

The secret life of Atlantic cod (*Gadus morhua*) at a wind farm in the Belgian part of the North Sea: where ecology meets economy

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A substantial expansion of offshore wind farms in the North Sea (BPNS) has been planned, inducing a growing interest in the possible effects of these artificial habitats on the marine environment. Demersal fishes are likely to be affected by these changes in the environment. The offshore wind turbines may provide a suitable habitat for hard substrate dwelling fish since hard substrates, e.g. shipwrecks and windmill artificial reefs (further referred to as WAR), have been reported to attract and concentrate fishes and/or to enhance local fish stocks.

Since 2009 the trophic ecology and community structure of Atlantic cod has been investigated at the wind turbines on the Thorntonbank. In this study, the state of the art of ecological knowledge of Atlantic cod inhabiting WAR in the BPNS after three years of environmental monitoring is given.

Reubens *et al.* (2010) revealed that high densities of Atlantic cod were present in the vicinity of the WAR in summer and autumn. Research on length-frequency distribution in combination with a migration study based on acoustic telemetry disclosed that Atlantic cod between 2 and 3 years old arrive at the WAR in spring, stay throughout summer and autumn and leave the area in winter time. Furthermore, the (ongoing) migration study (Reubens *et al.*, 2011) revealed high site fidelity and residency near the WAR. Investigation of the feeding ecology revealed the high dependency of hard substrate associated epifaunal prey items in the diet of Atlantic cod caught near WAR.

It can be concluded that the WAR play an important role in part of the life history of Atlantic cod in the BPNS. Every year, large aggregations of Atlantic cod dwell in the WAR and feed there throughout summer and autumn.

Atlantic cod has considerable economical importance; hence several fishing industries lobby to allow small-scale fisheries within this 'de facto' marine reserve. However, as fish aggregation may easily lead to overfishing it is important that thorough management restrictions are implemented and careful monitoring continues in the long term.

References

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