RCA Revista de Ciências Ambientais
ISSN 1981-8858
Editora Unilasalle

Canoas, v. 16, n. 1, 2022

http://dx.doi.org/10.18316/rca.v16i1.9023

CLYMENE DOLPHIN STRANDING EVENT IN PERNAMBUCO STATE, NORTHEAST COAST OF BRAZIL

Karen Lucchini[1,2]
Fernanda Löffler Niemeyer Attademo[1,3]
Vivian Chimendes da Silva Neves[4]
Taciana Cássia Santos Bezerra[2]
Hugo Leonardo Rossiter Peixoto dos Santos[2]
Carlos Santos-Neto[1]
Fábia de Oliveira Luna[1]

ABSTRACT

On 30th January 2021, one dolphin was reported stranded at Ipojuca municipality in Pernambuco State, Brazil. The rescue call was attended by Ecoassociados and Instituto Chico Mendes de Conservação da Biodiversidade/Centro Nacional de Pesquisa e Conservação de Mamíferos Aquáticos teams. The last is the representative of the Rede de Encalhes e Informações de Mamíferos Aquáticos do Nordeste do Brasil in Pernambuco State. The individual showed a high level of stress and muscular spasms, and was soon in shock and died around 90 minutes later. After further analyses and necropsy procedure, the teams identified the individual as an adult female *Stenella clymene* specimen. There was no evidence of boat strike or interaction with fishing gear. Although the organs were highly parasitized, this was not the cause of the death. Alterations in the lungs suggested infectious interstitial pneumonia. Currently, this species is classified as 'Least concern' by the IUCN and is not listed on the Brazilian Official National List of Species Threatened with Extinction. Hence, our study highlights the importance of systematic monitoring of marine mammals, stranding networks and databases for species conservation. We also point out the need for an official list of endangered species of the Pernambuco state, to support local and regional actions. Thus, national conservation plans could be achieved more straightforwardly and, in the best possible way, strategic priorities for species conservation, protection, and management could be developed and applied.

Keywords: *Stenella clymene*; Marine Mammals; Cetacea; REMANE.

1 Centro Nacional de Pesquisa e Conservação de Mamíferos Aquáticos, Instituto Chico Mendes de Conservação da Biodiversidade - ICMBio/CMA, Santos, SP, Brazil. E-mail para correspondência: lucchini.karen@gmail.com
2 Laboratório de Ecologia, Comportamento e Conservação, Universidade Federal de Pernambuco, Recife, PE, Brazil.
3 Ciências biológicas, Centro Universitário Internacional Uninter, Curitiba, SC, Brasil.
4 ONG Ecoasssociados, Ipojuca – PE, Brazil.

RESUMO

Encalhe de Golfinho-clymene no Estado de Pernambuco, Nordeste do Brasil. Em 30 de janeiro de 2021, foi relatado o encalhe de golfinho no município de Ipojuca, Pernambuco, Brasil. O chamado de resgate foi atendido pelos times da ONG Ecoassociados e do Instituto Chico Mendes de Conservação da Biodiversidade/Centro Nacional de Pesquisa e Conservação de Mamíferos Aquáticos. Este último como representante da Rede de Encalhes e Informações de Mamíferos Aquáticos do Nordeste do Brasil no estado de Pernambuco. O indivíduo já apresentava alto nível de estresse e espasmos musculares, entrou em choque e veio a óbito após cerca de 90 minutos. Durante análises e procedimentos de necrópsia, a equipe identificou que se tratava de uma fêmea adulta da espécie *Stenella clymene*. Não existia evidência de interação com embarcações ou com utensílios de pesca. Embora os órgãos do animal estivessem altamente parasitados, essa não foi a causa da morte. Alterações nos pulmões sugeriam pneumonia intersticial de origem infecciosa. Atualmente, esta espécie é classificada como 'pouco preocupante' pela IUCN e não está listada na Lista Nacional Oficial de Espécies da Fauna Ameaçadas de Extinção. Com isso, nosso estudo destaca a importância do monitoramento sistemático de mamíferos marinhos, das redes de encalhe e dos bancos de dados para a conservação das espécies. Ressaltamos também a necessidade de uma lista oficial da fauna ameaçada de extinção do Estado de Pernambuco, para assim gerar subsídio para ações locais e regionais. Desse modo, Planos Nacionais de conservação poderiam ser alcançados de forma mais direta, e as prioridades estratégicas para a conservação, proteção e manejo das espécies certamente poderiam ser desenvolvidas e aplicadas.

