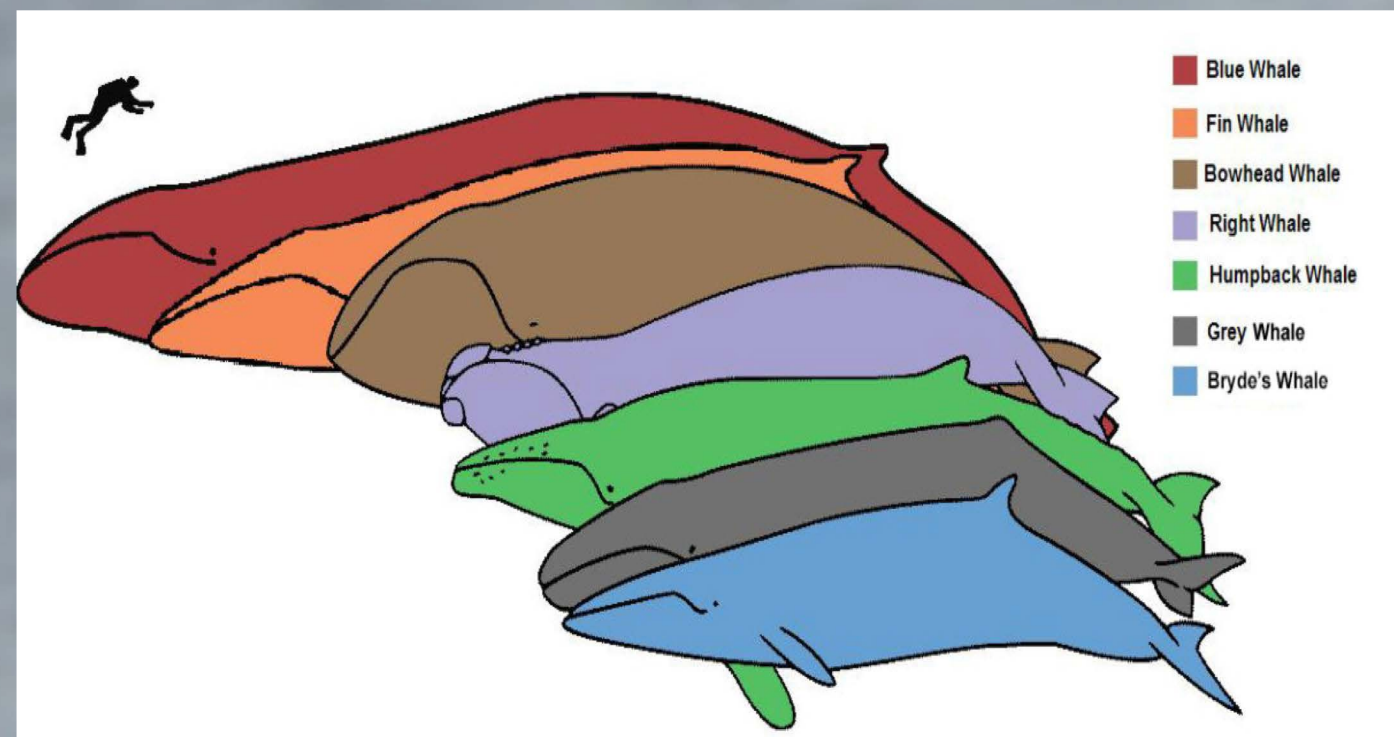


Blowhole Science: Comparative Anatomy of Baleen Whale Blowholes

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Introduction

- The anatomy of whales, specifically their blowholes, is very understudied.
- We investigated the anatomical differences between the blowholes of Humpback whales and Minke whales.
- We studied how the blowholes of Minke and Humpback whales differ

