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Promising results of the first land-based cetacean surveys from Andenes lighthouse, Norway



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Introduction

Land-based research of free ranging cetaceans has greatly increased in the last decades, together with the development of new and more adequate equipment. The current available technology allows the conversion of the observations into positions at sea for spatial studies. Additionally, it has proven to be an important tool for studying the natural behaviour of groups or individuals as well as for evaluating the effect of human activities on cetacean behaviour and energetic budget (Williams et al., 2006, Visser et al., 2011). It constitutes a valuable device for whale watching companies helping to detect cetaceans, reducing the time and fuel invested to survey the area. Increased coordination among different vessels in order to avoid sharing sightings and therefore also reduce the disturbance.

Material and methods

Study Area:

The present study was carried out during the summer of 2011 from Andenes lighthouse located at the northern tip of Andoya Island in the Vesterålen archipelago in Northern Norway (Fig 1). The location and the height (42 metres) of the lighthouse allow 240° of view range and a visibility of 23 km until the horizon (Fig. 2).

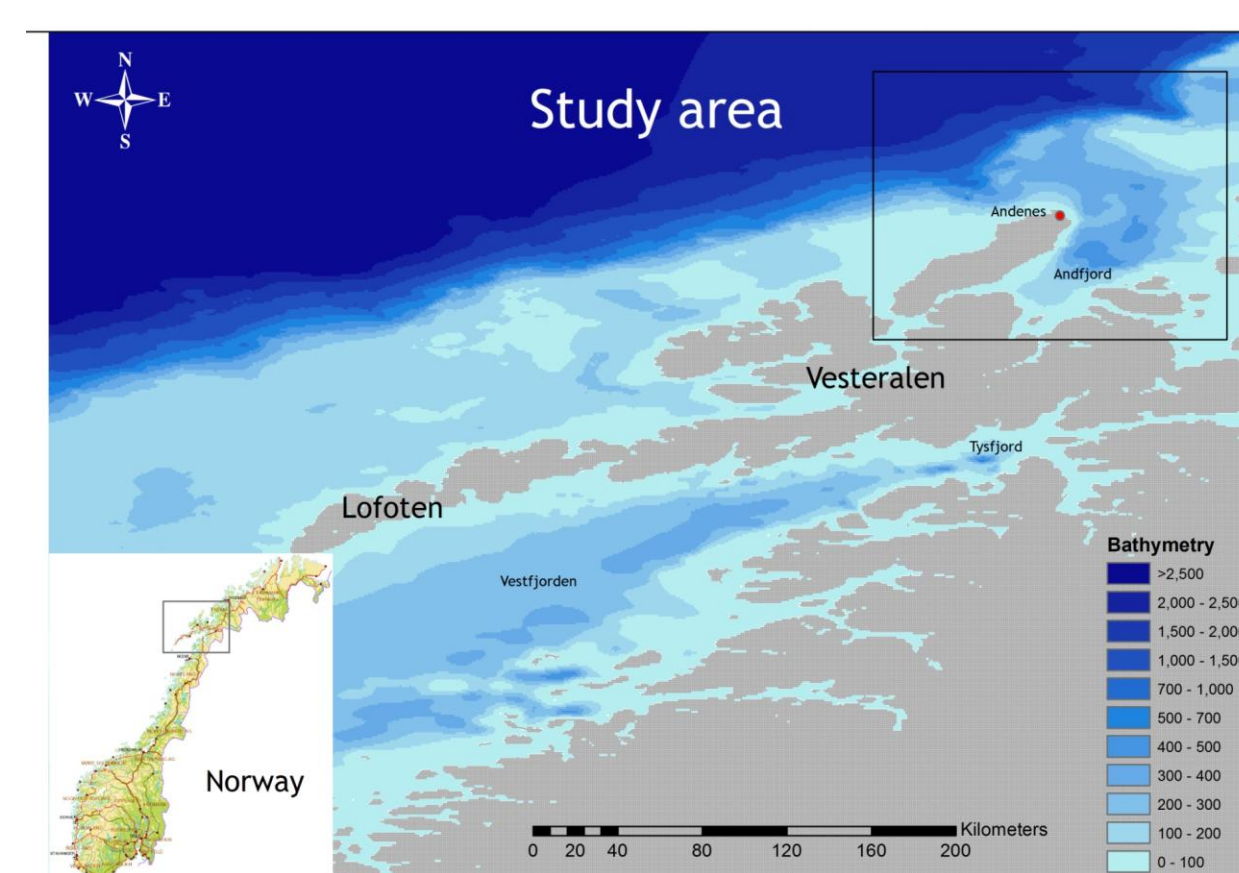


Figure 1: map of Norway and in detail, map of the study area

Methods:

Surveys consisted of 3 hour shifts carried out twice a day, in blocks of 20 minutes using Big Eyes® binoculars 25x80mm (Fig.2) according to the tidal state. Environmental data was collected at the beginning of each survey. For each sighting species identification, number of animals, behaviour, group compositions and presence/absence of birds and boats was collected.

