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# Effects of pingers on fish species of the North Sea

Study period: June 2003-June 2004

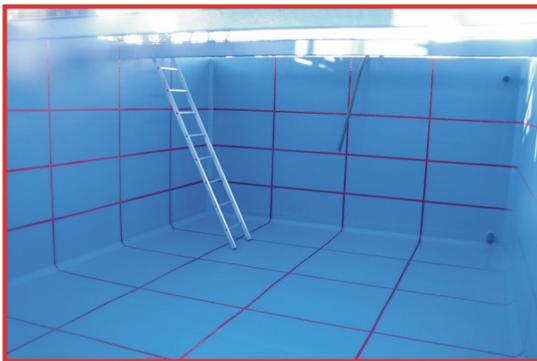
Every year millions of dolphins die in fishing nets. To reduce this unwanted bycatch, sound devices (pingers) have been developed to keep dolphins away from the fishing nets.

The European governments want to make the use of pingers in gillnet fisheries mandatory, as long as the use of pingers does not reduce the fishermen's catch.

In this study the effect of all 7 commercially available pingers on the behavior of various fish species from the North Sea is investigated. Behavior of fish in periods without sound is compared with that during periods with pinger sounds. The behavior consists of swimming depth, distance to pinger, swimming speed and orientation to other fish.



Front view of tank (Kammerland, Zeeland)



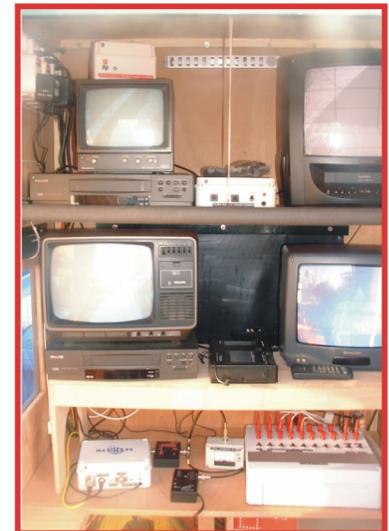
Empty tank with grid on walls and floor



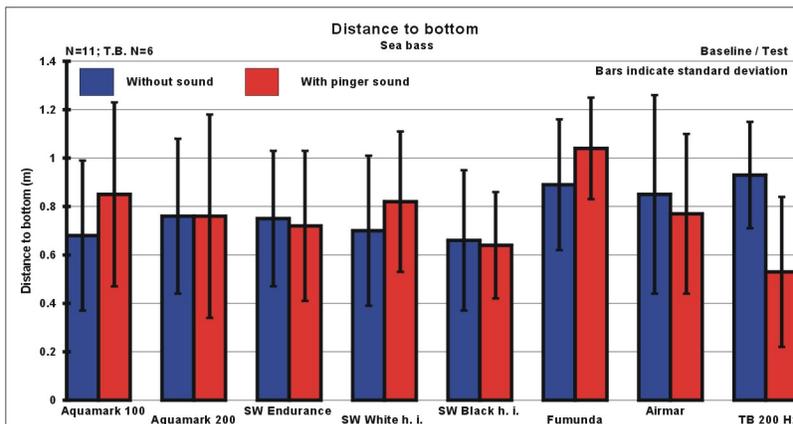
Top view of tank



SW endurance pinger



Recording equipment & pinger switchboard



Preliminary results from the first fish species: sea bass

Team: Peter Reijnders, Alterra Texel  
 Jan van de Veen, Het Arsenal, Vlissingen  
 Michaël Laterveer, Oceanium, Blijdorp Zoo  
 Wim Verboom TNO-TPD, Delft  
 Nancy Vaughan, University of Bristol  
 Sander van der Heul, Seamarco  
 Rob Triesscheijn, Seamarco  
 Ron Kastelein, Seamarco

Funding: Dutch Ministry of LNV  
 Facilitating institute:  
 RIKZ field station Jacobahaven

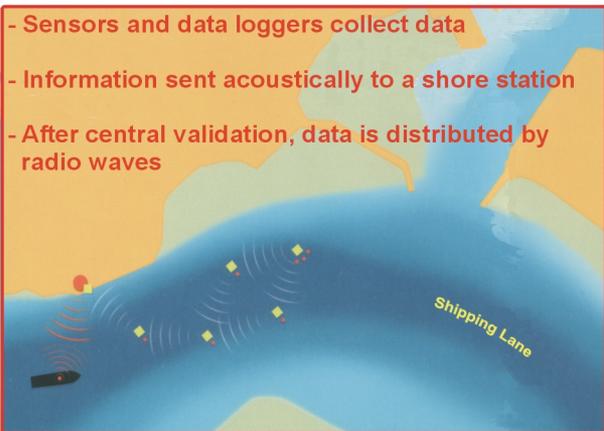
Main contractor: Seamarco  
 Tel: + 31.341.456252  
 researchteam@zonnet.nl