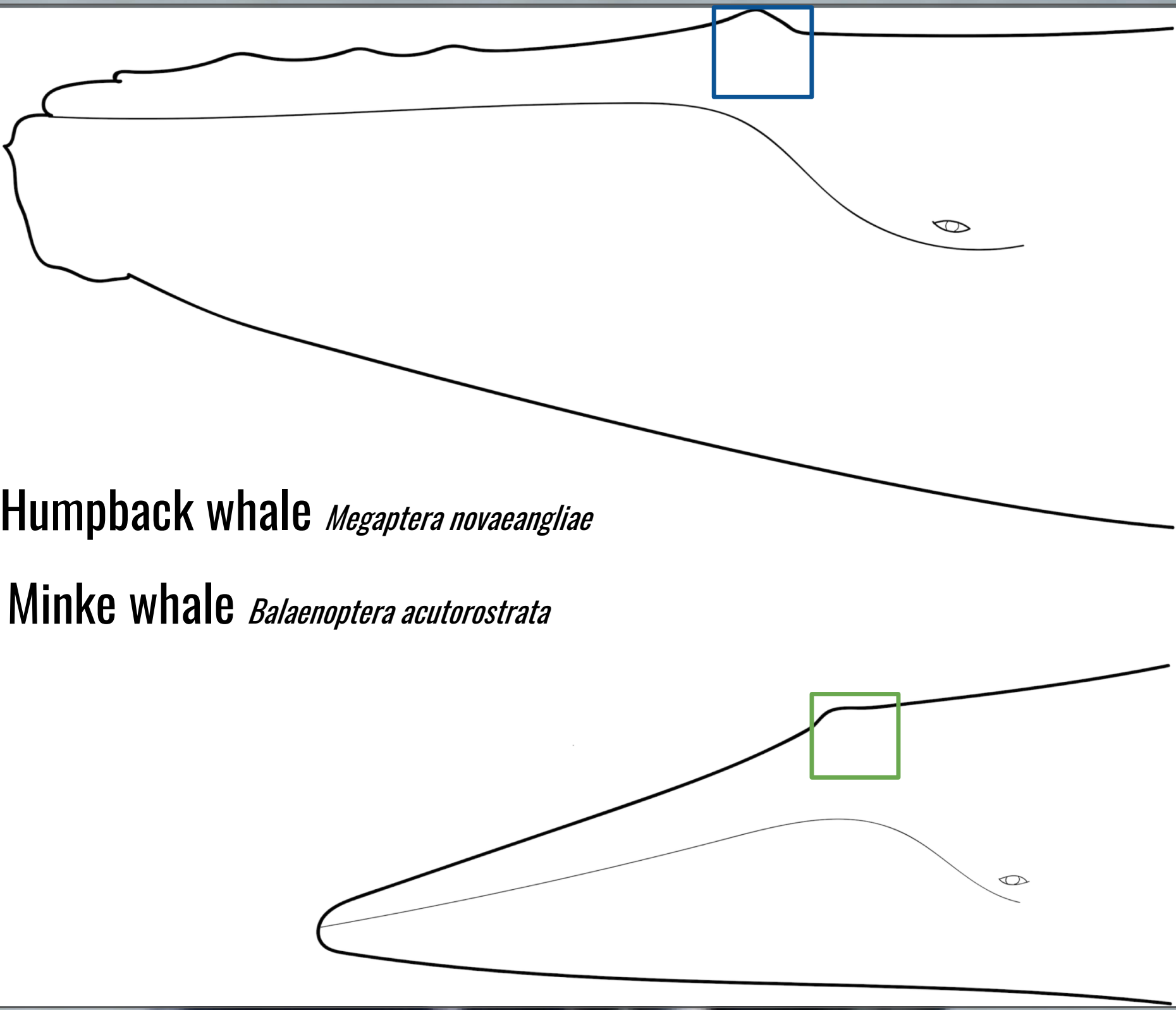
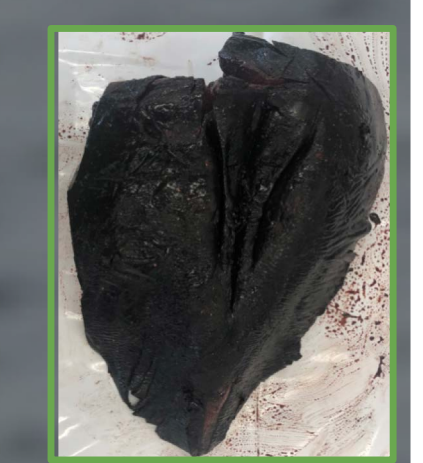
Methods

