Variation in myoglobin content of skeletal muscle of seal species.

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1 Introduction

Aquatic and marine mammals are able to dive underwater for extended periods as a result of having a higher muscle myoglobin concentration than terrestrial mammals (Kanatous and Mammen 2010). Noren and Williams (2000) found that 83% of the variation in Toothed whale species (odontocetes) dive capacity was accounted for by body mass and myoglobin content. Seal species are also known to vary in dive length. We investigated whether the concentration of myoglobin differed between species.

2 Methods

We measured the myoglobin content of the skeletal muscle of individuals in each of three species. We used R (R Core Team 2019) with tidyverse packages (Wickham 2017) for all analyses.

3 Results

There is a significant difference in myoglobin concentration between species ($F = 5.88$; *d.f.* =2, 81; $p = 0.004$). Post-hoc testing revealed that difference to be between the Weddell seal with the highest myoglobin concentrations ($\bar{x} \pm s.e.$: 48.91 ± 1.61 g Kg^{-1}) and the Harbour seal with the lowest (41.6 ± 1.46 g Kg^{-1}). See Figure 1

References

Kanatous, Shane B., and Pradeep P. A. Mammen. 2010. "Regulation of Myoglobin Expression." *Journal of Experimental Biology* 213 (16): 2741–7. https://doi.org/10.1242/jeb.041442.

Noren, S. R., and T. M. Williams. 2000. "Body Size and Skeletal Muscle Myoglobin of Cetaceans: Adaptations for Maximizing Dive Duration." *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology* 126 (2): 181–91. https://doi.org/https://doi.org/10.1016/S1095-6433(00)00182-3.

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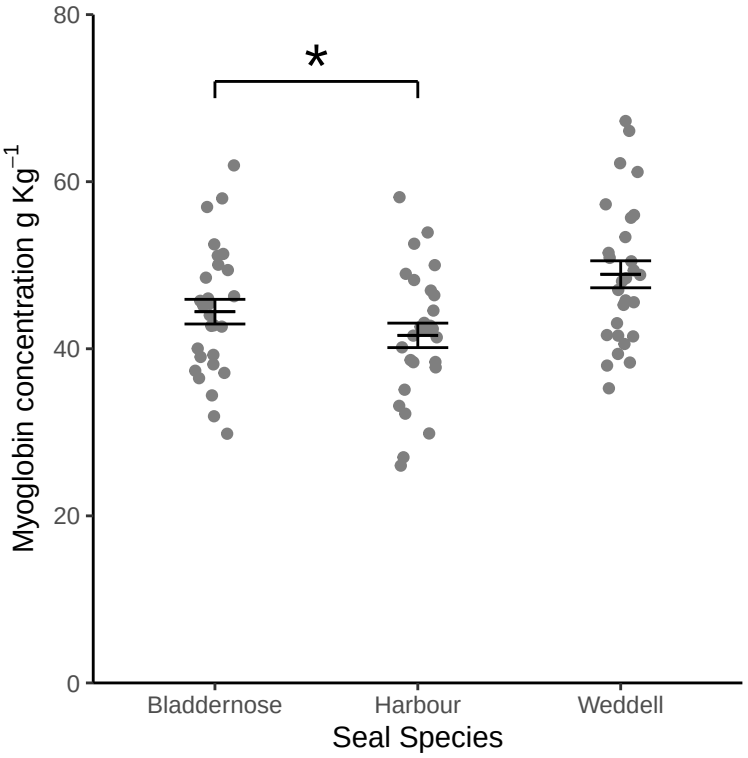

Figure 1: Mean Myoglobin content of skeletal muscle

Wickham, Hadley. 2017. *Tidyverse: Easily Install and Load the 'Tidyverse'.* https://CRAN.R-project.org/package=tidyverse.