



Ecohydrology of a Sphagnum peatland in transitional climate – an interdisciplinary study

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Sphagnum peatlands of the Central Europe are regarded as the valuable and endangered habitats. Their existence depends on the complex climatic, hydrological, topographical and botanical conditions. Good understanding of peatlands' ecohydrology is crucial for the appropriate environmental management. Our long-term ecological study is focused on a poor fen located in Northern Poland - a unique floristic nature reserve and Nature 2000 area. Main aims of the research were to: a) understand an influence of the temperature and precipitation on the ground water, b) explain an impact of the local climate and the groundwater table level on testate amoebae communities, Sphagnum mosses growth and stable carbon, nitrogen and oxygen isotope compositions, c) use the neo- ecological data for the quantitative palaeoecological reconstructions. We have been conducting the monitoring of the growth of Sphagnum mosses in five plots. Vegetation was sampled three times during the growing season for the stable isotope and testate amoebae analyses (July, September and December 2009). Temperature of the air and acrotelm, air humidity, precipitation and groundwater table were recorded using automatic data loggers. Our research confirmed that even small fluctuation of temperature, precipitation and annual distribution of precipitation have a very strong impact on the hydrology of the peatland. Testate amoeba communities and stable isotopes from Sphagnum clearly indicated the hydrological response of the mire in the different parts of the peatland. The next step is a detailed seasonal study supported by the manipulative warming experiment.