

B W Z e e

A BIOLOGICAL VALUATION MAP FOR THE BELGIAN CONTINENTAL SHELF

Duration of the project: 15/12/2003 – 30/04/2006

Budget: € 179.325

Keywords: Benthos, Birds, Biological Valuation

biological valuation and marine biology experts will search for an adapted approach for the biological value of the Belgian Continental Shelf (e.g. valuation criteria).

The marine Biological Valuation Map should include and integrate information on all marine ecosystem components for which detailed spatial distribution data are available. At the Belgian Continental Shelf such data are primarily available for the macrobenthos and seabirds (macrobenthos: UGent-MACRO-DAT database; seabirds: IN database). To a lesser extent, but still useful from a valuing perspective, data on the spatial distribution of the epi- and hyperbenthos exist (UGent and DVZ databases). It was decided to base the biological valuation of the Belgian Continental Shelf on the spatial distribution of seabirds and macrobenthos (full coverage baseline Biological Valuation Map), while epi- and hyperbenthos data will be used as an upgrade (upgraded Biological Valuation Map for selected areas).

The seabird database consists of a set of points where densities are known. In order to cover the entire Belgian marine area a GIS-aided inter- and extrapolation will be performed. Contrary to avifauna data, in which direct observations almost provide full-coverage information for numerous areas at the Belgian Continental Shelf, benthos data should be regarded as point data. To spatially extrapolate these point data, needed to obtain a full coverage spatial distribution map, a predictive model, based on the close link between the macrobenthos and its physical habitat, will be set up. Once developed and validated, the model will enable to extrapolate the spatial distribution of the macrobenthos to the full Belgian Continental Shelf, using existing data on the physical habitat (GIS-aided).

Even though large databases on seabirds are available, there are still areas at the Belgian Continental Shelf (mainly the outer parts) with a poor coverage of data. Supplementary seabird counts will fill the gap in these areas. New samples on macrobenthos will be collected to ground-truth the predicted full-coverage distribution maps.

Once a full coverage map of the spatial distribution of macrobenthos and seabirds is generated, these maps will be evaluated according to the set valuing criteria. Through a GIS aided combination of the different valuation maps (macrobenthos-seabirds and criteria) a full coverage base Biological Valuation Map will be attained. This baseline Biological Valuation Map will further be upgraded using data on the epi- and hyperbenthic value, within areas where information on these components is available (upgraded Biological Valuation Map for selected areas).

CONTEXT

The continuously increasing socio-economical interest in marine resources urges the need for a decision making framework to objectively allocate the different user functions at the Belgian Continental Shelf (BCS). This calls for a spatial structure plan, preferentially firmly based on the concept of integrated marine management, in which biological value should be carefully taken into account. Unfortunately, so far an integrated view on the biological value of the BCS is lacking. A first attempt to assess the biological value of (parts of) the BCS exists, but this study only took into account one ecosystem component (i.e. macrobenthos) and non-extrapolated to the whole shelf, generally failing to provide an integrated, full-coverage Biological Valuation Map of the BCS.

PROJECT DESCRIPTION

Objectives

This project aims at setting up a Biological Valuation Map (BVM) for the Belgian Continental Shelf. The general objectives of the project are therefore:

