



DEVELOPMENT AND SURVIVAL OF *BUXBAUMIA* SPECIES' (SHIELD-MOSSES) SPOROPHYTES IN HUNGARY

A hazai koboldmohafajok (*Buxbaumia* spp.) sporofitonjainak fejlődése és túlélése

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Knowledge on the development of *Buxbaumia* species is essential: due to their small size and special life cycle, the success of their detection in the field is sorely influenced by the current developmental stage of sporophytes. Nevertheless, their developmental relations are often ignored or poorly discussed in the literature; moreover, some authors have different opinions on their phenology.

During a systematic study from 2014 to 2020, space-for-time data and in many populations real-time data were also collected on the development of both species' sporophytes in Hungary. Damages and survival of sporophytes were also examined in the monitored stands.

13 developmental stages of *B. aphylla* sporophytes and 12 of *B. viridis* sporophytes have been distinguished and characterised according to morphological features. Sporophytes start to grow in autumn and shed their spores in late spring/early summer. Asexual propagules (gemmae) were produced all year round. Although not all of the many damages (e.g. chewing, breaking, fungal infections, desiccation, freezing) observed on the *Buxbaumia* capsules were lethal (i.e. older, broken/fallen/partially chewed sporophytes may still mature later), the mortality rate was high (*B. aphylla*: about 80%; *B. viridis*: about 50%).

Thanks to studying the same characteristics, the development of the sporophytes of the two *Buxbaumia* species is well comparable, so (contrary to the former findings) they can also be distinguished at very young stages, in autumn. However, based on their developmental characteristics and the environmental conditions, early spring is the most appropriate period for their field surveys. Whether the long-term survival of populations is ensured by sporophytes or gemmae could only be clarified in further studies.