

Patterns of phytodiversity in dry grasslands on Öland (Sweden)

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469 phytosociological relevés (each 4 m²) of dry grasslands in the southern part of Öland were evaluated with regard to patterns of phytodiversity. The species number varies from 7 to 80 per plot. The mean species number decreases from the associations of the Sedo-Scleranthenea (communities on shallow skeletal soils) over the associations of the Festuco-Brometea (mesophytic basiphilous grasslands) to the associations of the Koelerio-Corynepherea (grasslands on sandy soils). It has its maximum in the Gypsophilo-Globularietum (54,4) and its minimum in the Corniculario aculeatae-Corynephorietum canescens (8,0). The mean contribution of bryophytes and lichens reaches from 8% up to 74%.

Correlations of group specific diversity measures against each other and several environmental/structural parameters show differences in the distribution of phytodiversity of cryptogams and vascular plants: The species density of cryptogams is positively correlated with the evenness, but we found no correlation between the evenness and the number of vascular plants per plot. With increasing sum of mean cover degrees of vascular plants the cryptogam species density decreases (Figure 1). This indicates that the competition with vascular plants influences cryptogam diversity. On the opposite, species richness of vascular plants shows a strong linear increase (Figure 2). Therefore, interspecific competition seems not to be important for the within group diversity of the latter. Of all tested environmental parameters soil pH and depth show the strongest correlation with species densities, the latter being positively correlated with the number of vascular plant taxa and negatively with that of lichens and bryophytes.

In spite of the differences in patterns of group specific diversity, the small scale species-area functions (1 cm² to 9 m²) of all investigated Alvar communities mainly show the same picture independent of the proportion of cryptogam taxa: More or less they follow a linear trend in the log-log representation but become gradually steeper for very small areas.

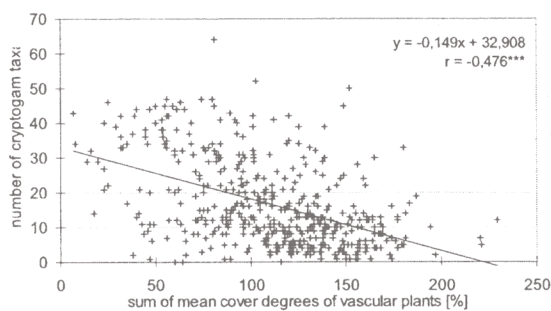


Figure 1: Correlation of number of cryptogam taxa and sum of mean cover degrees of vascular plants ($r = -0,476$ ***, $n = 469$).

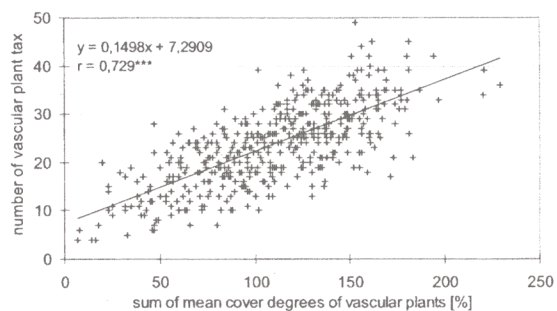


Figure 2: Correlation of number of vascular plant taxa and sum of mean cover degrees of vascular plants ($r = 0,729$ ***, $n = 469$).