

# Collision of a kitesurfer with a humpback whale (*Megaptera novaeangliae*) on the coast of Arraial do Cabo, Rio de Janeiro State, Brazil

Marcelo Tardelli Rodrigues

Laboratório de Ecotoxicologia e Microbiologia Ambiental (LEMAM), Instituto Federal de Educação,  
Ciência e Tecnologia Fluminense (IFF), Cabo Frio, Brazil

\*Corresponding author: [orcinusorca86@gmail.com](mailto:orcinusorca86@gmail.com)

The humpback whale (*Megaptera novaeangliae*) is a cosmopolitan cetacean found in all of the world's oceans. The species performs extensive annual migrations of thousands of kilometers annually, between summer feeding areas in high latitudes, and winter breeding calving areas in tropical and sub-tropical waters, where they generally fast (Mackintosh, 1942; Dawbin, 1966; Zerbini et al., 2006; Clapham, 2018). The fact that most humpback whales migrate close to the coast in Brazil (Pinedo et al., 1992; Hetzel & Lodi, 1993) facilitates the monitoring and studying of the population throughout much of their migration and residency in the breeding areas (Engel & Marcondes, 2021).

The population that occurs in the western South Atlantic Ocean (WSAO), called "breeding stock A" by the International Whaling Commission (IWC, 1998), inhabits the eastern coast of South America (Martins et al., 2001), more specifically the east and northeast coasts of Brazil (IWC, 1998; 2005), from late austral autumn to late austral spring, when mating and calving occur (Martins et al., 2001). Around 500 to 800 remaining whales

#### Keywords:

human-whale interaction, western South Atlantic Ocean, water sports, breeding stock A

around Abrolhos Marine National Park in the 1980s increased to approximately 2,400 animals by the year 2000 (first population estimate made with tag and recapture), and more than 17,000 whales in 2018 (Engel & Marcondes, 2021). The abundance in 2019 was estimated at 24,900 individuals, indicating that the WSAO humpback whale population has recovered to nearly 93% of its pre-exploitation abundance and would be nearly 100% recovered in 2030 (Zerbini et al., 2019).

The increase of the humpback whale population made these whales reoccupy areas that were used by the species before the whaling period along the northeastern and northern coasts of Brazil (Zerbini et al., 2004; Rossi-Santos et al., 2008; Gonçalves et al., 2018; Ristau et al., 2020). However, the main breeding area of humpback whales in Brazil is the Abrolhos Bank (Andriolo et al., 2010; Engel & Marcondes, 2021). Studies have shown that humpback whales calving and breeding in Brazil occur between April and December (Danilewicz et al., 2009), with peaks in August and September (Martins et al., 2001; Zerbini et al., 2004; Rossi-Santos et al., 2008; Andriolo et al., 2010; Engel & Marcondes, 2021). After this period, the species migrates to feed off South Georgia and South Sandwich Islands (Zerbini et al., 2006; Engel & Martin, 2009; Engel & Marcondes, 2021).

The Arraial do Cabo region (22°58'18" S, 42°01'30" W) in the Rio de Janeiro state, Brazil has natural beauties that attract a large number of visitors every year. Tourism is the main economic activity in the municipality and marine tourism generates the majority of jobs and income for the local population (A. S. Ribeiro, Museu Oceanográfico do IEAPM, pers. comm., 23 July 2021). The region also sits on the migratory pathway of humpback whales that travel each year from feeding areas in Antarctic to tropical areas further north in Brazil to breed. Vessel traffic may cause the interruption of behaviors such as resting, foraging, nursing, and reproduction (Allen & Read, 2000; Lusseau et al., 2006; Williams et al., 2006; Carrera et al., 2008; Stockin et al., 2008; Arcangeli & Crosti, 2009; Currey et al., 2009; Lusseau et al., 2009), which may negatively impact populations, harm animals and even lead to death (Favero, 2018). However, to the best of my knowledge, there are no records in the literature on the impact caused by water sports such as kitesurfing to this species.

