

Abstract

The remains from a sub-fossil pine forest buried in layers of peat deposits at the northern edge of the CHKO Křivoklátsko in the Central Bohemia is completely unique findings for the area of the Czech Republic. It offers new opportunities for palaeoenvironmental reconstruction and related climate changes during the Late Glacial and early Holocene epoch.

The methods of dendrochronology and radiocarbon dating were used to date subfossil trees. The results of radiocarbon dating determined the existence of the forest in the period approximately 12,000 to 10,300 cal yr BP. The dendrochronological analyses revealed two continuous floating chronologies. The chronology RD4, which is long 200 years, originates from the Younger Dryas. The chronology RD6, 300 years long, originates from the Preboreal.

The growth dynamics of the forest were reconstructed on the basis of the tree-ring analysis. Hydrological regime has been identified as a major disturbancy factor that influenced the growth of trees. This has been evident from synchronous phase depressions in the growth of synchronized tree-ring series. The high water table was the main cause of their extinction. This was in concordance with the results of macrofossils analyses. The effect of hydrological regime was largely influenced by microsite differences in topography, causing a low success of the crossdating. The fire represented another important disturbance factor that influenced growth dynamics of trees. In total 29 fire scars were recorded on the surface of 23 trees.

Macrofossils analysis of profile allowed to reconstruct environmental changes in the peat bog in greater detail . During the Younger Dryas, the surface of the wetland was heterogeneous. There were growing wetland species along with the first generations of trees. The forest was dominant in the Preboreal and wetland vegetation retreated, that may be associated with warmer climatic conditions. The major change in vegetation composition occurred during the transition phase between Boreal and Atlantic. Forest vegetation was replaced by wetland communities and trees died due to increased water table. The probable cause is higher humidity of climate at the beginning of the Atlantic.

Key words: dendrochronology, palaeobotany, central Bohemia, Scots pine, disturbance, fire