

Erdős, L. et al. (2014): Vegetation pattern along a topographical gradient in a beech forest reserve in the Mecsek Mts. (Hungary). Austrian J. Forest Sci. 131(2):85-106.

Reference: Erdős, László, Alexandra Vida, László Körmöczi, Zoltán Bátori, Csaba Tölgyesi, Adrienne Ortmann-Ajkai (2014): Vegetation pattern along a topographical gradient in a beech forest reserve in the Mecsek Mts. (Hungary). Austrian J. Forest Science 131(2):85-106.

Short reference: Erdős et al. (2014)

First author: Erdős László

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Abstract

Transitions between neighboring vegetation units form one of the central issues in ecology. The topic is especially interesting in the case of natural or near-natural forests, where different forest types are arranged along gradients, interspersed with gaps. In this article, our aim was to identify the spatial sequence of forest types along a topographical gradient in a forest reserve in the Mecsek Mts, Hungary. We wanted to characterize the sharpness of the boundaries between adjacent units, as well as to describe the different segments identified. A belt transect, running from a beech forest into a turkey oak-sessile oak forest, was established. The transect consisted of 376 plots, 2 m² each. The presence of all vascular plant species of the herb layer was registered in each plot along the transect. Vegetation boundaries were delineated both visually (during field works) and objectively (using the multivariate moving split windows – MSW – technique). The segments were compared based on physiognomy, species richness, ecological indicator values, geo-element spectra, and species' coenological preferences. We identified eight segments visually, all of which could be verified by the MSW analysis. The high peaks indicated sharp boundaries, reflecting sudden compositional changes due partly to physiognomic changes, and partly to the steep topographical gradient. MSW peaks were shifted to the north in each case, compared to the visual boundaries, the average spatial difference being 6.14 m. This is consistent with earlier studies on the light regime of the northern edges of the gaps. Forest gaps as well as the xeric end of the transect proved to be more species-rich than the other segments. In contrast, ecological indicator values, geo-element spectra, and species'

coenological preferences did not show marked gap vs. closed forest differences; instead, there were gradual trends in these characteristics from the valley bottom to the valley edge. Thus, the strong topographical gradient had a much larger influence on these features than canopy openness. We hope that our study contributes to a better understanding of the spatial heterogeneity of near-natural beech and oak forests, and it may serve as a starting point for monitoring surveys in the forest reserve of the Mecsek Mts.

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