

Sperm whale, *Physeter macrocephalus*, stranding on the Pakistani coast

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Sperm whales (*Physeter macrocephalus*) occur frequently in stranding records worldwide. However, none have been reported along the Pakistani coastline to date. This paper documents the first reported stranding of a sperm whale on the Pakistani coast. Ultimately, this finding is important in the planning of Pakistan's Biodiversity Action Plan and its National Conservation Strategy for marine mammals.

Sperm whales (*Physeter macrocephalus* Linnaeus, 1758) occur frequently in stranding records worldwide. However, none have been reported along the Pakistani coastline to date, with the closest reported strandings occurring off India and Oman. This paper therefore documents the first reported stranding of a sperm whale on the Pakistani coast.

The skeleton of the sperm whale was found on Soneri Beach on 8 December 2005, near Manjar Goth (24.52.787°N and 66.41.919°E) during a routine survey for beach-cast cetaceans. Species identification was made using the unique position of the left bony nasal passage within the skull (Figure 1). The Manjar villagers reported that the whale stranded freshly-dead during the night on the high tide, approximately two to three months prior to our survey date. The bones recovered are archived at the Centre of Excellence in Marine Biology, University of Karachi. Much of the skeleton was found; the most noticeable pieces missing included the teeth and the lower right jaw. Out of the 47 to 51 vertebrae that sperm whales are known to have, we recovered 20 vertebrae, with the majority being retained by the villagers. There was very little soft tissue left, but samples of the remaining dried skin were taken for future genetic and toxic chemicals analysis.

Sperm whales form a key part of the mesopelagic ecosystem due to their size, global distribution and relative number. They are one of the more deep-diving species and generally feed at depths ranging between 200 and 2000 m, principally feeding on squid in the hundreds to thousands of kilograms daily. They generally move at about 4 km per hour within large ranges spanning about 1000 km in females. Sperm whales are known to show strong sexual dimorphism in size (Whitehead, 2002). Males are thought to reach sexual maturity between 18 to 21 years of age at a body length of 11 to 12 m, reaching a maximum length of between 15 to 18 m. In contrast, females are thought to reach sexual maturity between 7 to 13 years of age at a body length of 8.3 to 9.2 m, reaching a maximum length of between 11 to 12 m. To calculate the length of the stranded sperm whale, we used a formula from Gordon (1991) based on the length of the spermaceti sac, with the difference between the length of the skull and the length of the spermaceti sac assumed to be minimal. The formula applied is as follows:

Total body length = $9.75 - 0.521(SL) + 0.068(SL^2) + 0.057(SL^3)$
where SL = skull length.

Using the length of the skull (2.18 m), we estimated the whale to be approximately 9.5 m in length. Given the estimated body length, it is likely that the whale was either a relatively young male

that had not yet reached sexual maturity, or a young female that was likely to be sexually mature.

The remains of the sperm whale were found on the west coast of the Sindh province, close to the mouth of the Hub River, which divides the Sindh and Balochistan provinces. The coastal regions

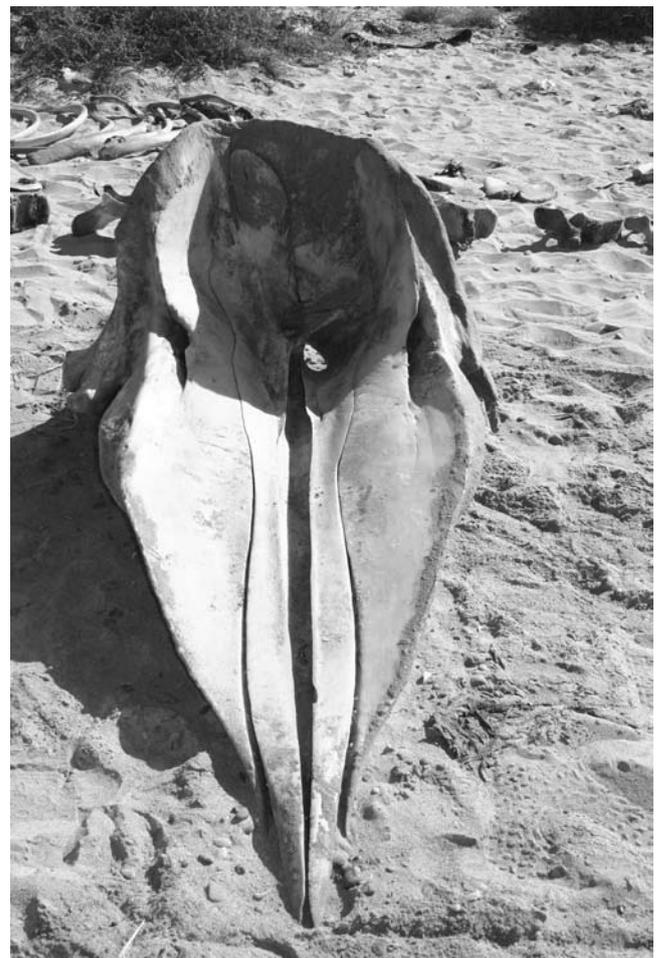


Figure 1. Sperm whale skull recorded during the beach survey on Soneri Beach, near Manjar Goth (24.52.787°N and 66.41.919°E) Sindh, Pakistan on 8 December 2005.

of Sindh are relatively shallow, with the 100 m contour occurring more than 40 km from the stranding site. This seems an unlikely habitat for sperm whales as they are an offshore species and tend to inhabit deep oceanic waters (Whitehead, 2002). In comparison, the waters off neighbouring Balochistan reach depths of over 3000 m relatively close to the shore, which is a sufficiently deep habitat for sperm whales. Aside from squid, sperm whales are also known to feed on octopus, demersal rays, sharks and bony fish, which might be found in the relatively shallow waters near the Hub River and could account for the whale's presence there. Interestingly, there have also been several individual strandings of smaller odontocete species reported around Manjar Goth over a period of years (Gore et al., unpublished data). Without pathology on the whale, the cause of death remains undecided and it is not known whether seismic surveys or military activity took place nearby prior to the stranding, or whether a ship strike was the cause. This is the first, and to date the only, report and speculation on underlying reasons that might involve large-scale climate events would be unreasonable. However, there is a ship-wrecking area within kilometres of the stranding site, where toxic chemicals and heavy metals are byproducts of the activity and may have had some effect on the cetaceans that died in the area.

Sperm whales have been recorded opportunistically and during dedicated boat surveys in other areas within the Arabian Sea (e.g. Minton, 2004). However, until now there has been no definitive record of this species occurring in Pakistani waters (e.g. WDCS, 2003), although Ahmad and Ghalib (1975) suggest that sperm whales may have been seen along the Pakistani coast some thirty years ago. It may also be possible that the protection from commercial whaling within the Indian Ocean Sanctuary since 1979 (WDCS, 2003) could have allowed the expansion of the sperm whale distribution within the Arabian Sea and the greater Indian Ocean. However, with a large proportion of the Pakistani coastline

uninhabited or difficult to access, many stranding events are likely to have been unreported, and as little systematic work on cetaceans has been carried out in Pakistan it may be that our focused survey effort could well result in an increase in such findings. Ultimately, our record of a sperm whale stranding on the Pakistani coast is important in the planning of both the Pakistan Biodiversity Action Plan and Pakistan's National Conservation Strategy for marine mammals.

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