- Necropsy of stranded whales and preservation of samples
- Examination of specimen of external nares
- MRI scans for high resolution three dimensional imagery
- HOROS to measure the sizes of different parts
- Values organized into tables and analyzed
- ImageJ to measure specimen of humpback whale

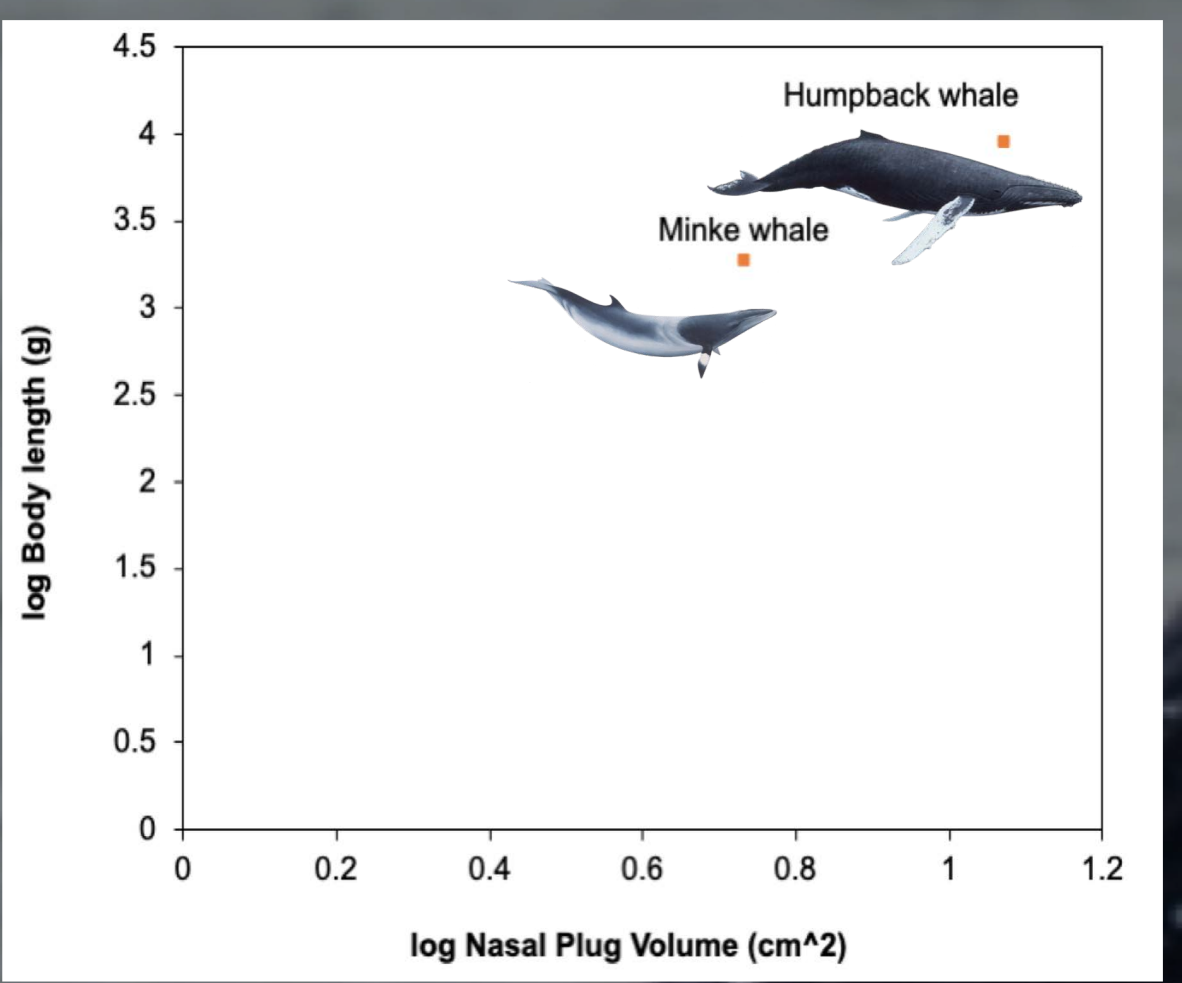
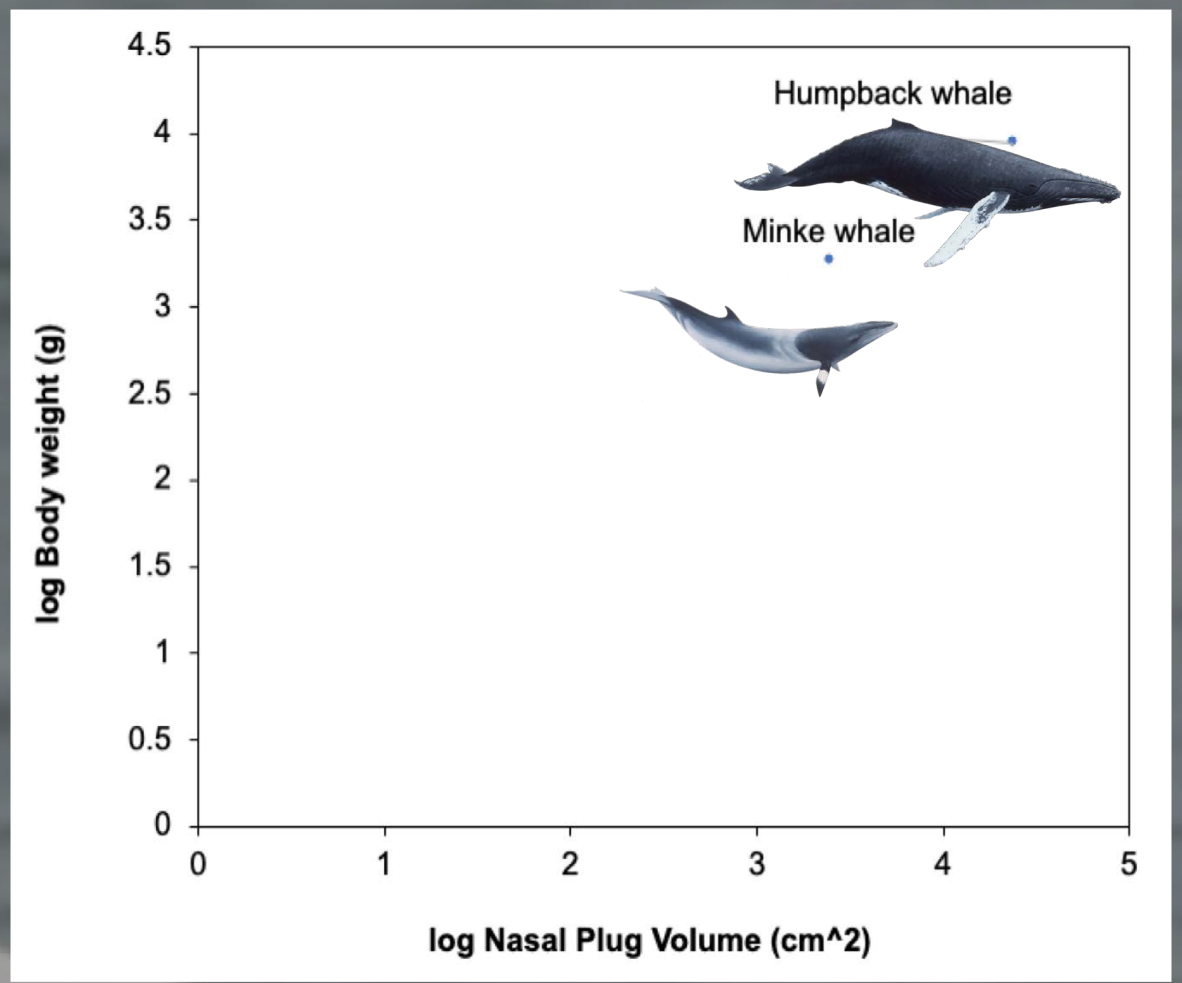
Results

Result #1: Humpback blowholes are different than Minke's!

