Photo-identification catalogue and distribution of orcas *(Orcinus orca)* off São Miguel Island, Azores

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Introduction

Orcas (*Orcinus orca*) are widespread throughout the North Atlantic. However, their conservation status is still data deficient, and little is known about their populations and distribution, especially in mid-Atlantic waters like the Azores[1].

The aims of this study are:

1. To create a **photo-identification catalogue** of orcas off São Miguel, Azores.
2. To assess the **temporal distribution** of orcas sighted around São Miguel, Azores.

Methods

Opportunistic data were collected year-round between **2006 and 2020** during whale watching tours with **Futurismo Azores Adventures in São Miguel Island (Azores) (Fig.1). Additionally, data from the MONICET** platform (www.monicet.net) was used to complete the final photo-identification catalogue and distribution analysis.

Whale watching vessels were **guided by lookouts** located on land. Once with the animals, **photographs** were taken when possible, and data such as **date and GPS** location, were registered for each sighting.

Good quality photos were used for **individual identification**, based on the shapes, marks such as nicks, scratches and coloration patterns of the dorsal fins, saddles, eye patches, flukes and bodies[2,3].

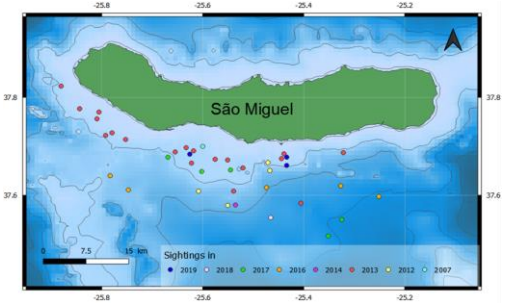

Fig. 1. Sightings of *Orcinus orca* in the study area (2006-2020).

Results & Conclusions

Photo-ID

55 individuals identified
(35 both sides, 7 right, 13 left side)

➔ **Re-sightings**:

- 16 individuals in consecutive days (max.45 days).
- 1 adult male re-sighted over five months in 2013 (Fig.2).

Fig. 2. Re-sighting of a male orca in January, April and May 2013 (SM_FUT_Oo09).

Temporal distribution

➔ Orcas were sighted **46 times** on 33 different days, in 9 of the 15 years considered.

Orcas occur around São Miguel mainly between **March and May (Fig.3)**.

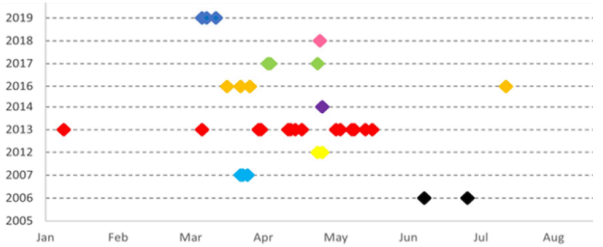

Fig. 3. Temporal distribution of orcas off São Miguel (2006-2020). Only years and months with sightings are shown on the graph.

Looking forward

★**Long-term data** with a regular spatial coverage make **whale watching companies a highly valuable tool** to improve our knowledge of orca populations in the North Atlantic. However, more regular and good quality photographs would be of great value to extend the existing information.

★**Comparison with other catalogues,** both within the Azores and in the North Atlantic, is necessary to increase our understanding of the population structure, spatial and temporal coverage, movement patterns, estimate populations size and better understand their biology and ecology.

References. [1]Jourdain E, Ugarte F, Víkingsson G, Samarra F, Ferguson S, Lawson J,Vongraven D, Desportes G. 2019. North Atlantic killer whale *Orcinus orca* populations: a review of current knowledge and threats to conservation. *Mammal Review*, 49(4), 384-400; [2] Foote AD, Kuningas S, Samarra FI. 2014. North Atlantic killer whale research: past, present and future. *Journal of the Marine Biological Association of the United Kingdom*, 94(6), 1245-1252. [3] Young B, Higdon J, Ferguson S. 2011. Killer whale *(Orcinus orca)* photo-identification in the eastern Canadian Arctic. *Polar Research*, 30(1), 7203.

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