Changes in a lichen-rich dry sand grassland vegetation with special reference to lichen synusiae and Campylopus introflexus

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with 4 photos, 11 figures and 3 tables

Abstract. This paper documents and describes the chronological changes in a lichen-rich dry sand grassland vegetation in the Netherlands. It is based on the results of a permanent plot study during 1981–1994. All 3–4 years the dominant lichen synusia and grass species were recorded in each square meter of a 26 × 36 m² plot. The dominance distribution was mapped and dominance transitions were recorded for all square meters. This method quickly provides solid information on vegetation structure and changes, and allows an interpretation in terms of synusial succession.

In 1981 the plot was dominated by the Cladonia glauca synusia Trapeliopsis granulosa-type, Cladonia-Cladina synusia and Cladina portentosa synusia, which were positively associated with dominance pattern of respectively Corynephorus canescens, C. canescens and Festuca ovina, and F. ovina. A strong decrease of the Cladina portentosa synusia could be recorded after a period of dry summers and dry and cold winters (1982–1986) and a strong decrease of the Cladonia-Cladina synusia after a strong increase of the game stock (1989–1990). The Cladonia glauca synusia Trapeliopsis granulosa-type continuously decreased, the neophytic moss Campylopus introflexus continuously increased, finally changing the entire plot into a monotonous, dense moss carpet with an open canopy of Corynephorus canescens. The causes of changes are discussed.

Keywords: disturbance, dominance-frequency, game stock, drought-stress, grasses, lichens, succession, vegetation pattern.

1. Introduction

In the pleistocenic heathland landscape of the Netherlands and northern Germany lichen-rich dry sand grassland vegetation occurs side by side with dry heather vegetation. Contrary to dwarf shrub heath (a.o. DiEMONn & HEIL 1984, LiPPE et al. 1985, AERTS & HEIL 1993), temporal variation in lichen-rich dry sand grassland vegetation is hardly studied by means of permanent plots (DANIELS 1990, RHEENEN et al. 1995, DANIELS & KRÜGGER 1996). Nevertheless it is often considered stable over many years (cf. STOUTJESDIJK 1959, DIERSCHKE 1994).