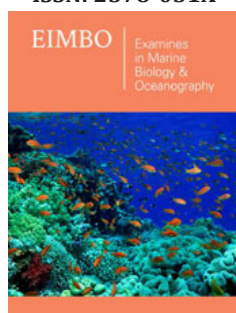# Increasing the Understanding of Multispecies Feeding Events in Marine Hotspots by Medium Term Instrumentation and Tracking

Lars Kleivane[1]* and Nils Øien[2]

[1]LKARTS-Norway, Norway

[2]Institute of Marine Research, Norway

*Corresponding author: Lars Kleivane, LKARTS-Norway, 8290 Skutvik, Norway

Opinion

From a case study focusing on surface rate behaviour of minke whales, we tracked a vhf tagged whale for 5 days in the waters south of Svalbard, Norway [1,2]. The tag was deployed with the whale-tag-launcher ARTS (Aerial Remote Tag System), and the tracking was enabled by the radio direction finder ADF setup with 4 Yagi antennas. Tag position was vital in this project due to the need of hundred percent registration of surface rate activity of the whale, and albeite to ensure good tracking. The VHF tag had a signal path of 240ppm, with 30ms signals length, which gave us 4 to 8 signals during a surfacing. The data was sampled by a custom-made voice recorder including a computer linked to a GPS and a microphone. For tagging and tracking details we refer to Kleivane et al (in prep).

However, the spinoff of this project was all what the tag did not record during the 116 hours tracking event in August 2007, and this is what we would like to spotlight here. Especially with focus on the time between and the resident time at different "Hotspots", and the mix of co-species and other species in the four "Hotspots" observed. A total of 193nm track was registered during these days, crossing in the waters of the outer Storfjorden, with the mapping of "Hotspot 1 and 2" to the West of the outer fjord with a duration of 6 and 2 hours, respectively, while the "Hotspots 3 and 4" were registered East of this, with a duration of 3 hours and 12 hours, respectively (Figure 1). Typically, the hotspots were in the slops of the fjord at depth of 100m to 200m, all from dense areas up to about 3nm in spacing. On tracking day 3, no other observations were registered other than 2 white-beaked dolphin groups of each 20-30 animals, resulting in evading behaviour of the tagged minke whale, speeding up and turning away. Observations during the presence in "Hotspots 1-4", included for all a number of minke whales and fin whales, while for some also humpback whales, sperm whales, white-beaked dolphins, harp seals, fulmars and kittiwakes. The boomerang registrations observed during the tracking events with the returning pattern of the tagged whale to the "Hotspots", indicate the need of periodic feeding events as well as the need of scouting for new feeding grounds. Especially for "Hotspot 4", where the tagged whale seeking out on SE for 7nm before returning to find no activity, then seeking out to the North, returning and then a third time seeking to the East and returning to the same area. Same returning pattern was seen at "Hotspot 1". The development of tag sensors (depth, GPS, orientation, acoustics and video), tag attachment and tracking abilities the last 10 years, make this type of ecological approach to an ecosystem interesting, using an individual tagged whale as a biological guide. This type of novel approach would also be an interesting add and supplement to standard line transect and station surveys applied during ecosystem surveys. Especially with the option to observe the feeding strategies and prey preferences of top predator species, by applying sensors (data loggers) and visually

observe these events, and then combine this with data collected from prey mapping and samples from trawl settings. In short, studying dynamics of marine mammal feeding ecology by the use of biological tracks.
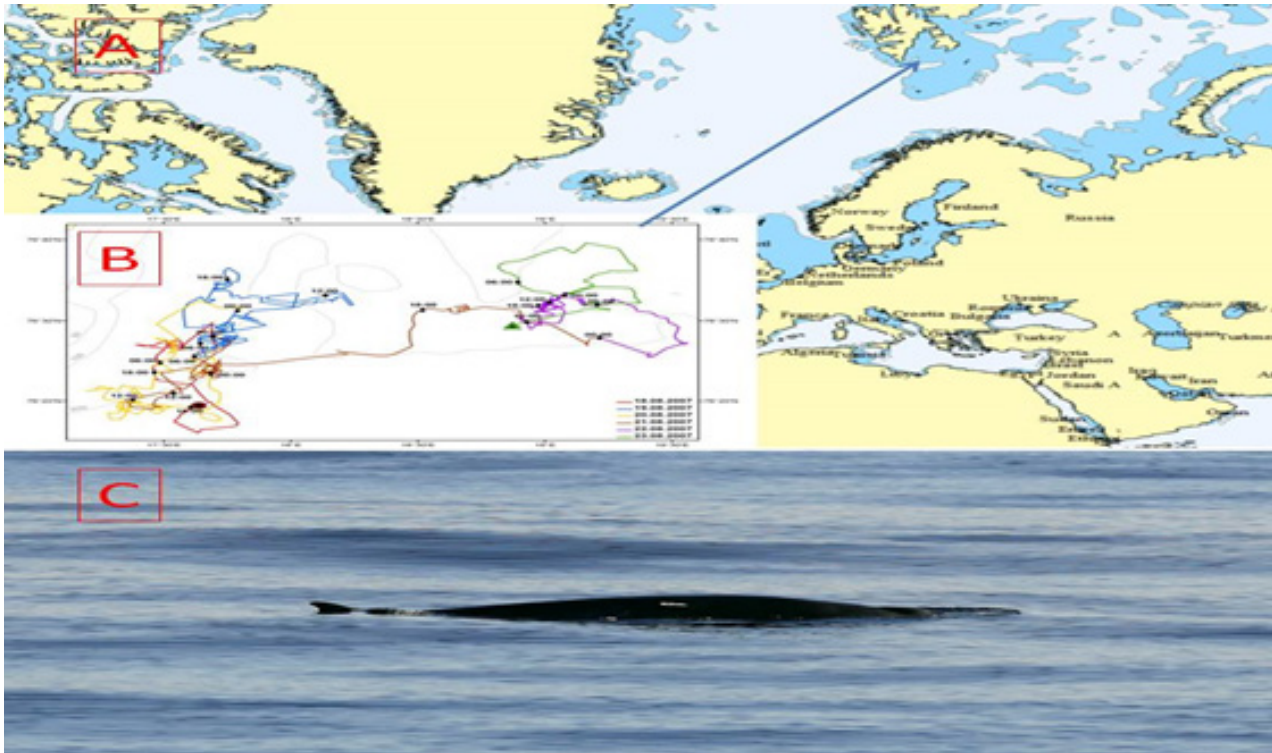

Figure 1: Showing the map (A), with the details of the boat during the tracking days (B), and the tagged minke whale (C).

References

1. Kleivane L, Kvadsheim P, Miller P, Bocconcelli A, Øien N (2021) In Prep. Recent development in field tools for cetacean research: The ARTS tag launcher and biopsy system, and the digital radio direction finder DFHorten. Animal Biotelemetry, UK.

2. Øien N, Bøthun G, Kleivane L (2009) Vhf and satellite tagging of minke whales at Svalbard in 2007-update on minke whale surfacing rates. IWC Scientific Committee, UK.

For possible submissions Click below:

Submit Article