morangezoe@gmail.com / zoe.l.morange@uit.no

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# A PHOTO-IDENTIFICATION STUDY OF A FORAGING AGGREGATION OF MALE SPERM WHALES (*PHYSETER MACROCEPHALUS*) IN NORTHERN NORWAY

Zoë Morange [1,2], Marie-Anne Blanchet [2,3], Audun H. Rikardsen [2], Tiu Similä [1]

[1] Whale2Sea, Andenes, Norway; [2] UiT The Arctic University of Norway, Tromsø, Norway; [3] Norwegian Polar Institute, Tromsø, Norway

## INTRODUCTION

**Sperm whales** (*Physeter macrocephalus*) inhabit the entire North Atlantic. Adult females and young individuals live at low latitudes (<45° N) in family groups. Once males reach puberty, they leave their family group, together with other young males in what has been described as "bachelor groups" and migrate towards higher latitudes (>60°C), to **foraging grounds**. Once there, adult males are thought to become more **solitary** as they grow older. However, **very little is known about the behavioural ecology** of adult male sperm whales. **Off Andøya**, in arctic Norway, a deep sea Canyon, **Bleik Canyon**, comes closer to land and offers a good opportunity for both research on male sperm whales and for whale watching. **Previous studies** in the area have focused only on **summer**, from May to September (Lettevall et al., 2002; Rødland and Bjørge, 2016). The aim of this study is to document **year-round presence** of male sperm whales in the Bleik Canyon and adjoining areas as well as potential **seasonal trends** in the occurrence of known individuals.

## METHODS

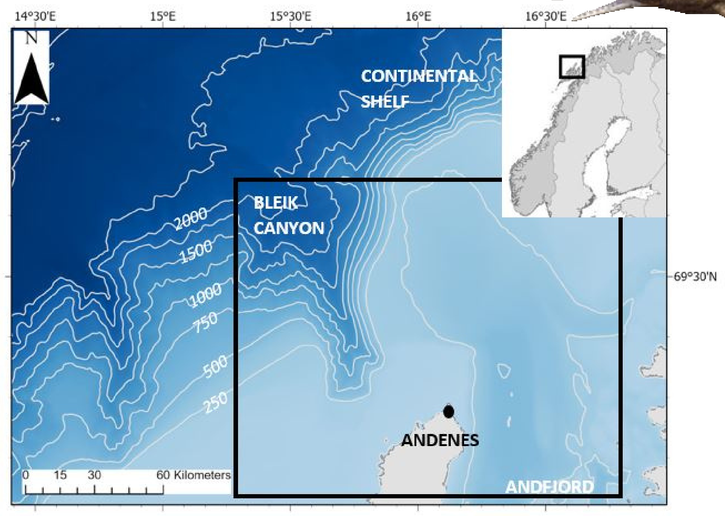



**FIGURE 1. MAP OF STUDY AREA.**

Data was collected on board whale watching boats (**Whale2Sea**), covering the deep sea Bleik Canyon as well as Andfjord throughout the year, from **2009** to **2022**. Photo-identification images and location data was gathered. Since 2020, **surface behaviour** as well as number of individuals observed together have been collected.