#### ARTICLE INFO

**Manuscript type:** Note

#### Article History

Received: 28 March 2023

Received in revised form: 19 June 2023

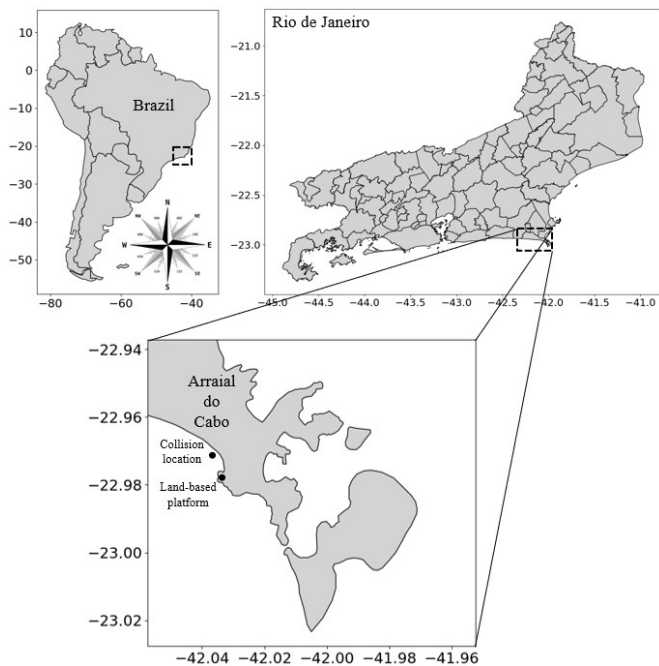
Accepted: 19 June 2023

Available online: 10 August 2023

**Handling Editor:** Fernando Félix

#### Citation:

Rodrigues, M. T. (2023). Collision of a kitesurfer with a humpback whale (*Megaptera novaeangliae*) on the coast of Arraial do Cabo, Rio de Janeiro State, Brazil. *Latin American Journal of Aquatic Mammals*, 18(2), 220-223. <https://doi.org/10.5597/lajam00308>



**Figure 1.** Rio de Janeiro State, highlighting the Arraial do Cabo region ( $22^{\circ}58'18''$  S,  $42^{\circ}01'30''$  W), where the record of a collision between a humpback whale *Megaptera novaeangliae* and a kitesurfer was made.

Kitesurfing is the combination of a board attached to the feet with an inflatable kite or parachute, which allow practitioner to glide over the surface of the water and, at the same time, take jumps with the help of weak or strong winds on lakes, dams, or at sea (Bitencourt & Navarro, 2005; ABETA, 2015). The sport, created in the late 1970s and perfected throughout the 1980s and 1990s (Alcantelado, 2009), began to be practiced in Brazil around 1996, and quickly became one of the most practiced water sports in the country and, consequently, one of the most popular (Bitencourt & Navarro, 2005; Alcantelado, 2009). The official entities indicated an approximate number of 2,000 practicing athletes, with only 500 associated with the Brazilian Kitesurfing Association (Bitencourt & Navarro, 2005).

On the coast of the Arraial do Cabo region, the practice of kitesurfing has been growing over the years, along with surfing, bodyboarding, stand up paddle, windsurfing, Hawaiian canoeing (Hawaiian canoe) (V. Ribas, Museu do Surf, pers. comm., 03 May 2023), free diving, and scuba diving (M. Queiroz, Queiroz Diver, pers. comm., 05 May 2023). The objective of this work is to report the collision of a kitesurfer with a humpback whale on the coast of Arraial do Cabo, located on the east coast of Rio de Janeiro state, southeastern Brazil, during the migration of the species through the region.

Observations and interaction records were made from a land-based platform ( $22^{\circ}58'43''$  S,  $42^{\circ}02'04''$  W) (Fig. 1) located on Pontal do Atalaia Hill, during whale watching activity carried out on 16 July 2021, from 08:00h to 15:00h (opportunistic observation period). The collision between the species and the kitesurfer occurred at 10:35h, when the kitesurfer, in fast displacement at about 300 meters from the coast, collided with a humpback whale, an adult individual in a group of eight whales, when surfaced to breathe (Fig. 2). With the impact, the kitesurfer was thrown about 10 meters away, while the whale continued on its course. After



**Figure 2.** Humpback whale *Megaptera novaeangliae* and kitesurfer observed seconds before collision on the coast of Arraial do Cabo, Brazil. Source: Marcelo Francisco de Lima.

a few seconds, the kitesurfer got up on the board and moved towards Grande Beach to recover from the collision.

