

## Plant species richness of the central European landscape on different spatial scales measured with a new approach

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Our aim was to measure the average plant species richness of the central European landscape on different scales, to analyse its spatial patterns and the correlations with environmental factors. Whereas the majority of biodiversity studies so far has analysed species richness within preconceived plant community types without actually knowing how wide-spread the respective types are in a given landscape, we wanted to get values that are representative for a certain section of a landscape as a whole.

For this purpose, we selected our plot positions within the study area totally at random and irrespectively of homogeneity. In the field, the plot positions were located with the help of a GPS. At each position, we sampled a series of nested plots of 0.0009 m<sup>2</sup>, 0.01 m<sup>2</sup>, 0.09 m<sup>2</sup>, 1 m<sup>2</sup>, 9 m<sup>2</sup>, and 100 m<sup>2</sup>, with four replicates for all plot sizes besides the largest. We recorded all species of vascular plants, bryophytes, and lichens (including non-terricolous taxa) for each of these plots. Additionally, we measured or estimated several structural and environmental parameters (cover values per layer, soil type, soil texture, soil pH, land-use type ...)

We studied two contrasting topographic map sheets in the north German lowlands (Brodowin, Brandenburg, and Lüneburg, Lower Saxony). For the study area in Brandenburg, we found on average 4.2 species on 0.01 m<sup>2</sup>, 11 species on 1 m<sup>2</sup>, and 44 species on 100 m<sup>2</sup> (range: 13–102). On 100 m<sup>2</sup>, vascular plants contributed 73%, bryophytes 19%, and lichens 8% to the total phytodiversity. The most common species was the moss *Brachythecium rutabulum* with a frequency of 75%. Among the ten most frequent species were seven vascular plants (including the neophyte *Impatiens parviflora*) and three bryophytes.

Furthermore, we analysed the frequency distributions of the species and the species-area curves, and compared them between sites and between the two study areas. We also correlated these biodiversity parameters to site conditions and to site heterogeneity.

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