



WAGENINGEN
UNIVERSITY & RESEARCH



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Effect of porpoise specific ADD, FaunaGuard Porpoise Module (FG-PM), on the behaviour of wild harbour porpoises (*Phocoena phocoena*)

Background

Animal deterrent devices (ADDs) can prevent damage by deterring porpoises from harmful areas. Most ADDs can be harmful to harbour porpoises that do not react, or react too late. (Brandt et al. 2013).

The FaunaGuard Porpoise Module (FG-PM)(further referred to as "FG"), a harbour porpoise-specific ADD was developed (Kastelein 2014). Unlike other ADDs, the FG, mainly uses higher frequency's in the best hearing frequency range of harbour porpoises. Controlled tests of the FG were performed in a pool on a captive porpoise (Kastelein 2014). These tests revealed a deterrent effect, since the porpoise swam away from the device and stayed away when the device was turned on. Based on the data from this research, the range of the effect was calculated, for a specific site (Luchterduinen), to be 1300m (de Jong and Binnerts, 2014).

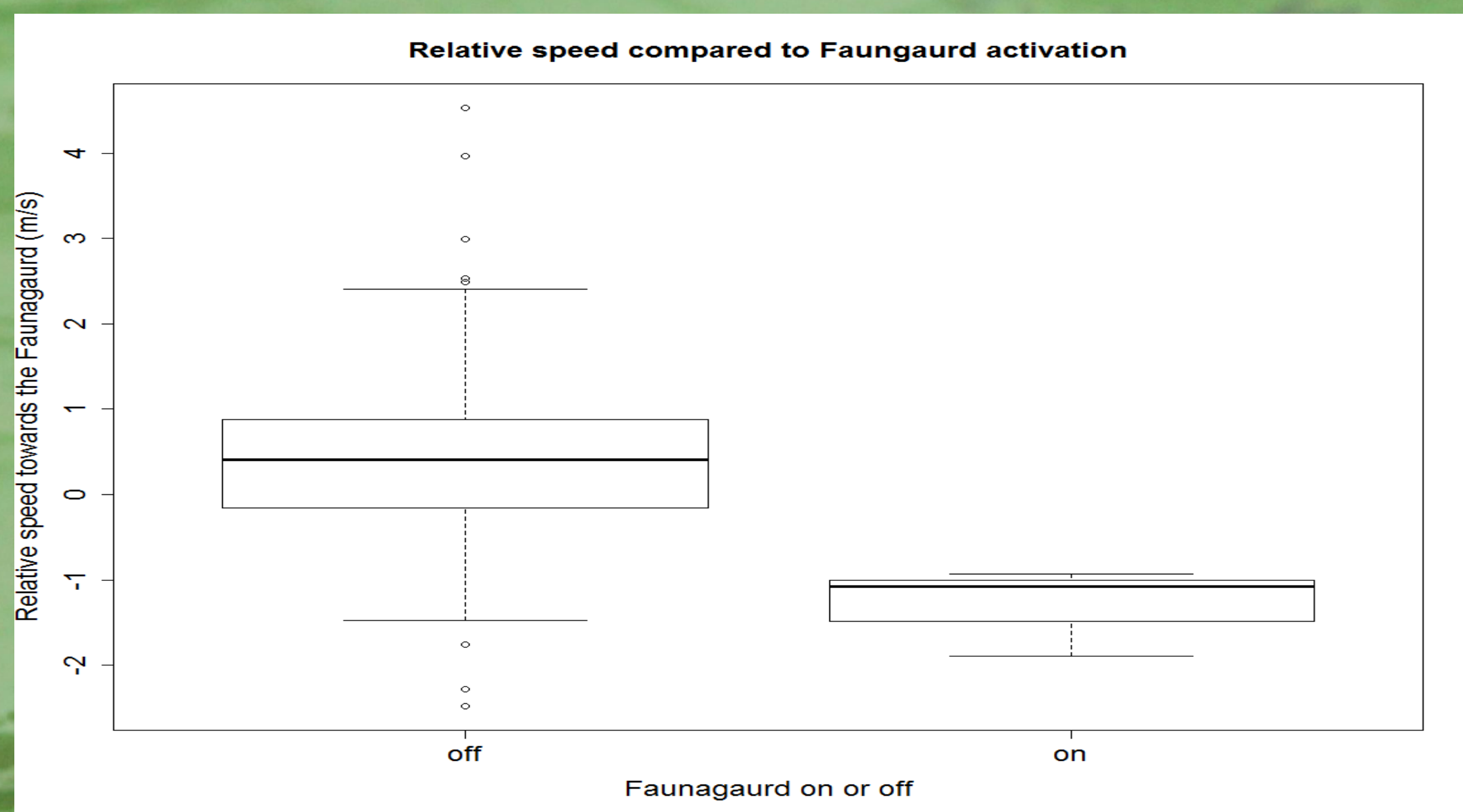
In this research porpoises were observed in the wild, in the Marsdiep area (Texel, Netherlands), and exposed to the FG.