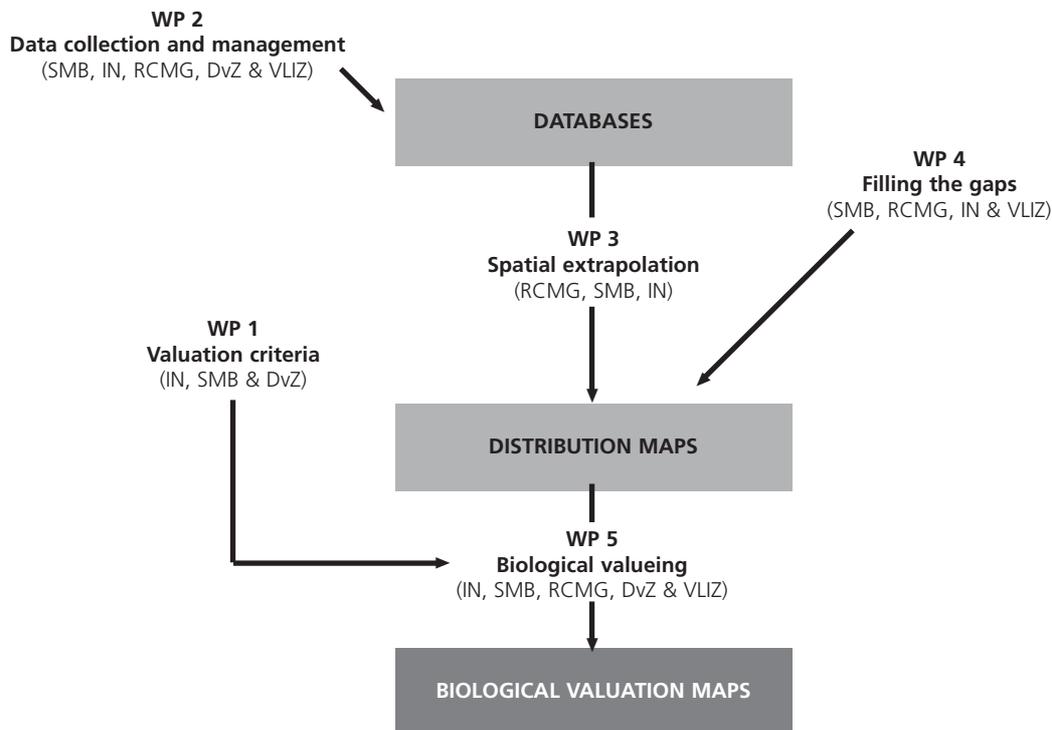
- (1) to select criteria for biological valuation of the marine environment;
- (2) to map the spatial distribution of well-studied ecosystem components at the BCS (i.e. macrobenthos and seabirds);
- (3) to create a full coverage baseline BVM for the BCS, based on the valuation of the macrobenthos and the seabirds;
- (4) to upgrade the baseline BVM for selected areas, based on the valuation of hyper- and epibenthos.

Methodology

Since no marine Biological Valuation Map has been set up in other parts of the world yet, a novel approach should be searched for. The generation of the Biological Valuation Map for Belgian marine waters should therefore preferably be based on the experience acquired during the actualisation of the terrestrial valuation maps: the creation of the marine Biological Valuation Map demands close cooperation with terrestrial experts, already in an early stage of the project. Because of fundamental differences between the terrestrial and marine ecosystem structure and functioning, a team of experts in terrestrial



Schematic presentation



Interaction between the different partners

As indicated in the schematic presentation of the project, several partners contribute to each of the five work packages. The first partner mentioned is coordinating the work package.

Expected results and/or products

The marine BVM is an indispensable tool to obtain an objective and scientifically-sound spatial structure plan of the BCS. Next to the above mentioned exploitation of the final result of BWZee, other results are: (1) an integrated databases on the biology and physical environment of the BCS, (2) the innovative approach to set up a marine BVM (e.g. valuation criteria), (3) the development of the habitat-based predictive model, (4) full coverage information on the spatial distribution of macrobenthos and seabirds at the BCS, (5) the translation of results and conclusions for the benefit of scientists, managers, policy makers, the public at large.

PARTNERS

Activities

A broad multidisciplinary expertise within the partnership is a condition sine qua non to be able to reach the final goal of this project. Therefore, each of the partners brings its own complementary expertise into the project:

- Marine Biology Section – UGent (SMB): Macro-, hyper- and epibenthos
- Institute of Nature Conservation (IN): Biological valuation, avifauna, GIS
- Renard Centre of Marine Geology – UGent (RCMG): Habitat characterisation, spatial extrapolation, GIS
- Sea Fisheries Department (DvZ): Epibenthos
- Flanders Marine Institute (VLIZ): Data management, dissemination

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