

# **The variability of the primeval forest's spatial pattern in the Babia Góra National Park**

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Analyzing the primeval forest's pattern in appropriate spatial scales allows to obtain information fundamental to understand its dynamics. Particularly interesting is the spatial distribution of live and dead trees forming the uppermost tree layer and the co-occurrence of trees of various species and sizes. These features largely determine the spatial variability of biomass accumulation, the vertical structure and species composition, and in the case of deviation from randomness suggest appearance of mechanisms that arrange the forest texture into spatially integrated units (e.g., developmental stages or phases).

This paper analyzes the spatial variability of stand volume, species composition and regeneration in a primeval stand located in the lower montane belt in the Babia Góra massif. These characteristics were surveyed on 259 circular plots (of a 7.0 m radius) located in a square grid 20 m × 20 m on the total area 10.36 ha.

The stand volume was 524 m<sup>3</sup>/ha; beech, fir and spruce shared respectively 46 %, 29 % and 25 %. With the average stand volume of 8.10 m<sup>3</sup> per plot, the coefficient of variation was 68 %. Volume distribution was one-sided, with the mode for values below ≤ 2 m<sup>3</sup>. The coefficient of variation of the basal area of live trees was 67 % for single plots, 18 % for the blocks of four adjacent plots and 12 % for the blocks of 25 plots. On 18 % of the plots one of the species dominated in the species composition (volume participation higher than 90 %). The volume of fir and spruce exhibited a directional gradient. The deadwood basal area was 78 % of the basal area of live trees, and spruce and fir accounted for 60 % and 28 % of the total amount of deadwood. The average basal area of dead trees was 0.43 m<sup>2</sup> per plot. This feature's coefficient of variation was 83 % for single plots, 23 % for the blocks of four adjacent plots and 17 % for the blocks of 25 plots. The distribution of dead trees basal area was close to one-sided distribution with the mode for values below 0.05 m<sup>2</sup>. It was concluded that in the analyzed patch of primeval forest the volume of live trees and the basal area of dead trees exhibit rather random spatial variability.