containing also other tree species. As expected, the field layer was less dominated by light demanding species in 1995 than 1975, though this trend did not continue in 2005. At the same time the cover of forest species has increased. The amount of moisture demanding species decreased significantly from 1975 to 1995, probably due to the draining effect of a denser tree layer. Later this effect seems to have flattened out. Increasing nitrogen indicator values from 1975 until 2005 indicate nutrient accumulation after cessation of grazing and mowing.

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Seed dispersal as a key to species losses in NW Europe: Can ecological restoration reverse the trend?

Insight into factors that determine the assembly of plant communities from a given pool of species is of paramount importance for conservation ecology. We analysed the importance of niche-based processes and dispersal processes for explaining plant losses in The Netherlands during the 20th century. We followed an "eco-informatics" approach by combining large databases containing floristic, phytosociological and functional information. For the floristic information we used the National Floristic Databank (Floron), which comprises more than 7 million records. The National Vegetation Databank (containing about 480,000 vegetation relevées which are integrated in the expert system SynBioSys NL) and the LEDA traitbase (with 25 traits for the Northwest European flora) formed the basis for the functional analysis. Our premise was that differences in the nature of the species in local and regional species pools with regard to functional traits can give important clues to the processes at work in the assembly of communities. Our results indicate that changes in dispersal processes are as important as the more commonly accepted

changes in habitat quality in explaining species losses. We will discuss some restoration efforts in The Netherlands.

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On the problem of scaling plant functional traits from individuals to communities

We offer a simple and flexible methodological framework to analyse trait-based data sets with the objective of scaling functional traits and types across levels of biological organization. The analysis takes a matrix B of individuals or species populations by traits, another matrix W with the performances (qualitative or quantitative) of these individuals or populations in communities, and a third matrix E describing the community sites by environmental factors or ecosystem effects. Cluster analysis of B defines a matrix U with degrees of belonging (uig) of each individual or population to plant functional types (PFTs), which will be crisp if uig = 0 or 1, or fuzzy if uig is in the interval [0, 1]. By matrix multiplication and proper weighting, X = U'W will contain PFT composition of communities and T = B'W the trait means in the communities. Both X and T can be related to E by matrix correlation or linear models. Existing iterative methods can search for an optimal trait subset and group partition taken from B to maximize the relationship between E and X or T. We use as example trait-based data of woody species colonizing *Araucaria* forest patches of different sizes in a forest-grassland mosaic in south Brazil and explore the advantages and complementarities of scaling into X or T to study the role of disperser attraction traits and seed size number trade-off in the colonization process.