Thanks to an internal reticule system and a graduated wheel, information about the positions at sea was also gathered. All spatial information was analysed with the software logtoolv4 (developed by Johnson, M.) in order to obtain the coordinates for each position.

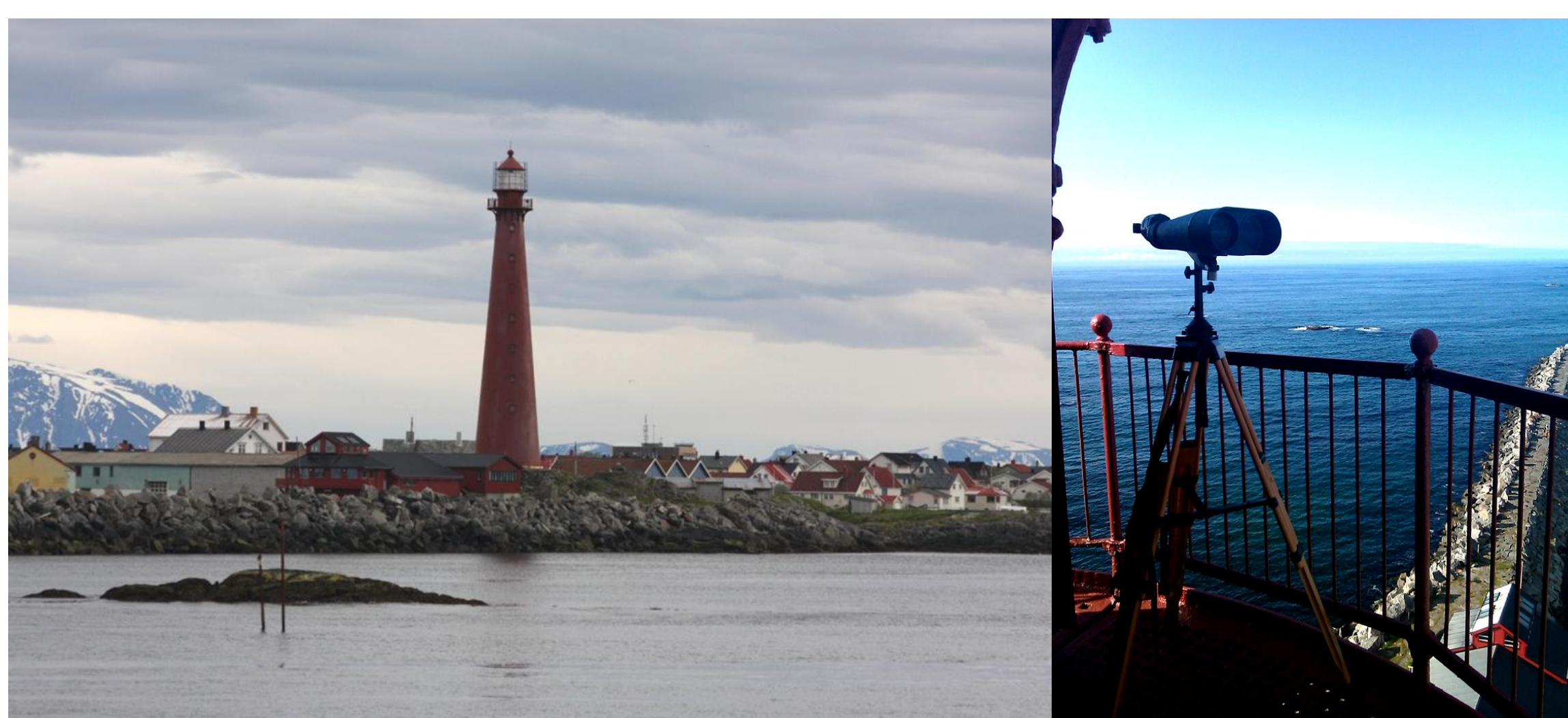


Figure 2: Andenes lighthouse and Big Eyes binoculars

Results

A total of 32 surveys were carried out between the 8th of June and the 31st of July. 81% of all surveys (i.e. 26) were successful allowing 61 sightings (Fig. 3) of 5 different species:

- Harbour porpoise (*Phocoena phocoena*),
- Sperm whale (*Physeter macrocephalus*),
- Killer whale (*Orcinus orca*)
- Humpback whale (*Megaptera novaengliae*)
- Minke whale (*Balaenoptera acustorostrata*)

Additionally 2 sightings were made of unknown species. Several focal follows were carried out, enabling the observations of interactions with human activities (i.e. whale watching vessels, vessel traffic) including a whaling operation on a Minke whale.