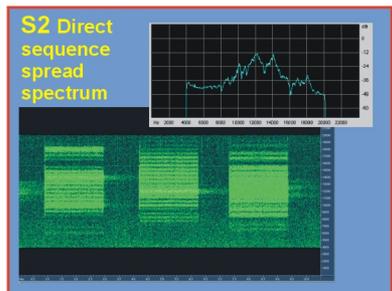


# Effect of underwater data communication sounds on harbor porpoises

Due to increased vessel traffic in coastal waters, chances of collisions have increased. To improve the safety in shipping lanes more information on hydrodynamics in the lanes needs to become available for the navigators of the vessels. Spar buoys provide information from outside the lanes and are vulnerable to collisions. Therefore a new system is being developed with sensors on the sea floor. The information is transmitted to shore via underwater sound.



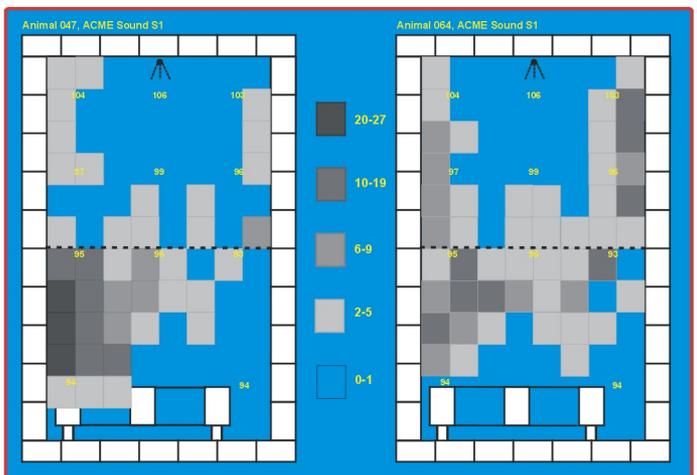
As part of an Environmental Impact Assessment, the effect of 4 potential communication sounds on harbor porpoises in a pen has been studied. Discomfort threshold Sound Pressure Levels were established for each sound. (Dashed lines). Using a simple shallow-water propagation model, the discomfort zones for various potential Source Levels of the system at sea could be calculated.



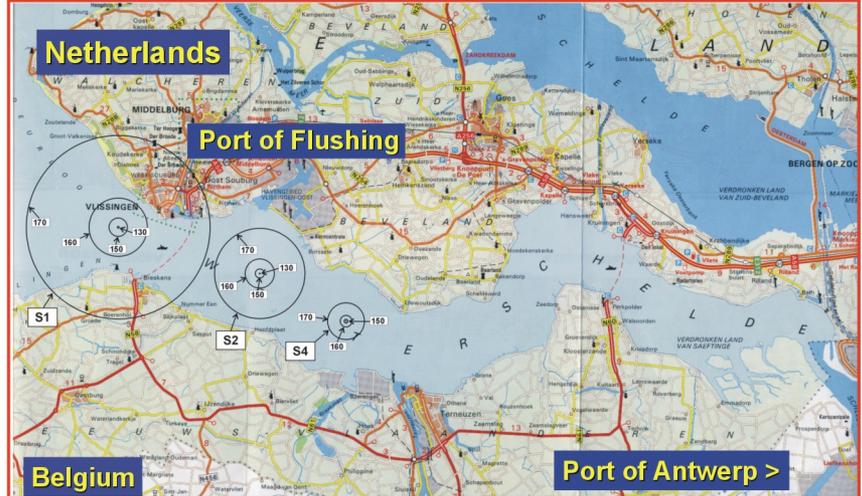
One of the 4 tested communication sounds



Floating pen with 2 harbor porpoises



Distribution of porpoises & SPL (dB) in pen



Discomfort zones of harbor porpoises for sounds S1, S2 and S4 at 4 source levels

Team:  
Wim Verboom, TNO-TPD, Delft  
Nancy Vaughan, University of Bristol, UK  
Sander van der Heul, Seamarco  
Rob Triesscheijn, Seamarco  
Ron Kastelein, Seamarco, Netherlands