Species	Date	Location	Age	Sex	Body length (m)
Humpback whale	May 4 2019	West Hampton, NY	Juvenile	F	11.8
Minke whale	June 25 2019	Sandy Hook, NJ	Adult	M	5.4

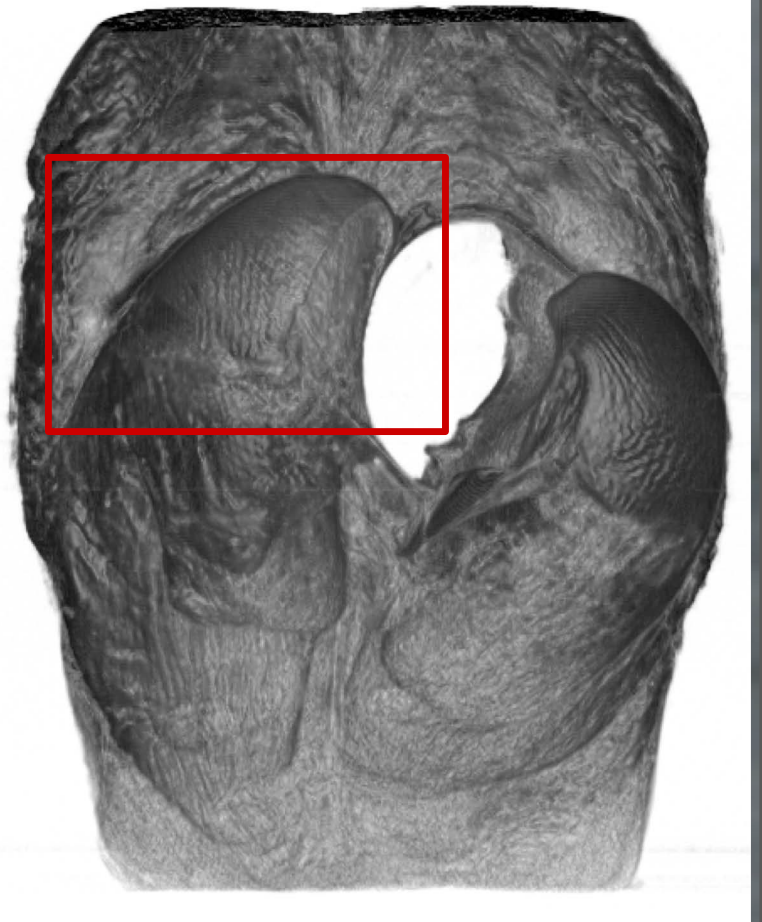


Result #2: Humpback nasal plugs are bigger than Minke's



Measurement	Humpback whale	Minke whale
Body size (m)	11.8	5.4
Blowhole length (cm)	23.5	17.3
Body weight (g)	23923	2438
Nasal plug volume (cm ²)	8810.1	842.4
Nasal plug length (cm)	37.4	14.4

Nasal plug



Even controlling for whale body size, humpback nasal plugs were bigger than minkes

Conclusions

- Differences in the nasal anatomies between the two species supports our hypothesis.
- Knowledge on whale evolution and anatomy may help entangled whales and improve treatment of sick whales.

The Future

- Examine a larger variety of both species of MRI scans for measuring purposes.
- Obtain specimens of Minke and Humpback whales that are both the same gender and age.
- We would like to observe if this theory holds true for other species of baleen whales.

References

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 Yamato M, Ketten DR, Arruda J, Cramer S, Moore K. 2012. The auditory anatomy of the Minke whale (*Balaenoptera acutorostrata*): a potential fatty sound reception pathway in a baleen whale. *Anat. Rec.* 295, 991–998. (10.1002/ar.22459)

