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Geodiversity and biodiversity assessment of the Słupsk Bank, Baltic Sea

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Recognizing the most diversified parts of the territory turns out to be very crucial for management and planning of natural protected areas. There is an increasing number of studies concerning assessing geodiversity and biodiversity of the land areas. However, there is noticeable lack of such publications for submerged zones.
The study area consists of 100km2 Słupsk sandy shoal sporadically covered with boulder layers, located in the southern part of the Baltic Sea. It is characterised by landscapes of a significant nature value protected by Natura 2000 and is as well designated as an open sea by Helsinki Commission Baltic Sea Protected Area (HELCOM BSPA).
The main aim of the presentation is an attempt to integrate geodiversity and biodiversity assessments of the submerged area using GIS platform. The basis for the diversity assessment is the proper selection of features of the marine environment, its reclassification and integration by the map algebra analysis. The map of geodiversity is based on three factor maps: a relief energy map (classification based on bathymetric model, a landform fragmentation/geomorphological map (expert classification using BPI – Bathymetric Position Index), and a lithological map (classification of the average size of grain fraction). The map of biodiversity is based on the following factor maps: a map of biomass distribution of Ceraminum Diaphanum, a map of biomass distribution of Coccotylus Truncatus, a map of biomass distribution of Polysiphonia Fucoides, a map of biomass distribution of Mytilus Edulis Trossulus, a map of distribution of macroalgae, and finally a map of distribution of macrozoobenthos. It was decided to use four classes of diversity (from low through medium and high, up to very high). The designation of the lowest class was abandoned because it characterizes areas with high anthropopressure.
Maps of geodiversity and biodiversity may prove to be helpful in determining the directions for management of the most valuable parts of the areas from the nature point of view, as well as delimitation of the geodiveristy/biodiversity hotspots for purpose of the strict nature protection. This study is the first attempt to use methods of diversity assessment for marine environment.