On the coast of the Arraial do Cabo region, migrating humpback whales have been observed for at least three decades and recorded for at least two decades. In the last 20 years, there was no official record (only a few unconfirmed reports) of collision between humpback whales and tourism vessels (marine / onboard tourism) or any other type of vessel in the area in question, despite the significant increase in the number and traffic of vessels, as well as the number of humpback whales migrating along the coast (E. B. F. Netto, Instituto de Estudos do Mar Almirante Paulo Moreira / IEAPM, pers. comm., 03 January 2023; A. S. Ribeiro, Museu Oceanográfico do IEAPM, pers. comm., 05 January 2023). Regarding kitesurfing, the practice of the sport has been intensifying in the region year after year. Kitesurfers and humpback whales have been observed for at least a decade using the same areas at the same time on the coast of Arraial do Cabo, mainly in the winter months. During this period, no collision event involving kitesurfers and humpback whales was observed (with the exception of the observed event described in this note). The individuals of humpback whales observed did not change their behavior, showing indifference to the presence of kitesurfers and not demonstrating any aggressive behavior towards them during the time they remained in the same areas (E. B. F. Netto, Instituto de Estudos do Mar Almirante Paulo Moreira / IEAPM, pers. comm., 03 January 2023; V. Ribas, Museu do Surf, pers. comm., 03 May 2023).

This observation on the coast of Arraial do Cabo highlights possible impacts caused by kitesurfers, which may lead to temporal behavioral changes in whales similar to those caused by vessels. Even if this observed interaction may be rare, it could become a more significant threat to the species in the future, as the number of kitesurfers has been increasing every year in the region. This type of interaction may also threaten human life and therefore must be a cause of concern for local authorities and sports practitioners. Thus, it is essential to conduct studies to assess the potential risk of kitesurfing to the species and humans throughout the range where humpback whale habitat and sports activities overlap.

## Acknowledgments

I thank Marcelo Francisco de Lima for the images provided and two anonymous reviewers for the important suggestions and critiques of the original manuscript.

