



EFFECTS OF FOREST RESTORATION INTERVENTIONS ON BRYOPHYTE AND LICHEN COMMUNITIES: WHAT WE KNOW AND WHAT WE DON'T KNOW

Restaurációs beavatkozások hatása az erdei moha- és zuzmóközösségekre.
Mit tudunk és mit nem?

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The structure and composition of Central European deciduous oak forests have undergone significant homogenisation in recent centuries due to long-lasting intensive forestry practices, resulting in decreased biodiversity. Targeted forest restoration strategies may reverse these processes; however, the success of forest restoration aimed at comprehensive biodiversity increases in epiphyte assemblages is less well known, especially the initial impact. In the framework of the Life4OakForests restoration project, the naturalness of formerly managed and later abandoned Natura 2000 oak habitats was enhanced by increasing stand structural heterogeneity and light and deadwood availability. Our study examined the early effects of restoration interventions on bryophyte and lichen communities and their drivers.

A total of 70 bryophyte and 55 lichen taxa were found. The most species-rich plots did not show traces of former intensive forest management, or the stands were more than 100 years old. Abundance and species richness differed, presumably due to altered light conditions resulting from altered stand structure in the treatment plots. Nonetheless, community composition was only slightly altered by dispersal limitation and slow growth. The responses of bryophytes and lichens to interventions differed in their pace. Although tree size was a crucial variable for both organism groups, the age of the forest stand and tree species diversity differed only for lichens, and the relative abundance of admixing tree species differed only for bryophytes, highlighting their different ecological requirements and sensitivities. Our results showed that restoration interventions aimed at increasing the structural and compositional naturalness of deciduous oak forests may positively impact their epiphyte communities from a conservation perspective on a long-term scale; however, epiphytes need more time to respond to interventions than other organism groups – especially lichens. Maintaining forest continuity, increasing the old-growth attributes of forest stands, maintaining continuous small-gap openings, increasing tree species diversity, and protecting habitat trees may enhance epiphyte diversity in oak forests. Restoration interventions and protection together could be more effective in enhancing epiphyte communities and rare, specialist species.