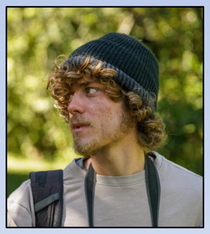

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EXPLORING THE HABITAT PREFERENCES AND NICHE SEGREGATION OF TWO TEUTOPHAGOUS CETACEANS IN THE AZORES ISLANDS

ID: 188

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INTRODUCTION & OBJECTIVES

Global warming is causing tropical marine species to expand their range to higher latitudes, disrupting the balance of local ecosystems. In the **Azores archipelago**, a rise in the occurrence of **short-finned pilot whales** (a warm-season visitor) could increase **competition** with resident populations of teutophagous cetaceans, like the **Risso's dolphin**. Here, we describe and compare the **habitat preferences** of these two deep-sea predators in order to better understand their ecological requirements.

METHODS

11 years of occurrence data
2009 — 2019
collected year round off **São Miguel island** (Azores) by local whale watching companies

Generalized Additive Models (GAM)

Environmental variables:
depth, slope, distance to the coast (DTC), daily sea surface temperature (SST) & monthly sea level anomaly (SLA)

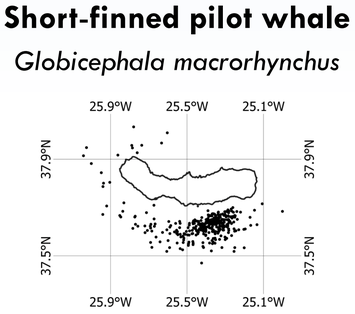
Habitat preferences: one presence (*1*)/absence (*0*) GAM for each species, using 5,000 sightings of non-target species as pseudo-absences.

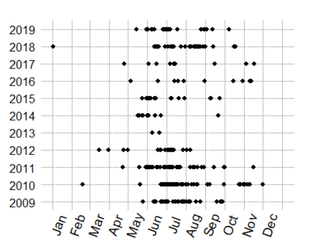
Niche segregation: one GAM comparing the sightings of the two species.

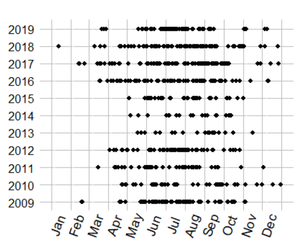
pseudo-absences (*0*) **presences (*1*)**

Short-finned pilot whale
Globicephala macrorhynchus

Risso's dolphin
Grampus griseus







345 sightings recorded off São Miguel island between 2009 and 2019

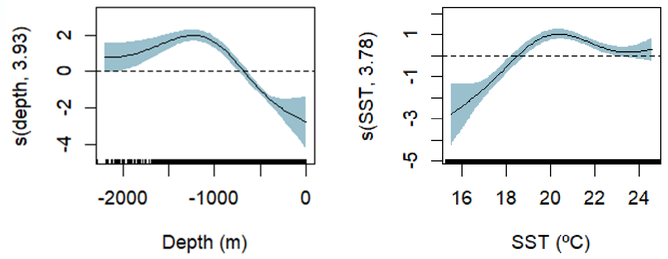
734 sightings recorded off São Miguel island between 2009 and 2019

Figure 1. Spatial and temporal distribution of the target species' sightings. Illustrations by Uko Gorter.

RESULTS

A

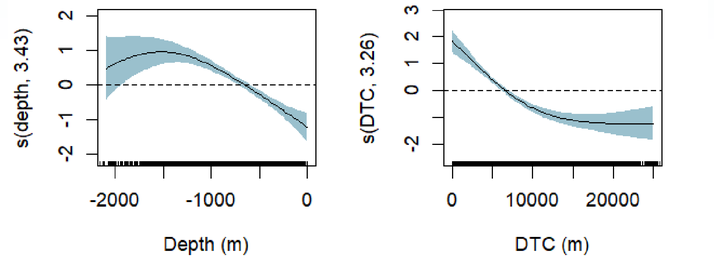
Predictor variables = depth, SST & SLA
Dev. Exp. = 21.4% **n** = 5,345 **AUC** = 0.84



+ a positive effect of SLA values between 0 and 0.05 m

B

Predictor variables = depth, slope, DTC & SST
Dev. Exp. = 6.4% **n** = 5,734 **AUC** = 0.69



+ a positive effect of slopes >10° and SST >21°C

C

0 *1*

Predictor variables = depth, DTC & SST
Dev. Exp. = 30.2% **n** = 1,079
AUC = 0.85

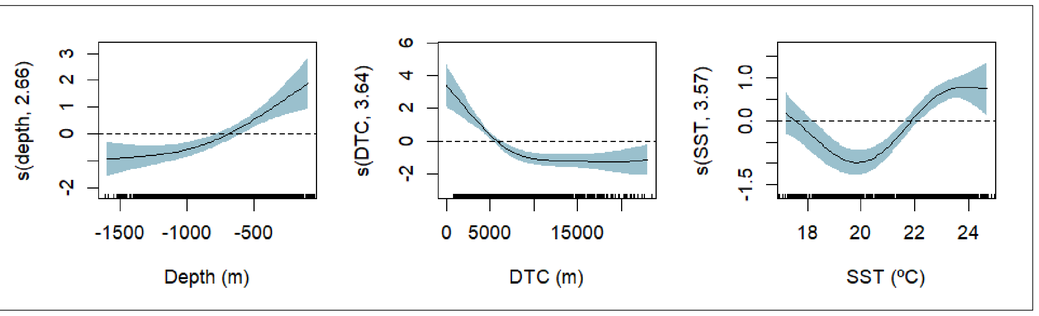


Figure 2. GAM model results and representation of the smoothers. **A.** Short-finned pilot whale. **B.** Risso's dolphin. **C.** Comparison GAM

DISCUSSION & CONCLUSIONS

Image 1. Short-finned pilot whales off São Miguel island. Author's photo.

Deep waters further from the coast and warm SST (between 19 and 22°C).

Deep slope waters close to the coast and warm SST (above 21°C).

Image 2. Risso's dolphin off São Miguel island. Author's photo.

Despite finding **differences in habitat suitability,** there is a **significant niche overlap** in terms of **depth** and **SST**. However, pilot whales have a greater preference for deep waters and Risso's dolphins favour slightly warmer SST.

References: **Fernandez *et al.* (2022).** Clash on the high-seas: the rise and fall of deep-diving cetaceans in an oceanic environment. *ECS 2022.*
Martins *et al.* (2019). Residency patterns of Risso's dolphins off São Miguel and inter-island matches with Pico Island (Azores). *WMMC'19.*