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A live-stranding of a Clymene dolphin (*Stenella clymene*, Gray, 1850) in the Gulf of Venezuela: first record for the southern Caribbean

Yurasi Briceño^{†,*}, Sonsireé Ramírez^{‡,§}, Jaime Bolaños-Jimenez^{‡,▽}, Leonardo Sánchez[‡], Luis Bermúdez-Villapol[#], Manuel González[§], Enrique Narvaez^{‡,§}, Jim Hernández^{‡,§} and Daría Pirela[‡]

[†]Instituto Venezolano de Investigaciones Científicas, Carretera Panamericana km 11, Estado Miranda, Venezuela 1020 A

[‡]Instituto para la Conservación de la Cuenca del Lago de Maracaibo (ICLAM), Circunvalación 2, Maracaibo, Estado Zulia, Venezuela

[§]Sociedad Conservacionista AQUA, Avenida 61 #90-07, Maracaibo, Estado Zulia, Venezuela

[#]Asociación Civil Sea Vida, A.P 162, Cagua 2122, Estado Aragua, Venezuela

[¶]Dirección Estatal del Ministerio del Poder Popular para el Ecosocialismo (MINEC), Calle Casorla, sector Salamanca, Edf. sede DEPPA Nueva Esparta, La Asunción, Municipio Arismendi, Estado Nueva Esparta, Venezuela

[•]Oficina Nacional de Diversidad Biológica (ONDB), Ministerio del Poder Popular para el Ecosocialismo (MINEC), Museo de la Estación Biológica Rancho Grande (EBRG), Vía Ocumare de la Costa, El Limón 2105, Estado Aragua, Venezuela

[•]Laboratorio de Piscicultura, Universidad del Zulia, Avenida Universidad 4011, Maracaibo, Estado Zulia, Venezuela

[▽]Instituto de Ciencias Marinas y Pesquerías (ICIMAP), Universidad Veracruzana, Miguel Hidalgo 607, Río Jamapa, 94290 Boca del Río, Veracruz, México

*Corresponding author: yurasialejandra@gmail.com

The Clymene dolphin, *Stenella clymene* (Gray, 1846), rediscovered as a species in 1981 (Perrin *et al.*, 1981) and also known as the short-snouted spinner dolphin, is currently classified as “Least concern” according to the International Union for Conservation of Nature (Jefferson and Braulik, 2018). The Clymene dolphin is distributed in tropical and temperate waters of the Atlantic Ocean, including the Caribbean Sea and the Gulf of Mexico (Perrin *et al.*, 1981; Perrin and Mead 1994; Fertl *et al.*, 2003; Jefferson, 2009). This species and the Atlantic spotted dolphin (*Stenella frontalis*) are the only two stenellids endemic to the Atlantic Ocean. Currently, very little is known about *S. clymene* (Pis-Millán *et al.*, 2019) and there are only a few reported in the Caribbean Sea (Fertl *et al.*, 2003). In this note, we present the first stranding record of Clymene dolphin on the Venezuelan coast, confirming the presence of this species in Venezuela and the southern Caribbean Sea.

On 25 May 2009, a small cetacean was sighted at Lake Maracaibo presenting erratic swimming, poor buoyancy, muscle spasms and a permanent lean to the right side. The animal stranded alive at the mouth of the Lake Maracaibo, southeastern Gulf of Venezuela in the Almirante Padilla municipality of Zulia state (10°59'57.18"N 71°36'50.13"W, Figure 1), but died on the beach. The stranding was attended by students from the University of Zulia, the Cetacean