## References

- Alcantelado, W. V. L. (2009). A evolução do kitesurf e o papel do usuário na inovação tecnológica dos equipamentos. [Master's thesis, Centro Federal de Educação Tecnológica Celso Suckow da Fonseca (CEFET), Rio de Janeiro].
- Allen, M. C., & Read, A. J. (2000). Habitat selection of foraging bottlenose dolphins in relation to boat density near Clearwater, Florida. *Marine Mammal Science*, 16(4), 815-824. <https://doi.org/10.1111/j.1748-7692.2000.tb00974.x>
- Andriolo, A., Kinas, P. G., Engel, M. H., Martins, C. C. A., & Rufino, A. M. (2010). Humpback whales within the Brazilian breeding ground: distribution and population size estimate. *Endangered Species Research*, 11, 233-243. <http://dx.doi.org/10.3354/esr00282>
- Arcangeli, A., & Crosti, R. (2009). The short-term impact of dolphin-watching on the behaviour of bottlenose dolphins (*Tursiops truncatus*) in western Australia. *Journal of Marine Animals and Their Ecology*, 2(1), 3-9.
- Associação Brasileira das Empresas de Ecoturismo e Turismo de Aventura (ABETA). (2015). Kitesurfe. Retrieved 01 May 2023, from <https://abeta.tur.br/pt/atividades/kitesurf/>
- Bitencourt, V., & Navarro, P. (2005). Kitesurfe. In DaCosta, L. P. (Org.), *Atlas do Esporte no Brasil* (pp. 431-432). Consórcio: Conselho Federal de Educação Física (CONFEF), Serviço Social da Indústria (SESI), Serviço Social do Comércio (SESC), Federação Nacional das Associações Atléticas Banco do Brasil (FENABB), Associação Cristã de Moços (ACM), Confederação Brasileira de Clubes (CBC), Comitê Olímpico Brasileiro (COB), Comitê Paraolímpico Brasileiro (CPB), Fundação Getúlio Vargas (FGV) / Escola Brasileira de Administração Pública e Empresas, Fórum Nacional dos Secretários e Gestores Estaduais de Esporte e Lazer e Ministério dos Esportes, Shape Editora, Rio de Janeiro - RJ, Brazil.
- Carrera, M. L., Favaro, E. G. P., & Souto, A. (2008). The response of marine tucuxis (*Sotalia fluviatilis*) towards tourist boats involves avoidance behaviour and a reduction in foraging. *Animal Welfare*, 17(2), 117-123. <https://doi.org/10.1017/S0962728600027627>
- Clapham, P. J. (2018). Humpback whale. In Würsig, B., Thewissen, J. G. M., & Kovacs, K. M. (Eds.), *Encyclopedia of Marine Mammals* (pp. 489-492). Academic Press. <https://doi.org/10.1016/C2015-0-00820-6>
- Currey, R. J. C., Dawson, S. M., & Slooten, E. (2009). An approach for regional threat assessment under IUCN Red List criteria that is robust to uncertainty: The Fiordland bottlenose dolphins are critically endangered. *Biological Conservation*, 142(8), 1570-1579. <https://doi.org/10.1016/j.biocon.2009.02.036>
- Danilewicz, D., Tavares, M., Moreno, I. B., Ott, P. H., & Trigo, C. C. (2009). Evidence of feeding by the humpback whale (*Megaptera novaeangliae*) in mid-latitude waters of the western South Atlantic. *Marine Biodiversity Records*, 2, e88. <https://doi.org/10.1017/S1755267209000943>
- Dawbin, W. H. (1966). The seasonal migratory cycle of humpback whales. In Norris, K. S. (Ed.), *Whales, dolphins and porpoises* (pp. 145-170). University of California Press. <https://doi.org/10.1525/9780520321373-011>
- Engel, M. H., & Martin, A. R. (2009). Feeding grounds of the western South Atlantic humpback whale population. *Marine Mammal Science*, 25, 964-969. <https://doi.org/10.1111/j.1748-7692.2009.00301.x>
- Engel, M., & Marcondes, M. (2021). *Salvas da Extinção: A História do Projeto Baleia Jubarte*. Bambu Editora e Artes Gráficas, São Paulo - SP, Brazil. 112 pp.
- Favero, I. T. (2018, 25 February - 2 March). *Primeiro registro de interação de Trichechus manatus manatus (Linnaeus, 1758) com praticantes de kitesurf no litoral do Piauí, Brasil*. [Paper presentation]. XXXII Congresso Brasileiro de Zoologia, Foz do Iguaçu, PR, Brazil. <https://dx.doi.org/10.5281/zenodo.1341248>
- Gonçalves, M. I. C., Sousa-Lima, R. S., Teixeira, N. N., Morete, M. E., Carvalho, G. H., Ferreira, H. M., & Baumgarten, J. E. (2018). Low latitude habitat use patterns of a recovering population of humpback whales. *Journal of the Marine Biological Association of the United Kingdom*, 98(5), 1087-1096. <https://doi.org/10.1017/S0025315418000255>
- Hetzel, B., & Lodi, L. (1993). *Baleias, botos e golfinhos: guia de identificação para o Brasil*. Editora Nova Fronteira, Rio de Janeiro - RJ, Brazil. 180 pp.
- International Whaling Commission (IWC). (1998). *Annex G - Report of the Sub-Committee on Comprehensive Assessment of Southern Hemisphere Humpback Whales*. International Whaling Commission (IWC), Report of the Scientific Committee: 13pp. (170-182). [Available from <https://iwc.int/en/>].
- International Whaling Commission (IWC). (2005). *Annex H - Report of the Sub-Committee on other Southern Hemisphere Whale Stocks*. International Whaling Commission (IWC), Report of the Scientific Committee: 12 pp. (235-246). [Available from <https://iwc.int/en/>].
- Lusseau, D., Bain, D. E., Williams, R., & Smith, J. C. (2009). Vessel traffic disrupts the foraging behavior of southern resident killer whales *Orcinus orca*. *Endangered Species Research*, 6(3), 211-221. <https://doi.org/10.3354/esr006211>
- Lusseau, D., Slooten, L., & Currey, R. J. C. (2006). Unsustainable dolphin-watching tourism in Fiordland, New Zealand. *Tourism in Marine Environments*, 3(2), 173-178. <https://doi.org/10.3727/154427306779435184>
- Mackintosh, N. A. (1942). The southern stocks of whalebone whales. *Discovery Reports*, 22, 197-300.
- Martins, C. C. A., Morete, M. E., Engel, M. H., Freitas, A. C., Secchi, E. R., & Kinas, P. G. (2001). Aspects of habitat use patterns of humpback whales in the Abrolhos Bank, Brazil, breeding ground. *Memoirs of the Queensland Museum*, 47(2), 563-570.
- Pinedo, M. C., Rosas, F. C. W., & Marmontel, M. (1992). *Cetáceos e Pinípedes do Brasil: uma revisão dos registros e guia para identificação das espécies*. United Nations Environment Programme (UNEP), Nairobi, Kenya, and Fundação Universidade do Amazonas (FUA), Manaus - AM, Brazil.

