

Exploring electromagnetic field impacts at offshore wind farms: North Sea field test of novel acoustic tags

Casals David¹, Reubens Jan¹, Pohl Lotte¹ and Dahlmo Lotte Svengård²

¹ Flanders Marine Institute, Jacobsenstraat 1, 8400 Oostende
E-mail: davidcasals14@gmail.com

² NORCE, Nygårdsgaten 112, 5008 Bergen, Norway

Aquatic tracking tools like acoustic transmitters are crucial for understanding animal movement, and Thelma Biotel's new acoustic EMF tags have the potential to revolutionize the study of electromagnetic field (EMF) impacts on marine species. The field test of a novel acoustic tag with an integrated magnetometer in the North Sea aims to validate the performance of these tags in aquatic environments. This study provides baseline knowledge of the EMF values present around the power cables of Offshore Wind Farms (OWF), facilitating accurate analyses in future research on EMF-sensitive species such as sharks and rays. The trial was conducted at an OWF in the Belgian part of the North Sea (BPNS) using the RV Abbé Mann. Tags were towed parallelly, perpendicularly, and diagonally to the buried export power cables. Three tags, each with unique codes and frequencies, were attached to a weighted rope and towed below the vessel at 3 knots. The tags measured and transmitted magnetic field values to an acoustic receiver, while a GPS track of the boat was recorded. Data analysis utilized a generalized additive model (GAM) to map the spatial variation of magnetic field values, creating an EMF landscape map of the area. The outcome of the test established crucial baseline field data for future studies and supported the conservation and management of EMF-sensitive marine species.

Keywords

Fish Tracking; Acoustic Telemetry; Electromagnetic Fields; Elasmobranchs; Offshore Wind Farms