Objective

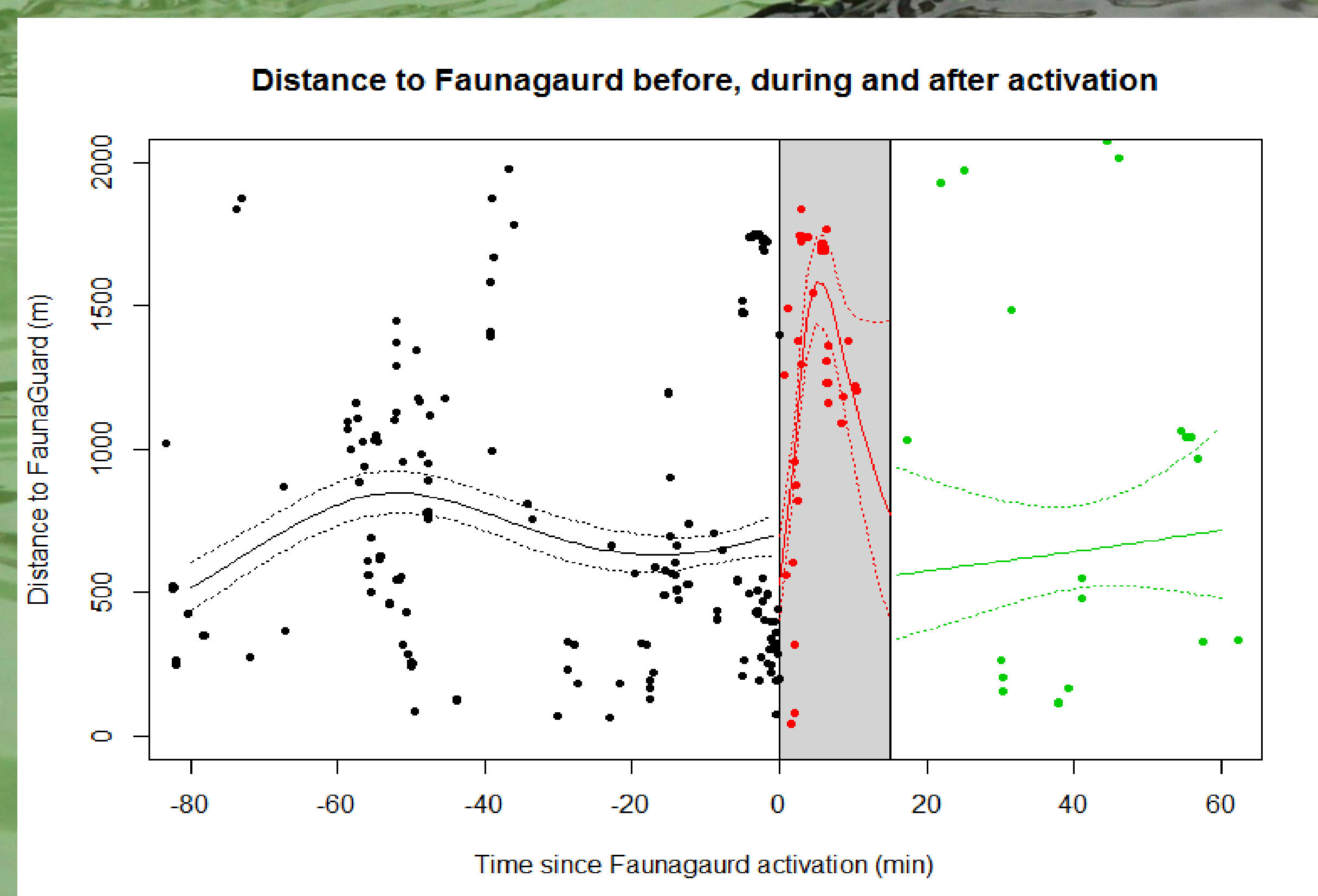
Determining the reliability of the FG as a deterrent device for harbour porpoises and the distance to which harbour porpoises are deterred.