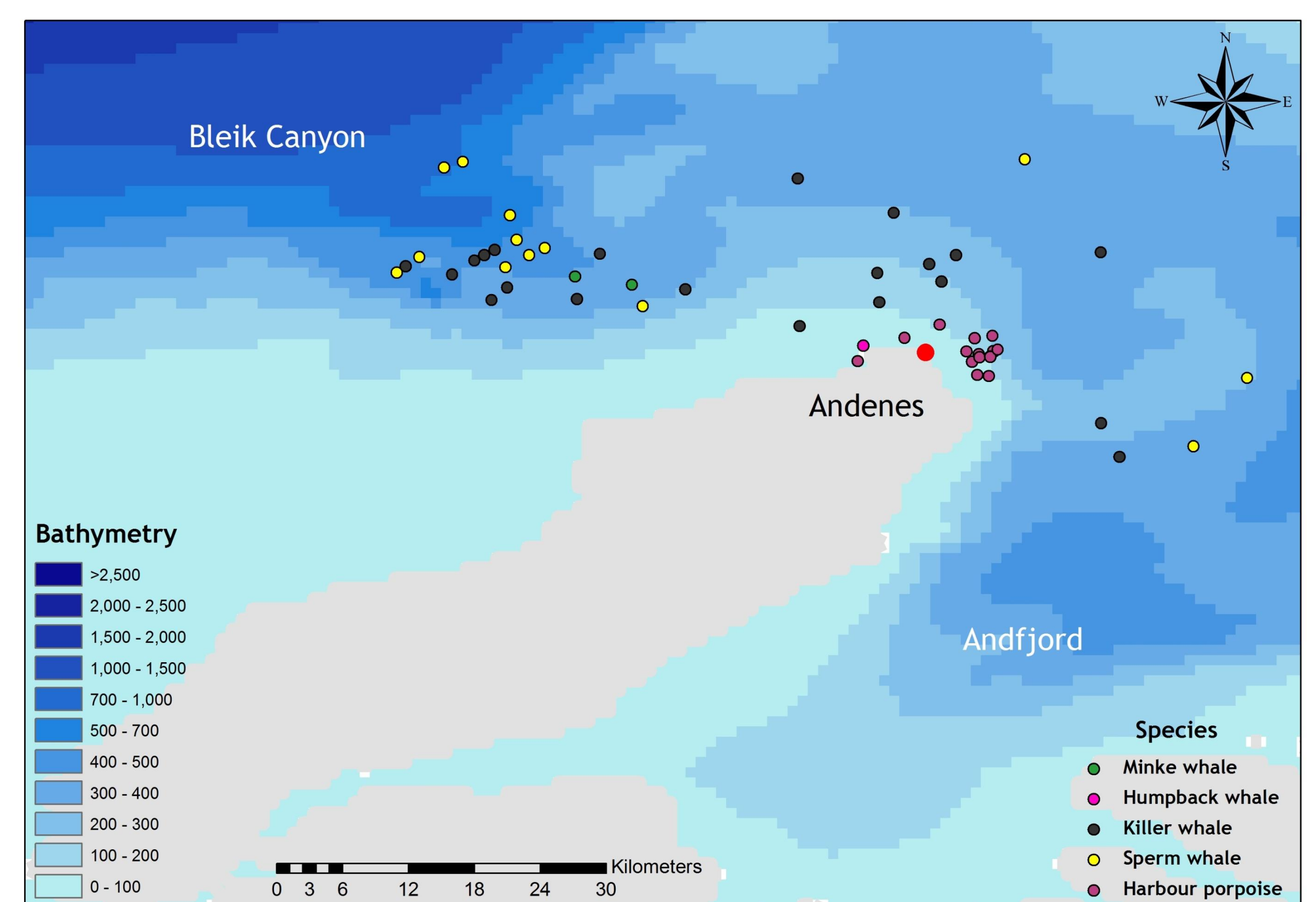


Figure 3: detailed map of the study area showing all cetacean sightings

Conclusions

- ✓ The methodology is highly dependent on weather conditions
- ✓ Long term use of this tool will allow identifying the habitat use of the different species as well as their temporal distribution
- ✓ It is a very useful tool to study and measure the level of disturbance the cetaceans are exposed to (i.e. behavioural responses and blow rates)
- ✓ Contributes towards developing a better whale watching practice in the area.



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References: Williams R, Lusseau D, Hammond PS. 2006. Estimating relative energetic costs of human disturbance to killer whales (*Orcinus orca*). Biological Conservation 133:301-311. Visser F, Hartman KL, Rood EJJ, Hendriks AJE, Zult DB, Wolff WJ, Huisman J, Pierce GJ. 2011. Risso's dolphins alter daily resting pattern in response to whale watching at the Azores. Marine Mammal Science 27 (2) 366–381.