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MARINE MAMMALS

A strange breaching behaviour of a beaked whale

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Abstract

An undescribed breaching behaviour of a beaked whale *Mesoplodon* sp. was seen west of Brazil in the deep waters off the Abrolhos Bank. Consecutive breaches were performed in a counterclockwise circle, the whale always falling on its left side with its head inwards where two other whales were basking.

Background

The family Ziphiidae, beaked whales, 24 extant species, are often difficult to identify or even spot at sea (Carwardine 1995, Reeves et al. 2002, Shirihai & Jarrett 2006, Best 2007, MacLeod 2018, Committee on Taxonomy 2024). They are the least known of all cetacean groups (MacLeod 2018). The reason is that these small to medium sized whales often lie low in the water and their usually inconspicuous blows are difficult to see even with a moderate swell or small wind-waves. Many species also have similar appearances in the field and cannot be distinguished from each other. Also, some species have never with certainty been seen at sea and were described from stranded carcasses or sculls found on the beach (Carwardine 1995, Reeves et al. 2002). Further, beaked whales are deep divers and although they seem to congregate at escarpments, submarine canyons and seamounts, their long dives make them difficult to follow unless tagged. Cuvier's Beaked (or Goose-beaked) Whale *Ziphus cavirostris* holds the record for deepest and longest known dives of all marine mammal; 2992 m (Quick et al. 2020) and 222 minutes (Schorr et al. 2014), respectively.

Possibly because of the difficulty to make observations of beaked whales at sea, most species have never been targeted by commercial whaling. The actively targeted species are the Northern Bottlenose Whale *Hyperoodon* ampullatus, which was hunted extensively in the North Atlantic Ocean, and coast-based whaling of Cuvier's Beaked Whale and Baird's Beaked Whale *Berardius bairdii* in Japan (MacLeod 2018). From a conservation perspective this is positive, but the lack of information for most species renders 19 of 23 beaked whales with IUCN conservation status of "Data Deficient", with two classified as "Least Concern" and two "Not Assessed" (Braulik et al. 2023). However, the use of the term "Data Deficient" has been questioned; the argument is that a classification of "Assumed Threatened" would better describe the conservation status of animals that are rarely seen (Parsons 2016).

Being difficult to study, remarkably little is known about the behaviour of the beaked whales (MacLeod 2018). Thus, any chance observation of behavioural oddities adds to the understanding of these elusive animals. The observation described here was not done as a part of a systematic study of whales. My "official" research during the expedition was on the global distribution of pollutants, so whale and bird observations were made opportunistically.

Observation

The Swedish research icebreaker *Oden* spent the austral summer 2006–2007 in Antarctic waters performing environmental research assignments and opening the supply lines to McMurdo Station. Research observations started as soon as the ship left Sweden.

The Abrolhos Bank is an International Marine Mammal Area off the coastline of northeastern Brazil in the Atlantic Ocean (IUCN-MMPATF 2023). On 12 November 2006, in the deep waters west of Brazil off the Abrolhos Bank (37° 36'S, 19° 11'W, depth 3400–3500 m), a beaked whale *Mesoplodon* sp. performed a strange and not previously described breaching behaviour. The vantage point was approximately 10 m above the water surface and observations made with a pair of Zeiss 10×25 binoculars. The weather and sea conditions were excellent for observations with good light, a low swell, and no wind waves. Because *IB Oden* is slow in open water (4–6 knots), observations were possible over several minutes.

The first breach was seen at a distance of c. 500 m and the closest observation was at c. 50 m. Consecutive breaches were 5–30 seconds apart and breaching was performed in a counterclockwise circle. The whale consistently fell back into the water on its left side with its head towards the centre of the circle. The radius of the circle was kept at 4–5 times the body length of the breaching whale, which was estimated to 5–6 m based on comparison with the size of sea birds circling the whale. At the centre of the circle, two other whales were basking (lying still at the surface). Estimating the size of these whales was difficult because they were never seen from beak to tail, but one of them seemed to be of a similar size as the breaching whale and the other half that size, possibly a calf.

Discussion

The species of whale could not be determined with certainty, but sketches were made directly after the observation (Figure 1). Generally, the body was light coloured with darker fields, particularly dorsally towards the tail and on the head.