## PRELIMINARY RESULTS

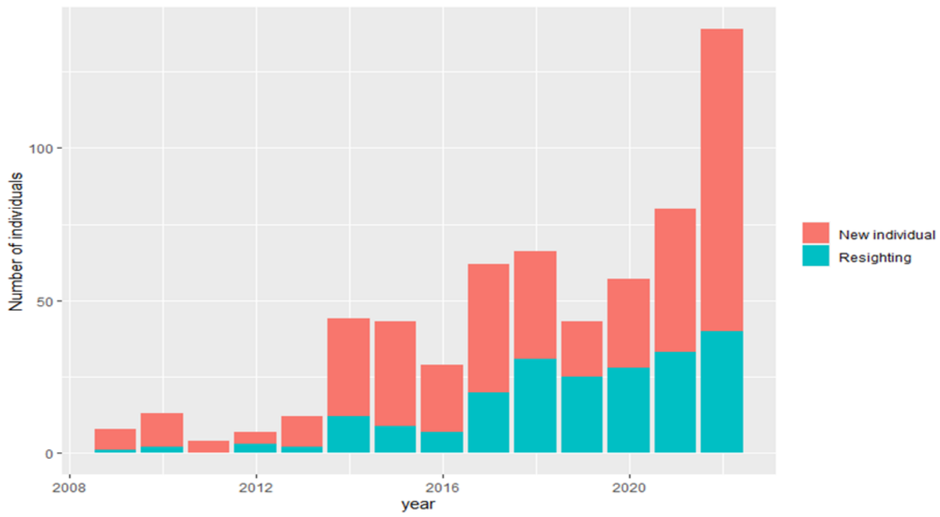



**FIGURE 2. NUMBER OF NEW INDIVIDUALS AND RESIGHTINGS PER YEAR, FROM 2009 TO 2022**

From 2009 to 2022, male sperm whales were encountered on a total of **607 days** (from 2 days in 2011 to 105 days in 2022). The effort varied a lot throughout the years as well as the months, all depending on the weather conditions. A total of **398 individuals** were identified. (*figure 2.*).

**107 individuals** were resighted over **at least 2 years** which represents **27%** of all the identified animals. Among them, 65 individuals have a **seasonal occurrence** in the area with **25 individuals** occurring only in **Winter** (middle of September to middle of May), and **40 individuals** occurring only in **Summer** (middle of May to middle of September) (*figure 3.*).

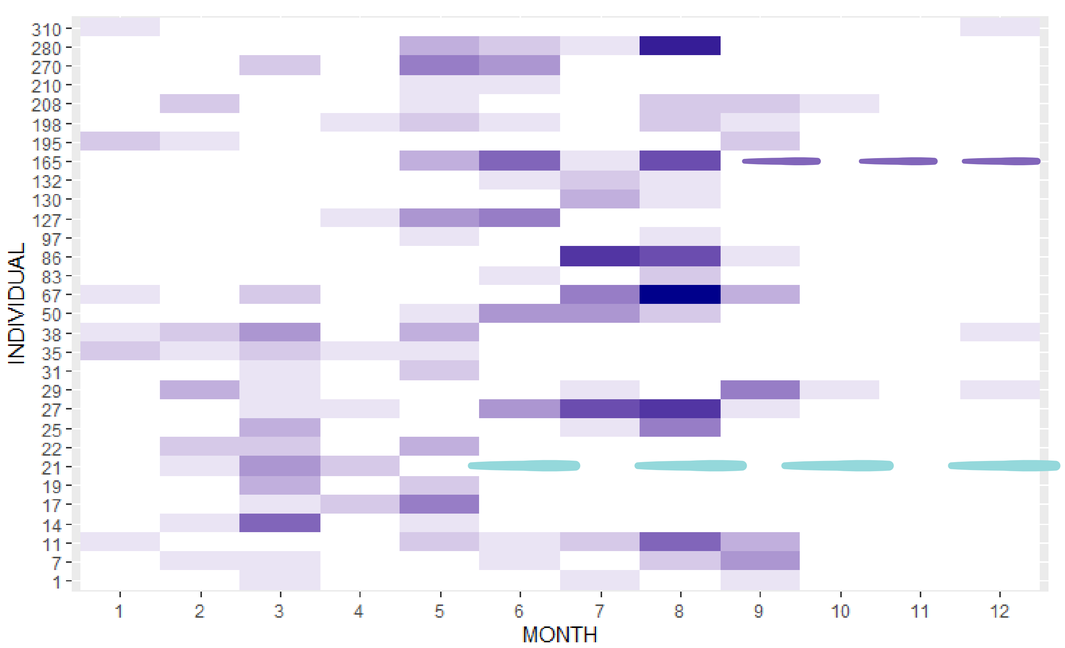



**FIGURE 3. MONTHLY FREQUENCY OF OCCURRENCE OF INDIVIDUAL MALE SPERM WHALES FROM 2009 TO 2022. SUBSAMPLE OF 30 INDIVIDUALS AMONG THE 107 INDIVIDUALS THAT WERE SEEN AT LEAST TWO DIFFERENT YEARS IN THE AREA.**

