CETACEAN'S ADAPTATIONS TO DIVING

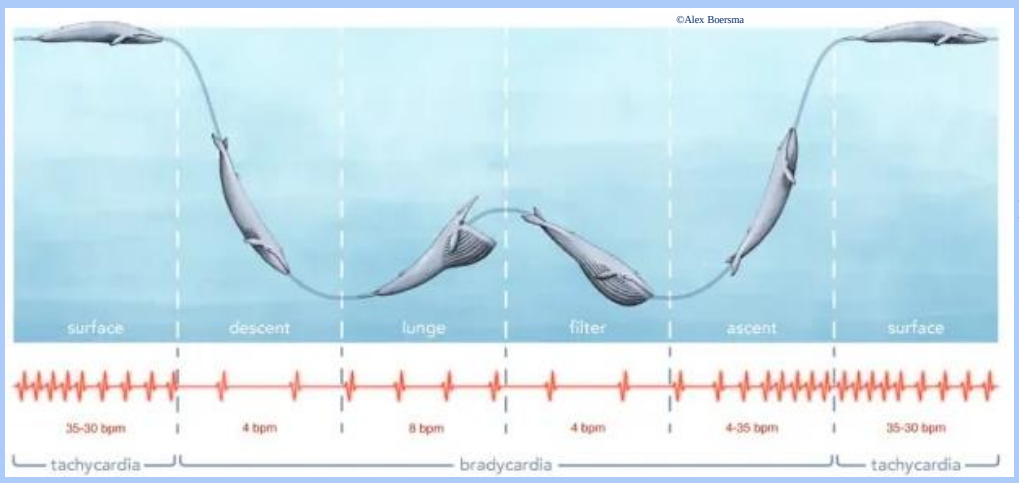
Final Degree Project – February 2023
Nuria Prieto Fernández

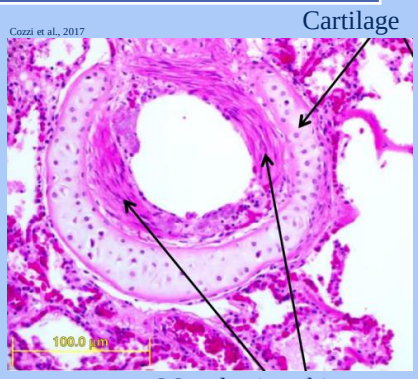
OBJECTIVES: To review data from the last 15 years (2007-2022) on two of the main cetacean's adaptations to diving: the mammalian dive response and thermoregulation, and provide an overview of what they are and how they work.

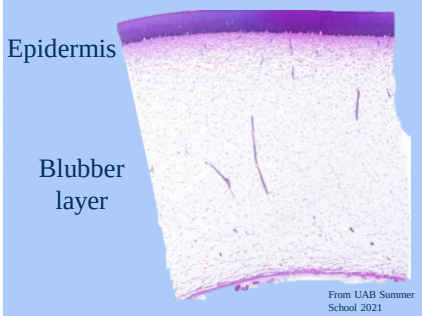
Figure 1. Article selection process (identification, screening and included).

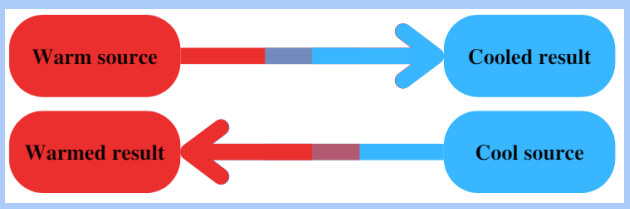
MAMMALIAN DIVE RESPONSE

The mammalian dive response consists on a series of processes (apnea, bradycardia, peripheral vasoconstriction, and decreased metabolic rate) that allow cetaceans to enhance their diving times.









THERMOREGULATION

The strategies regarding thermoregulation involve insulation (blubber layer), and cardiovascular adjustments (counter-current heat exchange, arteriovenous anastomoses).

CONCLUSIONS: Cetaceans possess physiological and anatomical adaptations that allow them to have an exclusively aquatic lifestyle, enhancing diving times, and allowing them to live in cold waters thanks to their thermoregulation strategies. However:

- Many questions are still unanswered and our knowledge of their physiology is still poor.
- Further studies are needed to better comprehend how these work.