

MONITORING THE IMPACT OF OFFSHORE WIND FARMS ON THE SOFT-SEDIMENT MACROBENTHOS

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As part of the environmental permit granted to C-Power and Belwind the baseline monitoring programme on the soft-sediment macrobenthos was initiated in 2005. Since then, macrobenthos has been sampled and analysed on the C-Power and Belwind concession areas (Thornton Bank and Bligh Bank, respectively), together with carefully selected reference stations on the Goote Bank, Bligh Bank and the Thornton Bank.

The baseline studies (Year-0) of the Thornton Bank and the Bligh Bank were carried out both during the autumn and spring of 2005 and 2008, respectively. In total, 76 sample sites were investigated for the baseline study of the Thornton Bank and 78 for the Bligh Bank. Both studies expressed higher macrobenthic densities during autumn (max. 1300ind.m⁻² in 2005 and 3500ind.m⁻² in 2008) in comparison to spring (max. 1100ind.m⁻² in 2005 and 900ind.m⁻² in 2008). The species richness on all sampling locations was rather low with a maximum of 15 species/0.1m² in 2005 and 26 species/0.1m² in 2008. *Nephtys cirrosa* was detected as the most dominant species over all the sampling locations. Therefore, the macrobenthic community of the several sandbanks investigated either belonged to the *Nephtys cirrosa* community or the transitional community between the *Nephtys cirrosa* and the *Ophelia limacina* - *Glycera lapidum* community. Furthermore, the sediments mainly consisted of medium sand (350-500µm) with a low mud content (max. 10%) and low organic material percentages (max. 1%).

During the autumn of 2008 the impact of the first six windmills built on the Thornton Bank (Year-1) was assessed. In this first year after implementation no large-scale impacts on the macrobenthos were detected while seasonal and annual variations in densities, species richness, biomass, productivity and community composition appeared to be more important. However, a continuation of the baseline monitoring is necessary to determine long-term effects and successive recovery of the soft-sediment macrobenthos.

Currently, the Year-2 situation of the Thornton Bank and the Year-1 situation of the Bligh Bank are being analysed. Slight modifications in sampling locations were carried out to attain samples in closer vicinity to the first six windmills and to hopefully determine more small-scale impacts on the macrobenthos.

In the near future, targeted monitoring will be applied to create a greater understanding of the source of wind farm impacts on the soft-sediment macrobenthos. Consequently, small-scale experiments will be carried out to gain more insight in the organic enrichment and the changing currents around wind mills together with their possible effects on the soft-sediment macrobenthos.

Also see abstracts of related projects further in this publication:

Brabant *et al.*; Degraer *et al.*; Di Marcantonio M.; Haelters J.; Kerckhof *et al.*; Reubens *et al.*; Vandendriessche *et al.*