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Acoustic telemetry as a tool for cod stock assessment

All around the world, fish stocks have declined tremendously during the last decades. Multiple causes can be addressed, working on different levels of the ecosystem: overfishing, habitat destruction and modification, pollution, disease and climate change. To restore stocks, a better understanding of fish movement and behaviour in relation to habitat use and environmental requirements is needed. In this study, we focused on Atlantic cod (*Gadus morhua*), one of the economically most important fish of Europe. Acoustic telemetry is a promising technique to unravel fish movement in the marine environment and was therefore applied on cod: fish were tagged with an acoustic transmitter, which emits a signal that can be detected by receivers. The LifeWatch ESRI observatory funded a network of such receivers in the Scheldt Estuary and the Belgian Part of the North Sea. This gave us the ability to track fish over a wide area and between different habitats (e.g. marine versus estuarine environment). An added value of acoustic telemetry is that it provides information on the individual level, rather than species level, resulting in more detailed observation of fish behaviour. This leads to new insights in complex fish migrations. The results of this study show seasonal migration between offshore habitats (i.e. windmill farm, shipwrecks) in summer and inshore habitats (i.e. coastal zone and Scheldt Estuary) from autumn till early spring. This information could contribute to a more efficient stock assessment and help to restore the population, by adding a spatio-temporal component to fishing quotas.

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