Palavras-chave: *Stenella clymene*; Mamíferos Marinhos; Cetáceos; REMANE.

OCCURRENCE DESCRIPTION

On 30th January 2021 at 7:00 am, one dolphin was reported stranded on Merepe Beach at Ipojuca municipality, Pernambuco state, Brazil, at 08º29'00.1"S and 034º59'56.1"W. Ecoassociados is a non-profit organization that acts on sea turtle research and conservation in Pernambuco State. Instituto Chico Mendes de Conservação da Biodiversidade/Centro Nacional de Pesquisa e Conservação de Mamíferos Aquáticos (ICMBio/CMA) is a governmental institution which coordinates a stranding network, the Rede de Encalhes e Informações de Mamíferos Aquáticos do Nordeste do Brasil (REMANE). In Pernambuco State, ICMBio/CMA is the representative of the REMANE. Thus, in the municipality of Ipojuca and surroundings, the Ecoassociados and ICMBio/CMA teams act in collaboration on attending to aquatic mammals stranding and rescue calls. The individual was still alive when the rescue team arrived, there was a lot of interaction from community members and the animal, keeping it in the water, on the surf zone. When the team arrived at the site, the animal had a high degree of stress, with muscle spasms and long breathing intervals. The team asked the population to stay away from the animal, removed it from the water, in an attempt to assess the animal and take it to the most appropriate location. However, a few minutes later, the animal was in shock and died around 8:30 am.

We performed biometry and necropsy and the animal was identified as an adult female *Stenella clymene* (Gray, 1850) specimen, according to Jefferson et al. (1993) and Miranda et al. (2020), with a total body length of 1.79 m (Figure 1E). No further analysis was carried out about ageing the individual and there were no previous records on identification databases. Among the characteristics considered for the identification of the species are the tricolour pattern with a double dip in the dorsal cap, above the eyes and below the dorsal fin, the 'moustache' stripe from the eye to the tip of the beak, the short beak, the angle of the dorsal fin, the tooth count and the shape of the tail (Figures 1A-E).

The animal had good body condition and there was no evidence of dehydration. It did not show any external signs of boat strike or fishing gear interaction or wounds. Necropsy was performed according to Geraci e Lounsbury (2005). The internal organs were intact, with no displacement of the normal area. The presence of a colourless liquid was verified in the thoracic cavity. The lung, intestine, and mesentery were congested. We also detected that the lungs, bladder, stomach, intestines and lymphatic system were highly parasitized. Lungs showed macro and micro alterations suggesting infectious-type interstitial pneumonia. The gastrointestinal tract had no food content. The stomach weighed 450 g and measured 15.7 cm long and 12 cm wide, had small ulcerated punctiform areas with blackish coloration, with parasites in the anterior and pyloric part. Intestines weighed 1,690 kg with a total length of 18.32 m. Parasites were found adhered to the mucosa of the descending colon with formations of rigid cysts and in the serosa of the final part of the intestine, parasitic saccular formations were visualized. Although these organisms were not further identified, the cause of standing and death may be related to the parasitism rate (Jefferson et al., 1995). Cranial and encephalic structures were not examined.

This species is endemic to the Atlantic Ocean and occurs in tropical and subtropical oceanic waters, from the West African coast to the east American coast, from the northeast of the United States to the southeast of Brazil, and individuals rarely approach the shore (Jefferson e Curry, 2003; Jefferson e Braulik, 2018). Currently, the IUCN has classified this species in the category of 'Least concern'; however, the data on this species are still extremely poor and further studies are necessary on its abundance, distribution, and population structure (Jefferson e Braulik, 2018). *S. clymene* is not listed on the Brazilian Official National List of Species Threatened with Extinction (Lista Nacional Oficial de Espécies da Fauna Ameaçadas de Extinção - Portaria MMA 444/2014). Although Attademo et al. (2020) surveyed aquatic mammal species occurrence in Pernambuco State, including *S. clymene*, it should be noted that, to date, there is no List of Species Threatened with Extinction in Pernambuco State. Following the species' absence on the national list and the lack of regional lists, it is still not possible to determine its conservation status in the area.

