Utrecht University

Faculty of Veterinary Medicine

ID-number: 273

Assessing temporal patterns in nutritional condition of harbour porpoises from the southern North Sea

Eva T. Schotanus*[1&2], Mariel ten Doeschate[3] & Lonneke L. IJsseldijk[1]

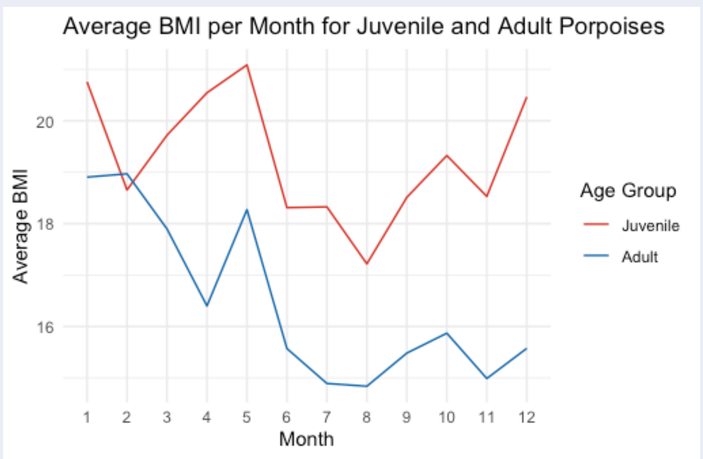
[1]Divison of Pathology, Department of Biomolecular Health Sciences, Faculty of Veterinary Medicine, Utrecht University. [2]University of Applied Sciences Van Hall Larenstein. [3]Scottish Marine Animal Stranding Scheme. *email: e.t.schotanus@uu.nl

INTRODUCTION

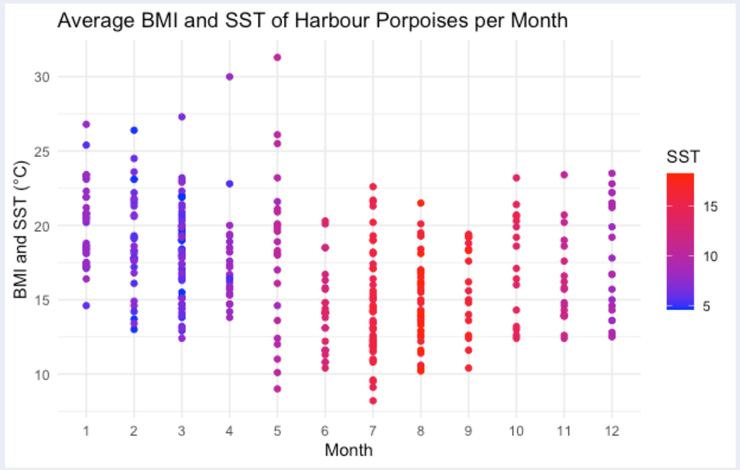
- The health and reproductive capacity of harbour porpoises (*Phocoena Phocoena*) can be adversely affected by climate change, due to shifts in food availability and habitat quality. [2&4]
- Monitoring the impacts of climate change on harbour porpoises and knowledge of factors that influence their nutritional condition is essential for conservation management.
- **We investigated the best indicator for nutritional condition, in relation to sea surface temperature (SST) and temporal patterns for harbour porpoises in the southern North Sea.**

APPROACH

- Data on 443 (non-frozen) harbour porpoises stranded in the Netherlands from 2008-2021, including age, sex, blubber thickness (BT) and cause of death categories (CDC), were analysed.[1]
- Monthly SST was collected from Google Earth Engine to analyse the relation with nutritional condition.
- **We expected temporal differences in nutritional condition per age groups and causes of death; a positive relation between nutritional condition and blubber thickness; and a negative relation between nutritional condition and SST.**

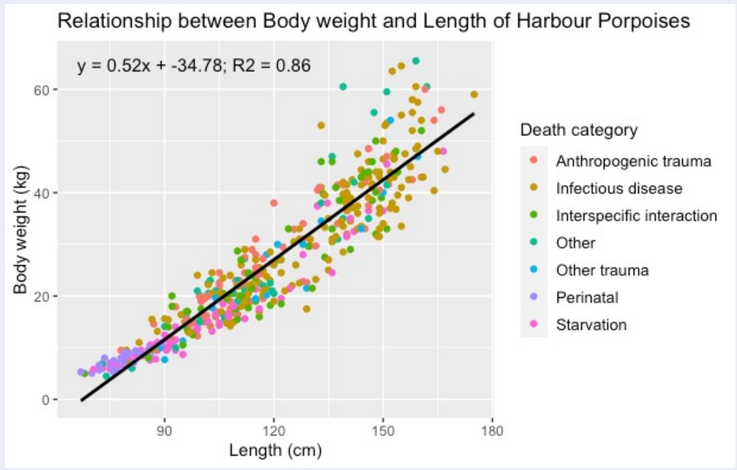


PRELIMINARY RESULTS AND DISCUSSION



This demonstrates the temporal relation between the BMI of harbour porpoises and SST.

- The best indicator was BMI ($mass/length^2$).
- Average BT was strongly correlated with BMI.
- There was a significant negative relation between SST and BMI with a temporal trend.
- Porpoises that died from trauma were in better condition compared to other CDC.
- Nutritional condition was significantly different between seasons and porpoises were in the best condition in winter.
- Expanding analyses spatially will provide additional insights into these findings and allows assessment at a scale that is ecologically relevant.



This illustrates the relation between body weight, length and CDC of harbour porpoises.

TAKE HOME MESSAGE

The best nutritional condition indicator for harbour porpoises is BMI, and porpoises are in better condition in colder temperatures and seasons.

1. IJsseldijk, L. L., Leopold, M. F., Begeman, L., Kik, M., Wiersma, L., Morell, M., Rebolledo, E. L. B., Jauniaux, T., Heesterbeek, H., & Gröne, A. (2022). Pathological findings in stranded harbor porpoises (Phocoena phocoena) with special focus on anthropogenic causes. *Frontiers in Marine Science, 9*. https://doi.org/10.3389/fmars.2022.997388
2. Kershaw, J. L., Sherrill, M., Davison, N. J., Brownlow, A., & Hall, A. J. (2017). Evaluating morphometric and metabolic markers of body condition in a small cetacean, the harbor porpoise (*Phocoena phocoena*). *Ecology and Evolution, 7*(10), 3494–3506. https://doi.org/10.1002/ece3.2891
3. SOS Dolfijn. (n.d.). *Bruinvis*. SOS Dolfijn. https://www.sosdolfijn.nl/meer-leren/bruinvis
4. Whitehead, H., McGill, B. & Worm, B. (2008). Diversity of deep-water cetaceans in relation to temperature: implications for ocean warming. *Ecology Letters, 11*(11), 1198–1207. https://doi.org/10.1111/j.1461-0248.2008.01234.x

Scan the QR-code for more information on the strandings investigations! →