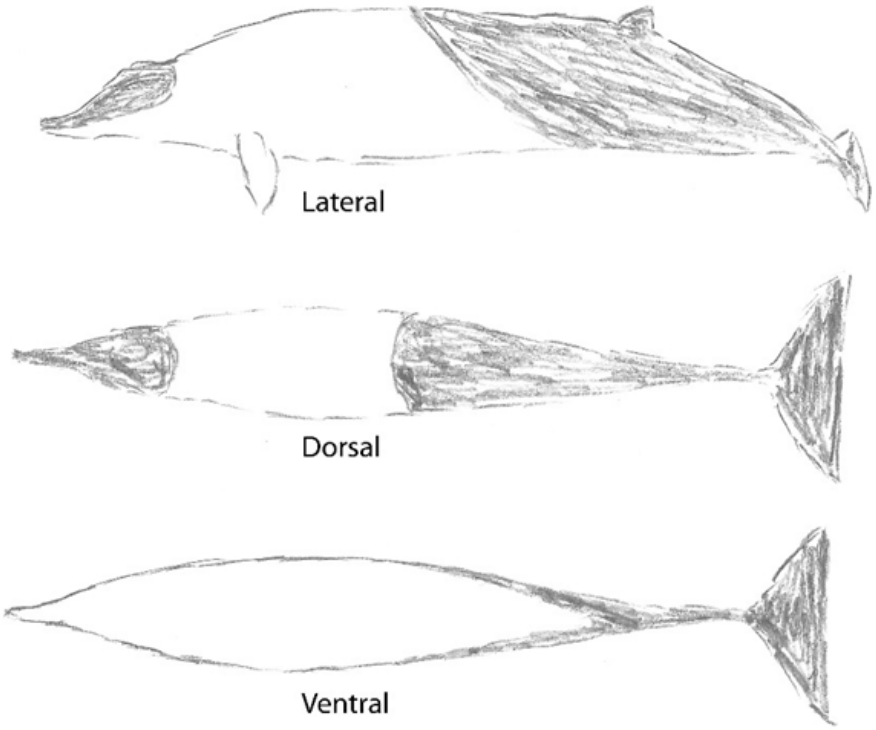

Figure 1. Field sketches made directly after the observations of the breaching beaked whale *Mesoplodon* sp., lateral, dorsal and ventral views. Note that the drawings, although made directly after the observation, are only indicative of the true colour pattern of the whale.

Mesoplodon species are rarely seen breaching. Designating the observed whale to this genus is based mainly on its profile (Figure 1). In the context described above, the reason for the breaching is likely to be linked to social interactions, e.g., courtship, assertion of dominance, or territorial display. Many beaked whales tend to avoid ships because of acoustic disturbance (Feyrer et al 2024). Icebreakers generate a lot of vessel noise. Despite this, the ship got relatively close to the whales. This suggests that the social

importance of the breaching must have been sufficiently significant for them that they disregarded the noise and concentrated on the interaction.

The species of whale could not be identified with certainty, but it was suggested that the generally light body with dark fields could indicate a Layard's (or Strap-toothed) Beaked Whale *Mesoplodon layardii* (C MacLeod 2008 pers. comm.). The observation was, however, north of the known range of this species (MacLeod 2018) and a single observation cannot be taken as a cause to expand its known range. However, as the beak should always be white in this species, the dark upper beak suggests a different species (given that my drawing made directly after the observation is correct. But as several Beaked Whale species are poorly know, and suspected new species are reported now and then based on field observations, designating this observation to any species is meaningless. However, the observation suggests that the area off the Abrolhos Bank might be interesting for further studies of Beaked Whales.

My own experience of whale spotting during 42 months at sea is that unless breaching, beaked whales are difficult to spot at best, but easier from the highest vantage point available. Most of my ship-time has been on polar-class icebreakers in the Arctic and Antarctic regions, or *en route* to or from the one of the other. On these ships the monkey island (above the bridge) is at least 20–30 m above water. With the help of "spotters" placed on different decks I compared the possibility to spot whales from vantage points 5–30 m above the water. In calm seas it was often possible to spot beaked whales from the monkey island while none could be seen from the lower decks. In rougher seas, no beaked whales were seen even from the monkey island, not even in areas where groups of beaked whales had been seen during previous journeys. Ships of icebreaker-stature are rarely used for targeted whale research, which may be one reason why beaked whales are so rarely seen. It is notable, though, that only species with a distinct dorsal profile, such as Cuvier's Beaked Whale, can be identified to species even from a high vantage point. The dorsal profiles of *Mesoplodon* species, and likely some similar looking genera, are too similar make it possible to identify it to anything but a Beaked Whale.

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