

Abstract

On the territory of the Czech Switzerland National Park took place during the Holocene significant changes in vegetation cover to the form is most enrolled medium Holocene climatic optimum when broadleaf deciduous forests expanded into Central Europe. These transformations are caused by climatic changes. However, it started the process of soil acidification to this day that caused the other variations of the vegetation composition, even the extinction a variety of species especially in sandstone areas. In addition, in the last few centuries the human impact is graduating, which more or less of the original forests changes due to agricultural and economic reasons to breed-specific and the same-aged plantations which supports the already declining species diversity and relative abundance of the undergrowth species. This work focuses on a single species, evergreen undergrowth shrub *Ledum palustre* which is characterized by strong demands on its habitat and indicates the specific habitat type. It grows on the upper north-facing edges of rocks with plenty of light and humidity. At these locations stores organic material thanks the favourable hydrology. This makes possible to study the use of pollen and macroremains the paleoecology of the species. On the basis of recent occurrences and the relationships of the species to its current environment was drawn up the predictive distribution model for the species. For these purposes was chosen the Maxent model based on the machine learning and digital terrain model derived from many environmental variables. Subsequently was tested the presence of *Ledum palustre* in humic soil horizon using the analysis of pollen grains. With fossil findings were correlated the informations about recent occurrences. The results of the pollen analysis indicate the long-term survival of the heliophyte species at suitable locations across the Holocene and suggest a long-term stability of the environment, which contrasts with significant changes in vegetation cover. These results support the idea of a diversified Holocene development of vegetation in a very diverse landscape of the Bohemian Switzerland sandstone, which allows surviving glacial relict *Ledum palustre*.

Key words: Czech Switzerland, the Holocene, *Ledum palustre*, climatic changes, predictive distribution model, pollen analysis, relict