

## Introduction

This issue of the “Rostocker Meeresbiologische Beiträge” contains articles that arose or were inspired by the BMBF-project BACOSA (Baltic Coastal System Analysis and Status Evaluation). BACOSA analyses spatial and temporal changes in phosphorus flows of macrophyte dominated coastal ecosystems of the Baltic Sea. Using the example of the Darß-Zingst Bodden Chain (a series of shallow coastal bays in the southern Baltic Sea, Germany) and the shallow waters near the island of Hiddensee, nutrient transport, sediment dynamics and interactions between pelagial and benthic are studied in detail. The collected data will characterize the role of macrophytes as sediment stabilizer and buffer for terrestrial nutrient input.

High nutrient inputs into the shallow coastal lagoons of the Baltic Sea led to eutrophication and loss of underwater vegetation cover in the 1970s. Since 1990, nutrient loads have been reduced, but the system is still turbid and phytoplankton biomass is high. However, underwater vegetation re-established in the past years. Interactions between benthic and pelagial in the system are still poorly understood. The investigations of the BACOSA-project, of which first results are presented in this issue, comprise sedimentation and resuspension rates inside reed beds (page 41) and inside as well as outside of macrophyte stands (page 73). The submersed vegetation is mapped (page 105) and biomass and production are assessed (page 93). Phosphorus flows in reed beds and between sediment and pelagial are another focus of the project (page 119). In addition, new methods are tested and established (page 7 and page 73).

The BACOSA-project stands out due to its collaboration of biosciences with the economic and social sciences. Another important subproject of BACOSA deals with the assessment of ecosystem services of the inner coastal bays of the Baltic Sea (page 133). Retention and storage of nutrients are only two examples for important ecosystem services provided by coastal ecosystems. Considering the total catchment area, further services, such as food production and tourism, add to the list. The monetary assessment of these services together with the results of field measurements will be an important tool in political and social decision-making.

BACOSA is a cooperation of the three universities of Rostock, Greifswald and Kiel. It is part of the research association Coastal Research North Sea/Baltic Sea (KüNO) of the BMBF framework programme FONA. The results of the project build an important basis for the assessment of the environmental status of coastal ecosystems in the context of the EU Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD).

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