HABITAT DIVERSITY AND SPONTANEOUS SUCCESSION OF FOREST WETLANDS IN BIAŁOWIEŻA PRIMEVAL FOREST

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The permanent observations of climatic conditions (from 1950) and ground water table (from 1985) show important changes for wetlands existence in Białowieża Forest. Over the period 1950 – 2003 as a whole, the mean air temperature noted at Białowieża rose by 0.9oC and the precipitation, especially in last period, was lower than the many-years` average. Results of measurements of the water table in the ash-alder swamp forest site show decreases in both the average annual depth and maximum/minimum levels. The above mentioned facts had fundamental impact on succession of wetland vegetation.

In this study, firstly we attempt to evaluate the importance of major habitat gradients with respect to their influence on vegetation variation. The habitat diversity was taken into account same features of habitat in sample plots i.e. pH, electric conductivity, C, N content, depth of peat, water table level. The relationships between plant communities and environmental variables were expressed by diagram of Canonical Correspondence Analysis (CCA). The vegetation dynamics of forest wetlands communities were studied by re-sampling of relevés recorded in the 1960`s-1970`s years. The studies concerned six forest plant communities, those represented bog, transitional bog, fen and riparian forest habitats. The spontaneous succession was observed in natural forest wetlands. Vegetation sampling was carried out according to Braun-Blanquet`s phytosociological method. Changes in species composition were evaluated in terms of frequency and abundance of species, species richness, average ecological indicator values. Dynamics of ground flora vegetation according to habitat gradient was expressed by using the Detrended Correspondence Analysis (DCA) method.

CCA suggested that peat thickness and water table level are the most important abiotic variables correlated with plant community diversity. Species composition changed considerably between today and reference studies. According to average ecological indicator values, besides ash-alder riparian forest, habitat conditions became drier. The mean indicator value for nutrients changed significantly only in raised bog with pine. The effect of these changes are a decreasing number and abundance of oligotrophic and bog species as well as an increasing number and abundance of eutrophic species.