

A historical view of the macrobenthic communities on the Thorntonbank and Goote Bank

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The first offshore wind farm in the Belgian part of the North Sea became functional in May 2009 on the Thorntonbank. This sandbank is situated 27km offshore and contains coarse, sandy sediments with a relatively poor macrobenthic community, dominated by a few species (Reubens *et al.*, 2009). In 2005, a monitoring programme was initiated to determine the baseline situation of the soft-sediment macrobenthos in this area (De Maerschalck *et al.*, 2006). Since 2008, samples have been taken yearly to determine any primary impacts on the community that could have arisen during and after construction. However, before any impacts can be detected it is crucial to understand the long-term natural fluctuations of the macrobenthic communities as a result of sediment movements, plankton blooms, eutrophication, industrial and fishing activities or even climate change. Any impacts caused by the construction of offshore wind farms can subsequently be separated from natural fluctuations in the macrobenthic community (Hiscock *et al.*, 2002).

The historical and recent monitoring data were integrated into the Marine Biology Macrobenthos database (Macrodat) which contains information on macrobenthic densities together with relevant abiotic factors such as median grain size, total organic matter content and temperature. A temporal analysis was carried out over a period of approximately 30 years starting from 1979 until 2005 for the Thorntonbank and 1980 until 2011 for the Goote Bank (reference stations). Only samples taken during autumn were analysed as macrobenthic densities can differ greatly between seasons. The data was analysed at different levels to study the reaction at station and sandbank level and integrate the habitat suitability communities. These communities were characterised by means of sedimentological characteristics (median grain size and mud content) and can be divided into four groups: the *Nephtys cirrosa*, *Abra alba*, *Ophelia limacina* and *Macoma balthica* community (Van Hoey *et al.*, 2004; Degraer *et al.*, 2009).

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