Among the marine mammals' stranding events attended or assisted by the ICMBio/CMA, 5.28% (n=18) were represented by *Stenella clymene* individuals, out of which 2.05% (n=7) occurred in Pernambuco State (Attademo et al., 2020). Within the public data on the Sistema de Monitoramento de Mamíferos Marinhos (SIMMAM - http://simmam.acad.univali.br/sistema/public/), 1.04% of the stranding occurrences were Clymene dolphins (n=129); and within the public data on Sistema de Informação de Monitoramento da Biota Aquática - 1.0.0 (SIMBA - https://simba.petrobras.com.br/), 0.03% (n=2) of the records were *S. clymene* stranding. From these records, it is possible to point out two stranding events in Brazil to illustrate that this species tends to occupy waters along the entire Brazilian coast. The northernmost stranding occurrence was recorded on the coast of the state of Maranh*ã*o, and the southernmost stranding record was on the coast of the state of Santa Catarina.

Figure 1. Individual biometry and necropsy records of Stenella clymene stranded. A – Falcate dorsal fin angle detail; B – Head details: short and robust beak, dorsal cape dip above the eye and stripe from the eye to the beak tip; C – Tooth count; D – Tail shape detail; E – *Stenella clymene* dolphin before necropsy.

These two platforms are independent and filled up by technical teams over Brazil, members of monitoring programs with information from continental, coastal, and oceanic marine mammals' stranding and sighting events. SIMMAM platform is administered and controlled by Universidade do Vale do Itajaí (UNIVALI) and ICMBio/CMA. This platform is filled up by institutions that are members of regional national stranding networks and, consequently, members of the national stranding network, the Rede de Encalhe e Informação de Mamíferos Aquáticos do Brasil (REMAB), created in 2011 aiming to aggregate information from regional networks. SIMBA platform is filled up by institutions that are members of a beach monitoring program called Programa de Monitoramento de Praias (PMP), which is coordinated and administered by Petrobras as an environmental license condition required by the Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA). The PMP aims to assess the possible impacts of petroleum and natural gas exploitation offshore on marine tetrapods.

Considering that the data on these platforms include marine mammals events throughout the country, the efforts and concentration region may influence the number and frequency of registered occurrences, as well as the protocols followed during each event. Although *S. clymene* is an oceanic species, its presence along the north-eastern coast of Brazil is favoured by high levels of environmental sustainability (60-90%), a low-temperature range, depths above 1000 m, and proximity to the continental shelf break (Amaral et al., 2015). Moreno et al. (2005) also pointed out the high frequency of Clymene dolphins stranding along the north-eastern coast of Brazil, an area that is inhabited by this species throughout the entire year, during all seasons. Both studies, Moreno et al. (2005) and Amaral et al. (2015), highlight the need for research efforts

that investigate *the* distribution patterns of Stenella species offshore and offshore of the northern coast of South America and the South-West Atlantic.

Our stranding record emphasizes the importance of systematic monitoring of stranding in the state of Pernambuco, as well as the need for the development of a list of endangered species in the state. In this way, it would make it possible to develop a conservation action plan for aquatic mammals in this state and stimulate a similar development of conservation strategies in other areas where the species occupies. Therefore, we highlight the importance of updated and standardized efforts and systems to provide information about marine mammal stranding and sighting events to build a stronger network and cooperation between researchers and institutions across the country. This would generate improvements in marine mammals' biogeography and biodiversity data processing and analyses. And consequently, this would also provide and gather information about the morphology, impacts, distribution, abundance, and occurrence of many species classified as 'data deficient' or yet classified as 'least concern' even without enough evidence, such as *S. clymene* (Berrow, 2001; Parente et al., 2017; Borges et al., 2019). The development, update, and use of stranding databases also provide valuable information to achieve goals defined in national action plans, e.g., for small cetaceans' conservation (Barreto et al., 2010). Furthermore, these platforms and actions may also contribute to the establishment of standardized protocols for the attendance and assistance of marine mammal stranding and also for monitoring Brazilian aquatic ecosystems. Additionally, we point out the need for strategic priorities aiming for the development of conservation, protection, and management of marine mammals.

