North and South - Harbour Porpoise Distribution within the Eastern German Bight

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Sophie Hansen[1], Ansgar Diederichs[1], Georg Nehls[1]

[1]*BioConsult SH GmbH & Co.KG, Brinckmannstrasse 31, Husum, Schleswig-Holstein, 25813, Germany*

INTRODUCTION

In the framework of offshore wind park construction, the Federal Maritime and Hydrographic Agency (BSH) stipulate acoustic monitoring of harbour porpoises in German waters. The aim is to gather long-term data sets with large coverage in order to investigate possible cumulative effects of wind farms on the presence and distribution of harbour porpoises. In this context we present passive acoustic data of harbour porpoises gathered from 7 C-POD stations during one year within the German EEZ in the North Sea (Fig.1). For this study, we focus on seasonal patterns in order to reveal possible migration movements between positions in the North (including Sylt Outer Reef, SOR) and South (including Borkum Reef Ground, BRG) within the German Bight (Fig.1).

METHODS

The presented data were collected from C-PODs at 7 stations during several wind park projects from January to December 2012. These 7 C-POD stations can roughly be grouped in the area NORTH (including SCI Sylt Outer Reef; Pos.1-3) and SOUTH (including SCI Borkum Reef Ground; Pos. 4-7). Data are presented on a daily scale using the parameter porpoise positive ten minutes (pp10m). For pos. 1,2,3,5 and 7 data were pooled from three C-PODs deployed close to each other. The moving average over 10 days reflects the seasonality in detection rate and is shown as a red line (Fig.2). In a second step, we calculated the mean of the annual detection rate of each position which is shown in Fig.3.

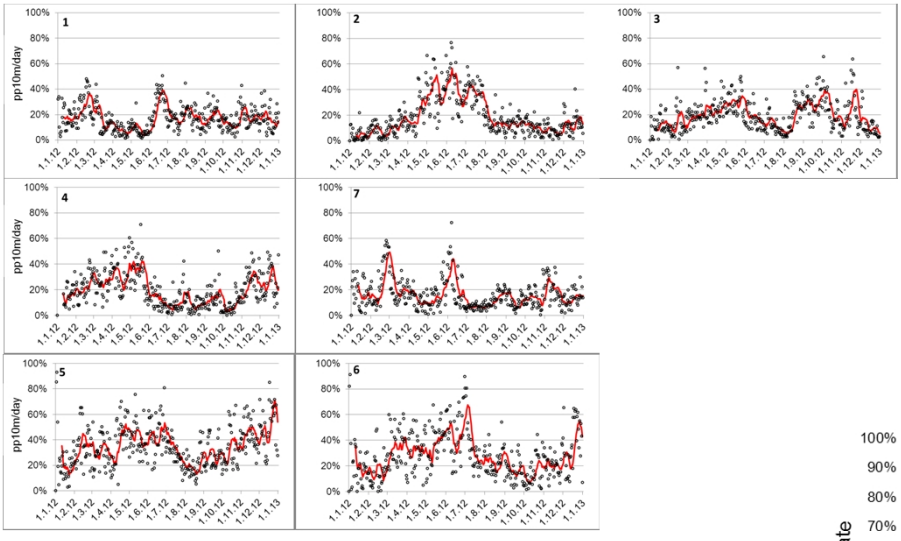

Fig.2 Daily detection rate of harbour porpoises (pp10m/day) during 2012. The red line indicates the moving average over 10 days for pos.1-3 (North) and 4-7 (South).

DISCUSSION

Porpoises are highly abundant and year-round present in the German North Sea. The high year-round detection rates at pos. 5 and 6 support the importance of the SCI BRG. with maximum detection rates during all seasons. SCI SOR, in contrast, does not reveal this picture. The expected summer peak for this area is not obvious for all positions in 2012.

CONCLUSION

§A contra-cyclical seasonal pattern in the detection rate between the North (summer peak) and South (late winter peak) could not be found. Thus, our results did not support our hypothesis of possible migration between the two areas.

§Long-term static acoustic monitoring data provides valuable information on spatio-temporal distribution of harbour porpoises and can help to investigate possible (cumulative) effects of anthropogenic activities on harbour porpoise presence.

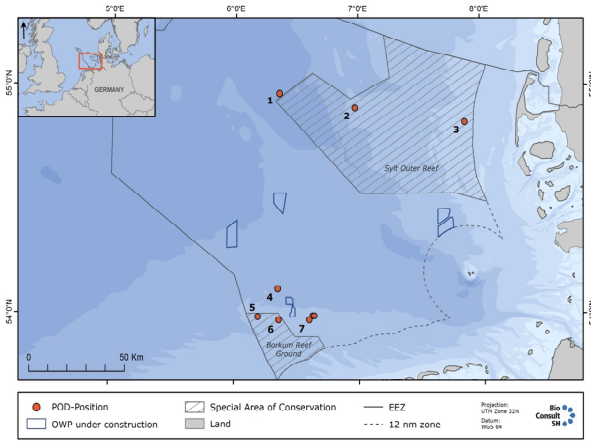

Fig.1 Study area: at positions 1,2,3,5 three C-PODs were deployed in close vicinity, respectively; position 7 consists of three single C-POD stations close together.

RESULTS

§Porpoises are present year-round and every day at all positions.

§For the area NORTH a distinct summer peak has only been observed for pos.2 whereas pos.1 in the West also showed some higher detection rates in summer (Jun+Aug). However, the coast-near pos.3 registered a distinct minimum in summer (Jun+Jul) and highest detection rates in autumn (Sep-Nov).

§For the area SOUTH, pos. 4 and 7 showed lower detection rates during summer/autumn (Jul-Sep). For the rest of the year no clear consistent pattern is visible.

§For pos. 5 and 6 (inside BRG) overall detections rates were constantly higher compared to all other positions (Fig. 3) with highest values in January, July and December.

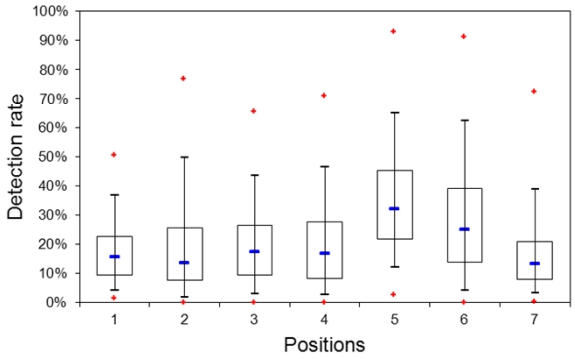

Fig.3 Box Plots of annual mean detection rates (pp10m/day) for all 7 positions representing lower 25% quartiles, median, upper 75% quartiles, minimum, maximum and outliers (+).

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