

Patterns of plant species richness of dry grasslands on the island of Saaremaa (Estonia)

S. Boch & J. Dengler

On the island of Saaremaa, different types of dry grasslands (*Festuco-Brometea* and *Koelerio-Corynephoretea*) are still widespread. They occur on shallow residual soils over limestone bedrock, on Weichselian moraines and on Holocene dunes. Our aim was to analyse the patterns of phytodiversity and their probable causes.

In summer 2004, we sampled 231 phytosociological relevés from dry grassland patches of different size, distributed over the whole island and representing the full range of dry grassland types. In plots of 4 m² size, all vascular plants, bryophytes and lichens were recorded, including epigeic, epilithic and epiphytic taxa. For each relevé we estimated the coverage of the vegetation layers, of bare soil and of bedrock, measured the microrelief and soil depth. Organic content, pH value and CEC of soil samples were measured in the laboratory. The height above sea level was derived from topographic maps. We calculated the size of the individual dry grassland patches and the distances between these using aerial photographs.

We applied regression analyses to evaluate the effects of environmental conditions, landscape structure and biotic interactions both on the total and group specific phytodiversity. At 16 selected sites, we also analysed species-area relations (1 cm²-100 m²).

Species densities per plot varied between 1 and 71, with association means from 14.7 to 47.7 (Fig. 1). The proportion of vascular plants per plot ranged from 6 to 100 %, that of bryophytes from 0 to 48 %, and that of lichens from 0 to 78 %.

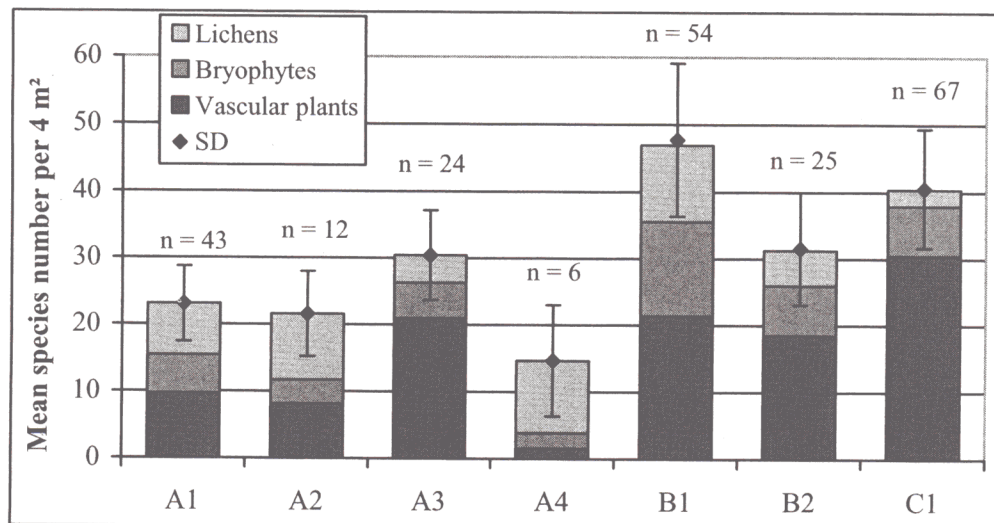


Fig. 1: Total and group specific mean species numbers of the different dry grassland associations. (*Koelerio-Corynephoretea*: A1 *Festucetum polesicae*, A2 *Helichryso-Jasionetum*, A3 *Sileno otitae-Festucetum*, A4 *Caricetum arenariae*; *Sedo-Scleranthenea*: B1 *Crepido-Allietum alvarensis*, B2 *Cladonio-Sedetum*; *Festuco-Brometea*: C1 *Filipendula vulgaris-Helictotrichon pratense* community).

Steffen Boch, Institute of Ecology and Environmental Chemistry, Faculty of Environmental Sciences, University of Lüneburg, Goethestr. 12b, 21335 Lüneburg, Germany. s_boch@web.de