



EFFECT OF LIGHT POLLUTION ON THE SPECIES COMPOSITION OF MOSS COMMUNITIES

A fényszennyezés hatása a mohaközösségek fajösszetételére

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Artificial night lighting has a detrimental effect on ecosystems, altering natural light conditions in terrestrial and aquatic ecosystems. Some of the negative effects of light pollution have already been demonstrated, but countless more research is needed to get a complete picture of its impact on wildlife. The effects of light pollution on insects and birds are already better known, but its effects on flora have only been systematically studied in recent years. Botanical research is largely focused on vascular plants, while little information is available on the effects of light pollution on cryptogams. In this study, the effects of light pollution on the species composition of moss communities were investigated.

The settlement of Bárdudvarnok provided a perfect location for the research, where the modernization of street lamps has taken place in recent years and the luminaries using CFL (compact fluorescent lamps) technology were changed to LED-based street lighting. In 2018 there were 16 lampposts with CFL lighting and 15 columns without luminaires in the settlement, in the same habitat type. In this study, the moss communities at the base of lampposts and lampless columns were compared in terms of species composition. The moss species were listed in a 5-meter circle around the concrete columns. The species compositions of the plots were compared using principal coordinate analysis (PCoA) with the Jaccard coefficient. Multiple Response Permutation Procedure (MRPP) was also conducted with the Jaccard coefficient to test differences in species composition among plots. Altogether 34 moss species were identified in the study areas. In terms of vulnerability, most species belong to the LC (least concern) category, however, the species *Syntrichia latifolia* and *Dicranella howei* belong to the NT (near threatened) category and deserve increased attention. Based on the results of PCoA the species composition of light-polluted and non-light-polluted areas were not separated from each other. The results of MRPP also indicated that moss communities are not significantly differed in species composition in these plots. Although morphometric differences were observed between individuals of the same moss species in the light-polluted and non-light-polluted areas, further studies are needed to confirm these observations. This study was supported by the European Union and cofinanced by the European Social Fund (grant number EFOP-3.6.2-16-201-00014: Development of international research environment for light pollution studies).