



## **The spatial relationships between geodiversity and biodiversity; the Dębica catchment, Poland**

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Natural environment consists of a variety of correlated abiotic and biotic systems, which are responsible for diversity in nature. Geodiversity determines biodiversity but occasionally an inverse relationship may occur, e.g. the impact of diversity and multiplicity of species on the character of biogenic sediments. Recognizing parts of the territory that are the most diversified turns out to be a very crucial for management and planning of natural protected areas.

The main aim of the presentation is to determine spatial relationships between geodiversity and biodiversity using a unique combination of maps for the Dębica catchment (West Pomerania, Poland) as well as an attempt to integrate geodiversity and biodiversity assessments of the lowland areas of the postglacial origin.

The collected field and literature data, both analogue and digital, allowed for assessing geodiversity and biodiversity. Seven factor maps were obtained, i.e. five maps for the diversity of abiotic elements (lithology, relative heights, landform fragmentation, hydrological elements and mesoclimate) and two for the diversity of biotic elements (potential natural vegetation and real vegetation based on hemeroby and vegetation origin), which became the basis for the creation of the final geodiversity and biodiversity maps.

A unique combination of geodiversity and biodiversity maps in the catchment of Dębica was created. These combinations reflect the coexistence of five distinguished classes of geodiversity and biodiversity assessment and their spatial relationships occurring between individual units. In Dębica catchment there are all possible cases of 25 unique categories. The largest areas are units of low geodiversity with medium and high biodiversity (47.05%), high geodiversity with medium and high biodiversity (22.89%) and medium geodiversity with medium biodiversity (14.37%). Units of low biodiversity in combination with geodiversity occupy only 7% of the whole catchment area of Dębica. In contrast, units of low geodiversity with all classes of biodiversity take up 51.39% of the entire catchment.

The adopted methodology for assessing geodiversity and biodiversity gave very good results that reflect an extremely genetically varied Quaternary postglacial landscape with the Holocene retouching. The areas with the highest geodiversity and biodiversity value such as Drawsko Landscape Park and the nature reserve of Dębica River Gorge, due to their uniqueness, are often legally protected.

Maps of geodiversity and biodiversity produced in accordance with given methodology may prove to be helpful in determining the directions for management of lands valuable from the point of view of nature, as well as delimitation of new forms of nature preservation for future generations. Moreover, presented methodology for geodiversity and biodiversity assessment may become a great tool to facilitate proper management of natural environment resources for the purpose of tradition and geotourism and finally natural heritage.