

## **Management Support System for wetlands protection: Red Bog and Lower Biebrza Valley case study**

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**Abstract** The Biebrza Wetlands (northeast Poland) belongs to the biggest protected areas in Europe aiming at conservation of wetland ecosystems. In order to optimize the expensive and time-consuming protection and restoration measures a Management Support System (MSS) was developed. The MSS consists of following three elements: a data catalogue combined with a Geographic Information System (GIS); a hydrological module, which simulates quantitative and qualitative variability of both ground- and surface waters dynamics; and an ecological module, which predicts directions of changes for particular wetlands' vegetation types as an effect of hydrological condition variability. MSS, as a complex tool for wetlands analysis, indicates the reaction of Biebrza Valley and Red Bog to different scenarios of hydrological conditions – as an effect of the present status (i.e. for various scenarios of drainage network function) and as possible consequences that would occur if all the conservation activities and climate changes were given up.

**Key words** Management Support System; GIS; the Biebrza wetlands; flood plain flow modelling; groundwater modelling