe, cetáceos, comunidades indígenas, mamíferos marinos, varamientos.

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