Funding:  
The Netherlands  
North Sea Directorate

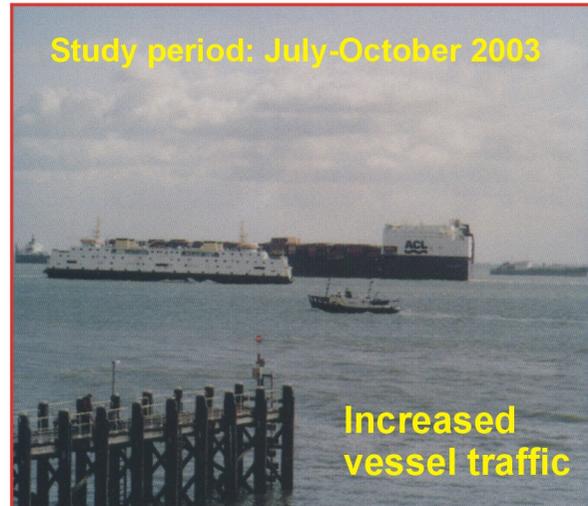
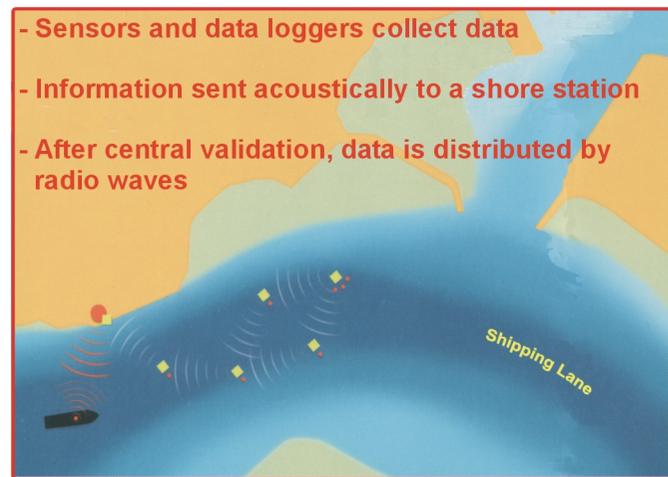
Main contractor: Seamarco  
Tel: + 31.341.456252  
researchteam@zonnet.nl



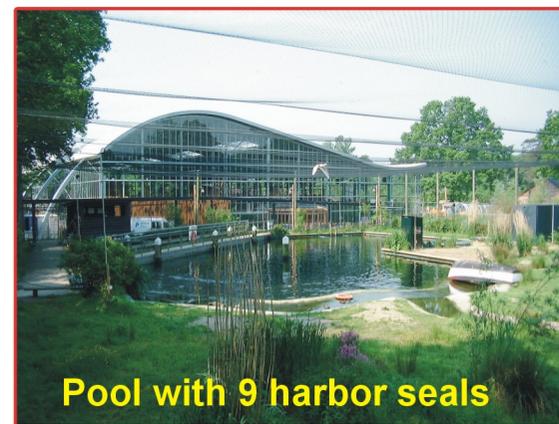
# The influence of underwater acoustic data communication sounds on harbor seals



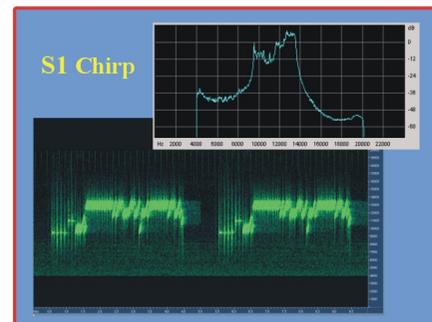
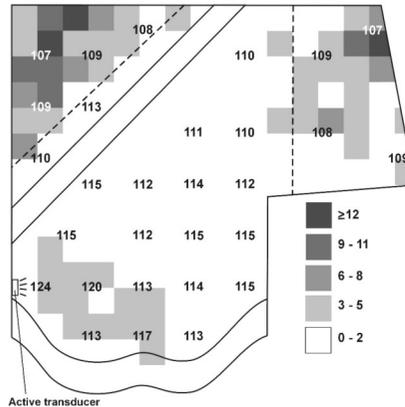
Due to increased vessel traffic in coastal waters, chances of collisions have increased. To improve the safety in shipping lanes more information on hydrodynamics in the lanes needs to become available for the navigators of the vessels. Spar buoys provide information from outside the lanes and are vulnerable to collisions. Therefore a new system is being developed with sensors on the sea floor. The information is transmitted to shore via underwater sound.



As part of an Environmental Impact Assessment, the effect of 4 potential communication sounds on harbor seals in a pool has been studied. Discomfort threshold Sound Pressure Levels were established for each sound (dashed lines). Using a simple shallow-water propagation model, the discomfort zones for various potential Source Levels of the system at sea could be calculated.



Seal & SPL distribution(dB) in pool



One of the 4 tested communication sounds



Discomfort zones of harbor seals for 3 source levels

Team:  
Wim Verboom, TNO-TPD, Delft  
Nancy Vaughan, University of Bristol, UK  
Sander van der Heul, Seamarco  
Rob Triesscheijn, Seamarco  
Ron Kastelein, Seamarco, Netherlands

Facilitating institute:  
Ouwehand Zoo, Rhenen, Netherlands

Main contractor: Seamarco  
Tel: + 31.341.456252  
researchteam@zonnet.nl

Funding:  
The Netherlands  
National Institute  
for Coastal and  
Marine Management

