

Cetacean Conservation Physiology: recent advances from technological innovations

Andreas Fahlman

Oceanografic foundation, Valencia, Spain

This lecture will discuss how a better understanding of respiratory physiology may have multiple applications for conservation of marine vertebrates. Until recently, it was generally assumed that O₂ limited diving in marine vertebrates. The discovery that mass-stranded whales appear susceptible to gas emboli has resulted in a paradigm shift how we view physiological limitations in these species, and increasing evidence suggest that some species may live with elevated blood and tissue N₂ levels throughout most of their lives and be at risk of gas bubble disease. We have investigated the structural and functional properties of the respiratory system in both pinnipeds and cetaceans to allow us to better understand how marine mammals alter gas dynamics during diving, and better predict how physiology may limit diving. The data may help to understand how changes to the environment may affect survival. In addition, our results also have clinical value for veterinarians and may help diagnose and treat pulmonary disease. Our measurements may also enable continuous monitoring of beached cetaceans and help determine if and when gravity may impose dangerous limitations to gas exchange.



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Seminar room at Zoophysiology