

Querner, E., Mioduszewski, W., Batelaan, O., Ślesicka, A., 2004, Groundwater hydrology of the Biebrza wetlands. Conference abstract, 7<sup>th</sup> INTECOL International Wetlands conference, 25-30 July, Utrecht, p. 246.

The Biebrza National Park, situated in north-east Poland, is a unique wetland with very well developed zones of peat focusing ecosystems. Land drainage undertaken in the past has resulted in too dry conditions. Agricultural developments in the surrounding area pose another threat. To counterbalance these negative effects the Biebrza National Park aims to restore the historic hydrological regime. Understanding the hydrology gives a proper basis for rational decision making. In the last ten years groundwater modelling has proven to be a useful tool in understanding the hydrology of wetlands. This paper will address the use of the hydrological models SIMGRO and MODFLOW in Biebrza. The models were calibrated on hydrological conditions over a number of years, using river discharges, surface water levels and groundwater levels. Using the results of the groundwater flow models, flow lines were calculated, giving information on the sources of water flows to the different ecosystem types in the river basin. All this information is important for preserving suitable hydrological conditions for the various wetland types. It can be used to pinpoint problem areas and for determining measures for restoration of the hydrology in balance with land use and landscape. The modelling approach gives results to be used in the evaluation of the effects of measures for both nature and agriculture. The methodology will be useful for other wetland ecosystems in other parts of Europe with comparable climatologically and geo-hydrological conditions, since the Biebrza valley is recognised as a reference for other lowland river valley wetlands.