

# SPEEK

## STUDY OF POST EXTRACTION ECOLOGICAL EFFECTS IN THE KWINTEBANK SAND DREDGING AREA

**Duration of the project:** 15/12/2003 – 30/04/2006  
**Budget:** € 179.970  
**Keywords:** Sand Extraction, Kwintebank, Benthic Life, Impact Assessment

### CONTEXT

SPEEK is a cooperation between three Belgian laboratories (Ghent University/Marine Biology Section; Ghent University/Renard Centre for Marine Geology; Agricultural Research Centre/Sea Fisheries Department) and a Spanish Institute (AZTI Foundation). This cooperation aims at joining the expertise present in these groups to gain insight in the possible restoration of the benthic life in the central area of the Kwintebank. This area is closed for sand extraction activities for a period of three years. This ecological information will provide management information necessary for a sustainable management of the sand extraction area on the Belgian Continental Shelf.

### PROJECT DESCRIPTION

#### Objectives

The main aims of SPEEK are (1) to describe the long term effects of sand extraction on the benthic life on the Kwintebank; (2) to investigate the possible recovery of the benthic life after cessation of extraction activities in the central part of the Kwintebank; (3) to discriminate appropriate disturbance indicators for the impact assessment of sand extraction and (4) to provide management information with respect to extraction intensity and rotation of possible concession areas at sea.

#### Methodology

SPEEK is investigating different benthic groups. Within the meiobenthos (all metazoans between 38µm and 1mm), focus is on the dominant taxa. The Marine Biology Section investigates the nematodes, while harpacticoid copepods are studied by AZTI. The Sea Fisheries Department explores the macrobenthos. These biological data will be backed up by geological data collected by RCMG.

In the initial phase of the project, long term effects of sand extraction on the benthic life will be investigated by compiling all available historical data. If possible, more recently collected data, originating from the sand extraction period will be added to the historical data. Analysis of these databases will allow for assessing long term changes in the benthos. This will provide us with the basic information needed to

evaluate the possible recovery of the benthic communities.

Further research will evaluate the possible recovery of the different benthic groups in the central area of the Kwintebank, which is closed for sand extraction for a period of three years. The biological data will be combined with geo-acoustic measurements made in the framework of the projects MAREBASSE and EUMARSAND. By combining traditional ecological research (analyzing diversity and community composition) with newly developed techniques at the Marine Biology Section (Nematode Biomass Spectra, MDA-modelling of nematode communities and ecotype approach for harpacticoid copepods), it will be possible to accurately describe the recovery and rate of recovery of the benthos.

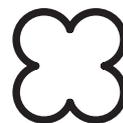
By comparing (1) the response time and sensitivity of the different benthic groups to sand extraction/cessation of sand extraction and (2) the accurateness of the different methods of analyzing the data, we will be able to suggest appropriate methods for monitoring the effects of sand extraction on the benthos. The final integration of all tasks will result in the formulation of management options concerning extraction intensity and rotation of extraction areas.

#### Interaction between the different partners

This project joins the expertise of the biological laboratories (Marine Biology Section, Sea Fisheries Department, AZTI) with the geological knowledge present at RCMG. The practical cooperation between the partners will be mainly in the field, since joint campaigns to the Kwintebank are planned. Moreover, each biological sampling campaign will be followed by a geological campaign. The integration of the biological results with the geological data is of prime importance, considering the complex bathymetry of the Kwintebank. Other integrated activities comprise the joint analyses of the biological data, in order to assess the relative sensitivity of the different benthic groups.

#### Link with international programmes

This project is closely related to the European programme EUMARSAND (FP 5), since RCMG and AZTI are involved in this project. The Marine Biology Section is active in the FP 6 Network of Excellence MARBEF. Members of the Sea Fisheries Department are active in various ICES working groups, including the Working Group on the effects of Extraction of Marine Sediments on the Marine Ecosystem (WGEXT).



**Expected results and/or products**

- Databases containing the log term biological data on the benthos of the Kwintebank will be available for future research.
- The spatial structure of the benthic communities will be characterised.
- Long term effects (1976-2001) of sand extraction on benthic communities.
- Appropriate descriptors of disturbance.
- Insight in the recovery of the benthos in the central area of the Kwintebank. Hence, the resilience of the ecosystem will be better understood.
- Management information concerning the intensity of the extraction activities and the possible rotation of extraction areas.
- Scientific results will be published in peer-reviewed journals and presented on national and international symposia, conferences.
- The compilation of the final report will take place in close cooperation with the end users to facilitate the translation of the data.

**PARTNERS****Activities****UGent - Marine Biology Section**

This section analyses the long term effects of sand extraction on nematode communities, assessment of the recovery of the nematode communities, development of indicators for sand extraction.

**UGent - Renard Centre for Marine Geology**

RCMG analyses the sedimentological variables from the central and northern part of the Kwintebank.

**AZTI (Spain)**

AZTI analyses the long term effects of sand extraction on copepod communities, assessment of the recovery of the copepod communities, development of indicators for sand extraction.

**CLO - DvZ**

The Sea Fisheries Department (DvZ) analyses the long term effects of sand extraction on macrobenthic communities, assessment of the recovery of the macrobenthic communities, development of indicators for sand extraction.

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