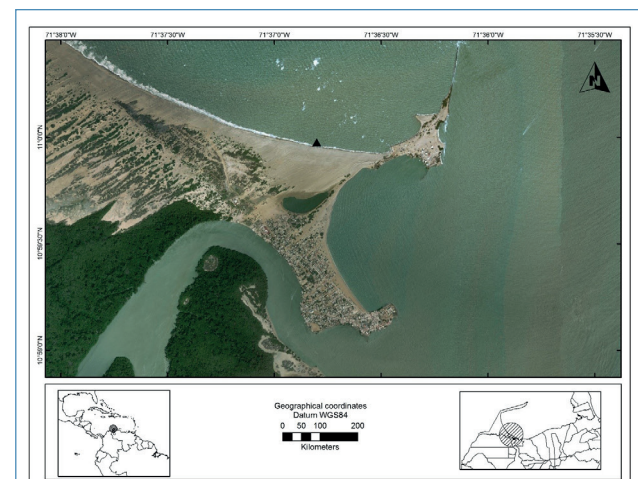


Figure 1. Location of live stranding event of a Clymene dolphin (black triangle), in the Gulf of Venezuela, Bajo de San Bernardo, Zulia State.

Research Center (CIC) western unit, officials from Instituto para el Control y la Conservación del Lago de Maracaibo (ICLAM), the National Institute of Agricultural Research (INIA), and the State government.

The carcass was transferred to a facility at University of Zulia, where a necropsy was performed. Body coloration pattern was consistent with that previously described for a

Clymene dolphin: a dark gray layer that dips under the eye and the dorsal fin, a light gray band along the flanks, and a white ventral zone. The eye was surrounded by a black coloration. The lower jaw was white. The tip of the snout was black, with a dark strip on the upper side that extended from the tip to the apex of the melon, accentuated in the center of the snout, like a “moustache”, diagnostic feature for the species (Perrin *et al.*, 1981; Jefferson 2018) (Figure 2A). Genital area examination revealed it was a female. Morphometric measurements were taken according to Norris (1961) (Table 1), and total length (197cm) was within the range described for adults of that species (190-197cm) (Jefferson, 2018) (Table 1). The tooth counts resulted as follows: right jaw 42, left jaw 42, right maxilla 38, and left maxilla 38. The external examination revealed no wounds or lacerations indicative of anthropogenic interaction. However, an ulcerative wound of unknown origin was present on the upper part of the snout (Figure 2B). Small radial lesions (2 cm) of unknown origin were observed in different parts of the body.

Table 1. External measurements of *Stenella clymene*, according to Norris (1961)

Measurement	cm
Total length	197
Tip of jaw to the anterior insertion of the pectoral fin	46
Tip of upper jaw to the center of eye	31
Tip of upper jaw to the corner of the mouth	26,5
Tip of upper jaw to the apex of the melon	11
Width of dorsal fin	26
Height of dorsal fin	17,5
Width of caudal lobes	11
Tip of upper jaw to center of blowhole	32



Figure 2A. *Stenella clymene* with the color morphology patterns described for the species.



Figure 2B. An ulcerative wound of unknown origin on the superior part of the snout of Clymene dolphin

Internal examination revealed the main stomach with a very pale and slightly thickened mucosa, and the second diverticulum with a thickened mucosa with hyperemic areas. The small intestine contained gas and areas with narrowed intestinal lumen. The large intestine showed turgid walls with liquid stool inside. The cardiovascular system, liver, kidneys, ovaries, uterus, and eyes appeared normal, without noticeable injury. All samples (heart, stomach, pancreas, small intestine, lymph nodes, and kidneys) analyzed for pathology presented normal histology. Lungs showed dilated and congestive vessels. The general pathological diagnosis was an acute, diffuse, mild pulmonary congestion, thus respiratory failure was determined as the cause of death.

This species has been mostly recorded in the Gulf of Mexico (Jefferson, 1995; Davis and Fargion, 1996; Mullin and Fulling, 2006; Maze-Foley and Mullin, 2007), the Atlantic coast of the United States (Mullin and Fulling, 2003), and the Brazilian coast of South America (Moreno *et al.*, 2005), with at least 200 records reported (Fertl *et al.*, 2003). Recently, the species was recorded in European waters for the first time (Pis-Millán *et al.*, 2019). The geographically closest known record to Venezuela for *S. clymene* is a female individual collected on Carriacou, to the north of Grenada, some 1100 km away (12°25'25.64"N, 61°25'51.27"W) (specimen BMNH 239115) (Perrin *et al.*, 1981; Fertl *et al.*, 2003).

