

Behavioural patterns of common dolphins (*Delphinus delphis*) in the Algarve

Effects of calf presence, anthropogenic pressure, and environmental conditions

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Introduction

- The Portuguese southern coast is an important nursery ground for common dolphins (fig.1) ¹
- Common dolphins are impacted by several anthropogenic activities – e.g., fisheries and touristic activities ^{2,3}
- The species was recently assessed as Near Threaten in the Portuguese mainland coast ⁴
- However, the behaviour of this species remains poorly understood



Fig. 1 – *Delphinus delphis* in the Algarve. ©AIMM

- This work aimed to identify relevant predictors of common dolphin behaviour in the Algarve

Results

The optimal model retained SST, SSH, lagged Chl concentration, salinity, slope, distance to coast, number of boats, calf presence, and year as predictors of common dolphin foraging and socialising behaviour ($p < 0.001$).

- 72.7% of groups included calves — higher odds of foraging and lower odds of socialising rather than travelling
- Increasing number of boats — lower odds of foraging, and higher odds of socialising rather than travelling
- 2020, 2021, and 2022 — higher odds of foraging rather than travelling
- Foraging probabilities were higher further from coast, in cooler waters, and in locations with higher productivity (fig.2). Socialising probabilities were higher in areas with lower slope and closer to coast (fig.2).

Discussion and Conclusion

This work showed an influence of **geospatial context** and **oceanographic conditions** on dolphins' behavior, highlighting a potential susceptibility to the effects of climate change. The results also advanced our understanding of the behavioural patterns of common dolphins, particularly regarding the effect of **calf presence** on foraging behaviour. The underlined effects of **boat densities** on the behaviour of dolphins, particularly foraging, suggests the necessity of adapting management regulations or their enforcement in the study area. Understanding the factors that influence dolphin behaviour is essential for informing and adapting conservation and management efforts ⁵.

Methodology

Boat surveys were conducted between June and October, from 2016 to 2023, following random trajectories up to 25 nm from shore.

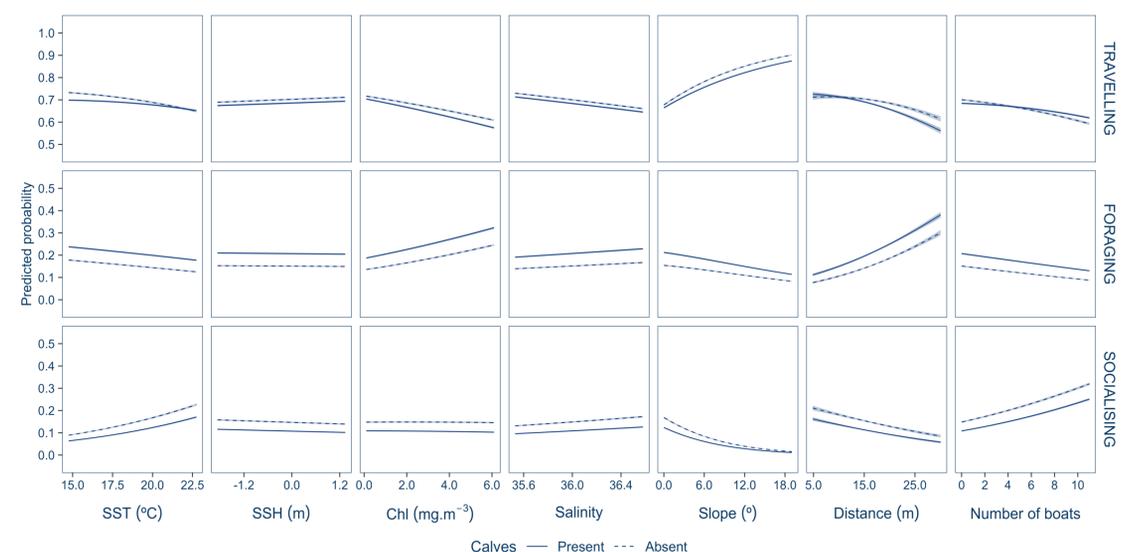
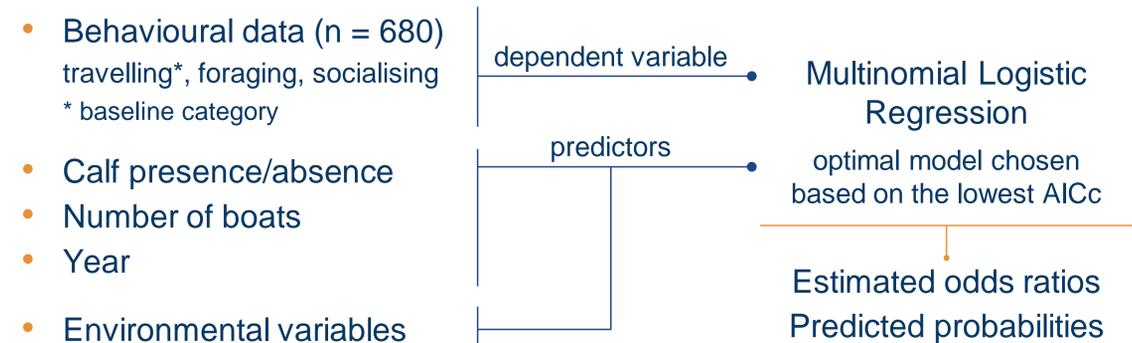


Fig. 2 – Predicted probabilities of each behaviour according to the gradient of sea surface temperature (SST), sea surface height (SSH), two-month lagged chlorophyll concentration (Chl), salinity, slope, distance to coast, and the initial number of boats in the study area. Probabilities and are presented as the average of the eight years, with 95% confidence intervals in blue.

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References

- Castro, J et al. (2024) *Mar. Mammal Sci.*, 40(3). doi:10.1111/mms.13115
- Dias, IC et al. (2022) *Aquat. Conserv.: Mar. Freshw. Ecosyst.*, 32(8). doi:10.1002/aqc.3828
- Silva, AA et al. (2024) *Oceans*, 5(4). doi:10.3390/oceans
- Mathias, ML et al. (2023). FCIências.ID, ICNF, Lisboa. <http://hdl.handle.net/10174/35224>
- Ross, PS et al. (2011) *Mar. Policy*, 35(4). doi:10.1016/j.marpol.2010.11.004

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