Standovár, Tibor, Soma Horváth, Réka Aszalós (2017): Temporal changes in vegetation of a virgin beech woodland remnant: stand-scale stability with intensive fine-scale dynamics governed by stand dynamic events. Nature Conservation 17:35-56.

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Abstract

The aim of this resurvey study is to check if herbaceous vegetation on the forest floor exhibits overall stability at the stand-scale in spite of intensive dynamics at the scale of individual plots and stand dynamic events (driven by natural fine scale canopy gap dynamics). In 1996, we sampled a 1.5 ha patch using 0.25 m² plots placed along a 5 m × 5 m grid in the best remnant of central European montane beech woods in Hungary. All species in the herbaceous layer and their cover estimates were recorded. Five
patches representing different stand developmental situations (SDS) were selected for resurvey. In 2013, 306 plots were resurveyed by using blocks of four 0.25 m² plots to test the effects of imperfect relocation.

We found very intensive fine-scale dynamics in the herbaceous layer with high species turnover and sharp changes in ground layer cover at the local-scale (< 1 m2). A decrease in species richness and herbaceous layer cover, as well as high species turnover, characterized the closing gaps. Colonization events and increasing species richness and herbaceous layer cover prevailed in the two newly created gaps. A pronounced decrease in the total cover, but low species turnover and survival of the majority of the closed forest specialists was detected by the resurvey at the stand-scale. The test aiming at assessing the effect of relocation showed a higher time effect than the effect of imprecise relocation.

The very intensive fine-scale dynamics of the studied beech forest are profoundly determined by natural stand dynamics. Extinction and colonisation episodes even out at the stand-scale, implying an overall compositional stability of the herbaceous vegetation at the given spatial and temporal scale. We argue that fine-scale gap dynamics, driven by natural processes or applied as a management method, can warrant the survival of many closed forest specialist species in the long-run.

biodiversity: higher plants
habitat: oak-hornbeam forests, beech forests
forest dynamic, gap dynamic, succession
forest structure: herb layer

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