A previous case of misidentification involved a dead specimen incidentally captured on the eastern coast of Venezuela, originally identified as Clymene dolphin¹ (Romero *et al.*, 2001). The skull, deposited in the Estación Biológica

¹Agudo, I. (1990) Preliminary report on death of cetaceans in gillnets in northeastern Venezuelan waters. Page 1 in Abstracts, *Symposium on Mortality of Cetaceans in Passive Fishing Nets and Traps*, 20–21 October 1990, La Jolla, California.

Rancho Grande Museum under the code 16887, was later re-examined. Given an average tooth count of 52 teeth per dental series², which is outside the known range for *S. clymene* (38-49) (Perrin *et al.*, 1981), the individual was reidentified as a spinner dolphin (*S. longirostris*)².

Similarities in color pattern and body and skull morphology cause recurring confusion between *S. clymene* and other species of the genus (*S. longirostris* and *S. coeruleoalba*) (Perrin *et al.*, 1981; Jefferson, 2009). Recent genetic evidence indicates the origin of *S. clymene* from a natural hybridization between a male *S. longirostris* and a female *S. coeruleoalba*, which is also supported by morphological characteristics (Amaral *et al.*, 2014).

In the case of the individual stranded in south east of the Gulf of Venezuela, a thorough analysis of the distinctive rostrum and body color pattern, as well as tooth counts of the maxillary and mandibular rami, were consistent with *S. clymene* description (Jefferson, 1996). Consultations were also made with specialists, who confirmed the identification of this individual.

It is important to highlight that the stranding occurred in a shallow zone. The maximum depth in the northern Gulf of Venezuela is 55 m, and on the southwestern coast (Ensenada de Calabozo), depths do not exceed 20 m (Rodríguez, 2000). Considering the oceanic habits of the species, its preference for depth water ranging between 437 and 5000 m (Fertl *et al.*, 2003; Weir *et al.*, 2014; Jefferson and Braulik, 2018), it is likely that currents carried the animal toward shallow waters.

This is the first record of the of *Stenella clymene* in Venezuela and the Southern Caribbean. The event confirms the importance and scientific value of stranding records in providing relevant biological and ecological data on cetaceans as well as on their distribution.

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References

- Amaral, R., Lovewell, G., Coelho, M.M., Amato, G. and Rosenbaum, H.C. (2014) Hybrid speciation in a marine mammal: the Clymene dolphin (*Stenella clymene*). *PLoS ONE* 9(1): e83645. <https://doi.org/10.1371/journal.pone.0083645>
- Davis, W. and Fargion, S. (1996) Distribution and abundance of cetaceans in the north-central and western Gulf of Mexico. *OCS Study MMS 96-0027*. Prepared by the Texas Institute of Oceanography and the National Marine Fisheries Service. US Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, Louisiana. Available from National Technical Information Services, PB96-194436. US Department of Commerce, Springfield, VA 22161, USA.
- Fertl, D., Jefferson, T., Moreno, I., Zerbini, A. and Mullin, K. (2003) Distribution of the Clymene dolphin *Stenella clymene*. *Mammal Review* 33(3): 253–271. <https://doi.org/10.1046/j.1365-2907.2003.00033.x>
- Jefferson, T. (1995) *Distribution, abundance, and some aspects of the biology of cetaceans in the offshore Gulf of Mexico*. PhD Thesis. Texas A&M University, College Station. 232 pp.
- Jefferson T. (1996) Morphology of the Clymene dolphin (*Stenella clymene*) in the northern Gulf of Mexico. *Aquatic Mammals* 22: 35–43.
- Jefferson, T. (2009) Clymene dolphin *Stenella clymene*. Pages 234–236 in Perrin W.F., Würsig, B. and Thewissen, J.G.M. (Eds) *Encyclopedia of Marine Mammals*. 1ed. Academic Press, London, UK. <https://doi.org/10.1016/B978-0-12-373553-9.00060-2>
- Jefferson, T. (2018) Clymene dolphin: *Stenella clymene*. Pages 197-200 in Würsig, B., Thewissen, J.G.M. and Kovacs, K.M. (Eds) *Encyclopedia of Marine Mammals*. 3ed. Academic Press, London, UK. <https://doi.org/10.1016/B978-0-12-804327-1.00093-5>
- Jefferson, T. and Braulik, G. (2018) *Stenella clymene*. *The IUCN Red List of Threatened Species* 2018: e.T20730A50373865. <https://doi.org/10.2305/IUCN.UK.2018-.RLTS.T20730A50373865.en>
- Maze-Foley, K. and Mullin, K. (2007) Cetaceans of the oceanic northern Gulf of Mexico: Distributions, group sizes and interspecific associations. *Journal of Cetacean Research and Management* 8(2): 203-213.
- Moreno, I., Zerbini, A., Danilewicz, D., de Oliveira Santos, M., Simões-Lopes, P., Lailson-Brito Jr, J. and Azevedo, A. (2005) Distribution and habitat characteristics of dolphins of the genus *Stenella* (Cetacea: Delphinidae) in the southwest Atlantic Ocean. *Marine Ecology Progress Series* 300: 229-240. <https://doi.org/10.3354/meps300229>