- Ristau, N. G., Martins, C. C. A., Luvizotto-Santos, R., Balensiefer, D., Sousa, G., Marmontel, M., & Farias, I. P. (2020). Sharing the space: Review of humpback whale occurrence in the Amazonian Equatorial Coast. *Global Ecology and Conservation*, 22, e00854. <https://doi.org/10.1016/j.gecco.2019.e00854>
- Rossi-Santos, M. R., Neto, E. S., Baracho, C. G., Cipolotti, S. R., Marcovaldi, E. & Engel, M. H. (2008). Occurrence and distribution of humpback whales (*Megaptera novaeangliae*) on the north coast of the State of Bahia, Brazil, 2000 - 2006. *ICES Journal of Marine Science*, 65, 667-673. <https://doi.org/10.1093/icesjms/fsn034>
- Stockin, K. A., Lusseau, D., Binedell, V., Wiseman, N., & Orams, M. B. (2008). Tourism affects the behavioural budget of the common dolphin *Delphinus* sp. in the Hauraki Gulf, New Zealand. *Marine Ecology Progress Series*, 355, 287-295. <https://doi.org/10.3354/meps07386>
- Williams, R., Lusseau, D., & Hammond, P. S. (2006). Estimating relative energetic costs of human disturbance to killer whales (*Orcinus orca*). *Biological Conservation*, 133(3), 301-311. <https://doi.org/10.1016/j.biocon.2006.06.010>
- Zerbini, A. N., Andriolo, A., da Rocha, J. M., Simões-Lopes, P. C., Siciliano, S., Pizzorno, J. L., Waite, J. M., DeMaster, D. P., & VanBlaricom, G. R. (2004). Winter distribution and abundance of humpback whales (*Megaptera novaeangliae*) off Northeastern Brazil. *Journal of Cetacean Research and Management*, 6(1), 101-107. <https://doi.org/10.47536/jcrm.v6i1.796>
- Zerbini, A. N., Andriolo, A., Heide-Jørgensen, M. P., Pizzorno, J. L., Maia, Y. G., VanBlaricom, G. R., DeMaster, D. P., Simões-Lopes, P. C., Moreira, S., & Bethlem, C. (2006). Satellite-monitored movements of humpback whales (*Megaptera novaeangliae*) in the Southwest Atlantic Ocean. *Marine Ecology Progress Series*, 313, 295-304. <https://doi.org/10.3354/meps313295>
- Zerbini, A. N., Adams, G., Best, J., Clapham, P. J., Jackson, J. A., & Punt, A. E. (2019). Assessing the recovery of an Antarctic predator from historical exploitation. *Royal Society Open Science*, 6, 190368. <https://doi.org/10.1098/rsos.190368>
-