

DNA-based impact monitoring: the case of sand extraction in Belgium



Sand extraction, like most other human activities at sea, needs to be managed and regulated, because it induces changes in the marine environment. In most countries, an environmental impact assessment (EIA) is required.

Within most EIA's, macrobenthos - fauna living within the sediment - is an important indicator. Traditionally, macrobenthic analyses require experts for species identification based on morphological characteristics. DNA metabarcoding is potentially faster, more reliable and cheaper.

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Bulk DNA, extracted from the organisms in the samples, is amplified and sequenced. The obtained sequences are then linked to species names, by comparing them to DNA sequences of morphologically identified specimens in reference libraries.

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traditional
↕
DNA based

Species richness
MATCH

Community composition
MATCH

Ecological health
NEAR MATCH

DNA-based and traditional species identification provided **similar** detection of **abundant species** and comparable **community composition**. Translation of these results into ecosystem health assessments was only partly similar, indicating that development of a genetic index might be advisable

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DNA-based impact monitoring is
45% FASTER and 27% CHEAPER

(GEANS data based on 24 samples, soft sediment pilot, 2021)