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BOOK OF ABSTRACTS

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SCOTS PINE (*PINUS SYLVESTRIS* L.) AS A PROXY FOR HYDROLOGICAL VARIABILITY IN PEATLANDS: CASE STUDY FROM ČEPKELIAI RAISED BOG, SOUTH LITHUANIA

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Dendrochronological investigation of Scots pine (*Pinus sylvestris* L.) growing in the raised bog of Čepkeliai in the South-eastern Lithuania showed that annual tree growth of peatland pines can be used as a proxy for the past variations of hydrological variables. Water table fluctuations in raised bogs depend primarily on evapotranspiration (precipitation minus temperature controlled evaporation), which in turn make raised bogs sensitive to changing climatic conditions. Čepkeliai wetland complex is one of the largest in the Baltic region and offers one of the longest water table observations in Lithuania. In order to determine the best water level proxy and to reconstruct the annual water level in Čepkeliai raised bog two types of relationship models were investigated. The first one studied dependences of the annual water table level fluctuations on the cumulative amount of precipitation or P-PET (Precipitation - Potential evapotranspiration) from one to six prior years. The relationships were studied during the period of 2002-2014. The second model investigated a relationship between the annual water table level and tree ring width. For this study cores from 96 Scots pines growing in the bog were collected during fieldworks in April, September and October 2014 using an increment corer. The strongest correlations have been obtained between the average annual groundwater level and four years of the P-PET, as well as between the annual water level and the raw ring width chronology (Raw) of pine tree-rings. The difference between the restored water level heights fluctuates around 0-0.4 m while using models based on the P-PET and Raw chronology. Such differences can be explained by input of showers' precipitation into the P-PET calculations. It was found that according to the observed and P-PET restored water level it had influenced the radial pine tree growth over periods of 4 to 6 years. It is advisable to use both methods for restoration of the water level. According to the latter data, the ground water level fluctuations restored in Čepkeliai raised bog for the period of 1932-2014 corresponded to the periods of dry and wet years known from the literature sources and in social memory.

Keywords: *dendrochronology, raised bog hydrology, Scots pine, tree rings, water table fluctuation.*