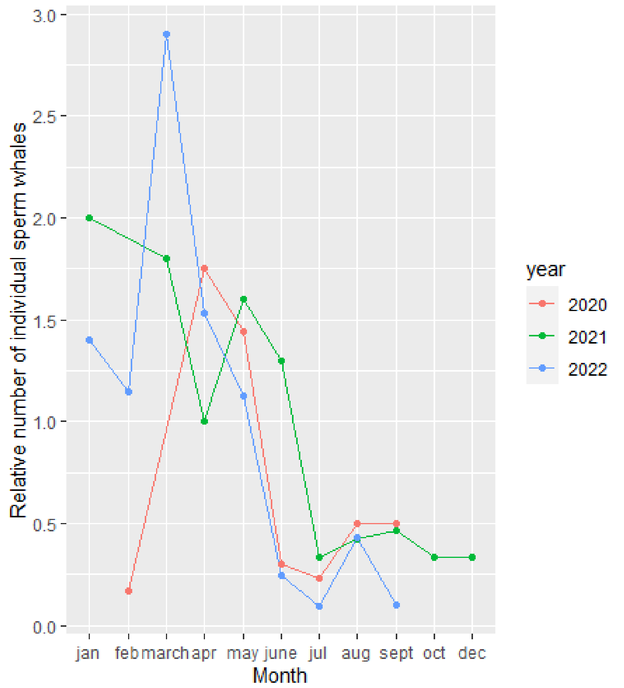
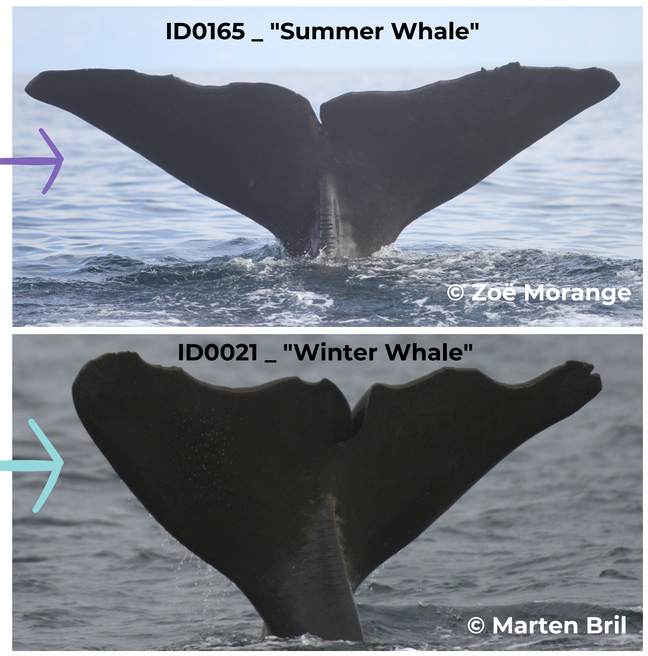



**FIGURE 4. NUMBER OF INDIVIDUAL SPERM WHALES PER TRIPS FOR EACH MONTH BETWEEN 2020 AND 2022.**

Sperm whales seem to be most numerous around March-April, when they also can be observed in **groups of 2 to 7 individuals,** with **synchronized behaviour.** In July there is a **decrease** in the presence of sperm whales in the study area (*figure 4.*).




## DISCUSSION

This study documents that male sperm whales are present in Bleik canyon and adjoining area **throuhgout the year** and that **seasonal trends** can be observed within the foraging aggregation. Sperm whales are more numerous and often observed in **groups** in **Winter**, displaying synchronized behaviour. During summer, sperm whales are more spread out in the area, and gatherings are rarely observed. These **seasonal differences** highlight the **dynamic nature** of the **foraging aggregation of male sperm whales in the study area.**

## REFERENCES

Lettevall, E., Richter, C., Jaquet, N., Slooten, E., Dawson, S., Whitehead, H., ... & Howard, P. M. (2002). Social structure and residency in aggregations of male sperm whales. Canadian Journal of Zoology, 80(7), 1189-1196.

Rødland, E. S., & Bjørge, A. (2015). Residency and abundance of sperm whales (Physeter macrocephalus) in the Bleik Canyon, Norway. Marine Biology Research, 11(9), 974-982.

UiT The Arctic University of Norway