ACKNOWLEDGEMENTS

We thank the Instituto Chico Mendes de Conservação da Biodiversidade/Centro Nacional de Pesquisa e Conservação de Mamíferos Aquáticos (ICMBio/CMA), the Ecoassociados, the Brazilian National Council for Scientific and Technological Development (CNPq), the Sistema de Monitoramento de Mamíferos Marinhos (SIMMAM), the Rede de Encalhes e Informação de Mamíferos Aquáticos do Nordeste do Brasil (REMANE) and the Sistema de Informação de Monitoramento da Biota Aquática - 1.0.0 (SIMBA) developers, and to all the teams that provide valuable information on these platforms.

REFERENCES

AMARAL, K. B. et al. 2015. Ecological niche modelling of *Stenella* dolphins (Cetartiodactyla: Delphinidae) in the southwestern Atlantic Ocean. **Journal of Experimental Marine Biology and Ecology**,**472:**166-179.

ATTADEMO, F. L. N. et al. 2020. Ocorrências de mamíferos aquáticos no Estado de Pernambuco, Brasil. **Arquivos de Ciências do Mar**, **53:**33-51.

BARRETO, A. S. et al. 2010. **Plano de Ação Nacional para Conservação dos Mamíferos Aquáticos - pequenos cetáceos.** Brasília: ICMBio, 132p.

BERROW, S. 2001. Biological diversity of cetaceans (whales, dolphins and porpoises) in Irish waters. In: J. D. Nunn (Ed.). **Marine biodiversity in Ireland and adjacent waters, proceedings of a conference.** Belfast: Ulster Museum, p. 115-120.

BORGES, J. C. G et al. 2019. Mamíferos marinhos da Bacia Sergipe-Alagoas. In: E. C. Reis; M. E. R. Carneiro (Eds.). **Quelônios, aves e mamíferos marinhos da Bacia de Sergipe-Alagoas**. São Cristóvão: UFS, p. 116-149.

GERACI, J. G.; LOUNSBURY, V. J. 2005. **Marine mammal ashore.** A field guide for strandings. 2. ed. Texas: A&M University Sea Grant College Program, 371p.

JEFFERSON, T. A.; LEATHERWOOD, S.; WEBBER, M. A. 1993. **Marine mammals of the world.** FAO species identification guide. Rome: FAO, 320p.

JEFFERSON, T. A.; ODELL, D. K.; PRUNIER, K. T. 1995. Notes on the biology of the Clymene dolphin (*Stenella clymene*) in the northern Gulf of Mexico. **Marine Mammal Science**, **11**(4):564-573.

JEFFERSON, T. A.; BRAULIK, G. *Stenella clymene*. The IUCN Red List of Threatened Species 2018: e.T20730A50373865. Available at: <https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T20730A50373865.en>. Accessed in: 15th July 2021.

JEFFERSON, T. A.; CURRY, B. E. 2003. *Stenella clymene*. **Mammalian Species**, **726**:1-5.

MIRANDA, A. V. et al. 2020. **Guia de ilustrado de identificação de cetáceos e sirênios do Brasil – ICMBio/CMA**. 2. ed. Brasília: ICMBio/CMA, 70p.

MORENO, I. B. et al. 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.

PARENTE, C. L. et al. 2017. Diversidade e distribuição de cetáceos na área de influência das atividades de E&P na Bacia de Campos. In: E. C. Reis; M. P. Curbelo-Fernandez (Eds.). **Mamíferos, quelônios e aves:** caracterização ambiental regional da Bacia de Campos, Atlântico Sudoeste. Rio de Janeiro: Elsevier, p. 35-61.

Submetido em: 12.08.2021

Aceito em: 14.03.2022