Results

Harbour porpoises show a negative relative speed towards the FG when turned on.



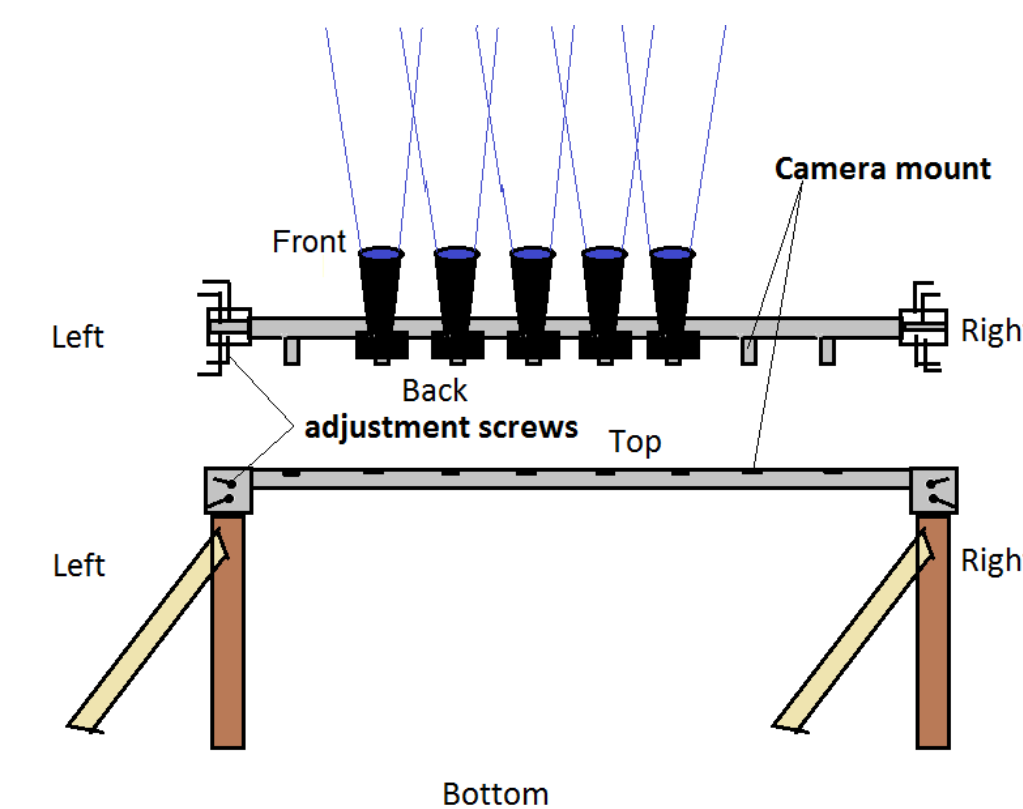
Harbour porpoises have a random distance from the FG before and after activation and move quickly to **1000 ± m** distance after activation



Methods

Observations:

Binoculars, rotatable camera for observed porpoises, 5 stationary cameras to record unobserved porpoises.

