

Acoustically tagging Atlantic cod - the silver bullet to investigate behaviour?

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Atlantic cod (*Gadus morhua*) is a commercially important fish species suffering from overexploitation in the North-East Atlantic. In recent years, their natural environment is being intensively altered by the construction of offshore wind farms in many coastal areas. These constructions form artificial reefs influencing local biodiversity and ecosystem functioning.

The wind farms in the Belgian part of the North Sea create a unique opportunity to investigate the influence of these manmade constructions on the natural behaviour, abundances and movements of Atlantic cod.

It has been demonstrated that Atlantic cod is present in the vicinity of these constructions. However, empirical data concerning the diel activity and feeding behaviour of Atlantic cod in the vicinity of these artificial reefs is lacking. Directly observing the behaviour of marine fish in the wild is logistically very difficult. As a result, other methods are essential to infer fish behaviour. In this study we integrated acoustic telemetry with stomach content analysis. The former method was used to empirically quantify diel movement behaviour, while the latter is used to evaluate diel feeding patterns.

Atlantic cod exhibited crepuscular movements related to feeding activity; a 12h cycle was found and the highest catch rates and stomach fullness were recorded close to sunset and sunrise.

The integrated approach, combining acoustic telemetry with stomach content analysis and catch rate information, greatly contributed to the interpretation of the data. We therefore strongly encourage multimethodological approaches in future research to investigate fish ecology.