²Bolaños-Jiménez, J. (1995) *Morfometría y taxonomía de los delfines de rostro largo de las costas de Venezuela (Cetacea: Delphinidae)*. Proyecto especial. Universidad Simón Bolívar.

- Mullin, D. and Fulling, L. (2003) Abundance of cetaceans in the southern U.S. North Atlantic Ocean during summer 1998. *Fishery Bulletin* 101: 603–613. <http://fishbull.noaa.gov/1013/11mullin.pdf>
- Mullin, D. and Fulling, L. (2006) Abundance of cetaceans in the oceanic northern Gulf of Mexico, 1996–2001. *Marine Mammal Science* 20: 787–807. <https://doi.org/10.1111/j.1748-7692.2004.tb01193.x>
- Norris, K. (1961) Standardized methods for measuring and recording data on the smaller cetaceans. *Journal of Mammalogy* 42(4): 471-476. <https://doi.org/10.2307/1377364>
- Perrin, W., Mitchell, D., Mead, G., Caldwell, K. and Van Bree, H. (1981) *Stenella clymene*, a rediscovered tropical dolphin of the Atlantic. *Journal of Mammalogy* 62(3): 583-598. <https://doi.org/10.2307/1380405>
- Perrin, W. and Mead, J. (1994) Clymene dolphin *Stenella clymene* (Gray, 1846). Pages 161-171 in Ridgway, R. and Ridgway, S.H. (Eds) *Handbook of Marine Mammals*, volume 5. Academic Press, London.
- Pis-Millán, J., Roselló, E., Morales-Muñiz, A. and Nores, C. (2019) First record of Clymene dolphin (*Stenella clymene* Gray, 1846) in European waters/Primera cita de delfín de Clímene (*Stenella clymene* Gray, 1846) en aguas europeas. *Galemys* 31: 83-88. <https://doi.org/10.7325/Galemys.2019.N3>
- Romero, A., Agudo, I., Green, M. and Notarbartolo di Sciara, G. (2001) Cetaceans of Venezuela: their distribution and conservation status. *National Oceanic and Atmospheric Administration Technical Report* NMFS 151. 60 pp. <http://aquaticcommons.org/2505/1/tr151.pdf>
- Rodríguez, G. (2000) *El Sistema de Maracaibo*. 2ed. Instituto Venezolano de Investigaciones Científicas, Caracas, Venezuela.
- Weir, C., Coles, P., Ferguson, A., May, D., Baines, M., Figueiredo, I. and Edwards, M. (2014) Clymene dolphins (*Stenella clymene*) in the eastern tropical Atlantic: distribution, group size, and pigmentation pattern. *Journal of Mammalogy* 95(6): 1289-1298. <https://doi.org/10.1644/14-MAMM-A-115>