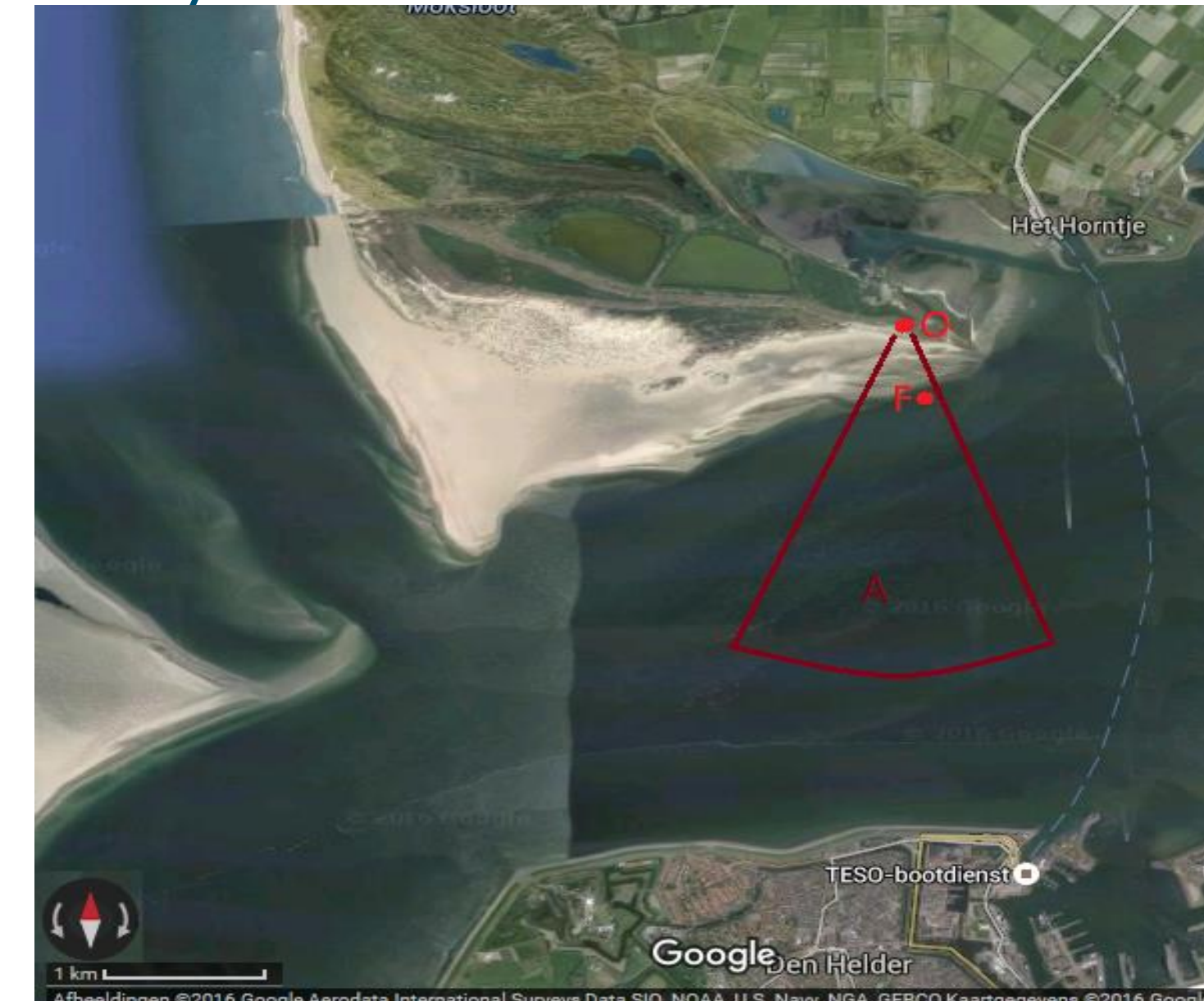


Position determination (Hoekendijk et al. 2015).



Area:

The Marsdiep area, image from Google Earth O= observation point, F= is FG position, A= area of study.



Fg activation 15 minutes, observations before during and after.

Tracks of individuals were made from multiple surfacings.

Conclusion & Discussion

- The detection of 281 harbour porpoises in 43 hours and 50 minutes in a relatively small research area (about 3km²) shows that the recently developed method of detecting and geo-referencing harbour porpoises (Hoekendijk et al. 2015) is an effective one.
- The FG was clearly very effective at deterring wild harbour porpoises to a distance of at least 1000 meters (in this area), and can be expected to be very reliable, due to the fact that no porpoises were observed with a delayed or non-existent reaction.
- The fact that many porpoises, that were close to the FG when it was turned on, were not observed again after the FG was activated, indicates that the porpoises reacted with prolonged diving, which is expected in response to ADD sounds (Teilmann et al. 2006).
- Porpoise specific ADD's are likely to work better for harbour porpoises due to their higher perceived sound pressure level(SPL) from frequencies around 100kHz when the SPL is relatively low.
- It is likely this also goes for different odontocetes, there is however not enough data yet available on odontocete sound perception to make confident assumptions about this.

References

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