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Biotic and abiotic characterisation of embankment vegetations along navigable waterways in Flandres (Belgium)

Introduction

In Europe the area of traditionally managed semi-natural grassland habitats has been reduced dramatically during 20th century (Stoate *et al*., 2009). In highly fragmented landscapes with few or very small semi-natural habitats left, embankments and other small habitat patches can have an ecological importance for the maintenance of semi-natural grassland species (plants: Auested *et al*., 2011 and Cousins & Lindborg, 2008; invertebrates: Saarinen *et al*., 2005) and in improving ecological processes (Tscharntke *et al*., 2011). Consequently, a better knowledge of abiotic variables affecting biodiversity in small habitat patches is desirable.

Materials & methods

We studied the vegetation of embankments along 6 different navigable waterways in Flandres. In total 542 vegetation relevés (of 4 m^2) were made on the slope or crown of embankments. By means of TWINSPAN main clusters of vegetation composition were distinguished. Soil variables were determined in 200 plots, selected in such way that number of plots were equally distributed in main vegetation clusters.

Results

We distinguished 5 main vegetation clusters:

- cluster *00 characterised by *Cytisus scoparius*, *Rumex acetosella*, *Rubus* sp.;
- cluster *010 clustered by *Festuca rubra*, *Achillea millefolium*, *Daucus carota*, *Leucanthemum vulgare*, *Centaurea jacea;*
- cluster *011 typified by *Holcus lanatus*, *Arrhenatherum* elatius;
- cluster *10 classified by *Urtica dioica*, *Galium aparine*, *Anthriscus sylvestris*, *Elymus repens;*
- cluster *11 distinguished by *Symphytum officinale*, *Urtica dioica* (high coverages), *Galium aparine* (high coverages).

Some vegetation characteristics per cluster are shown on figure 1; some soil variables per cluster on figure 2.

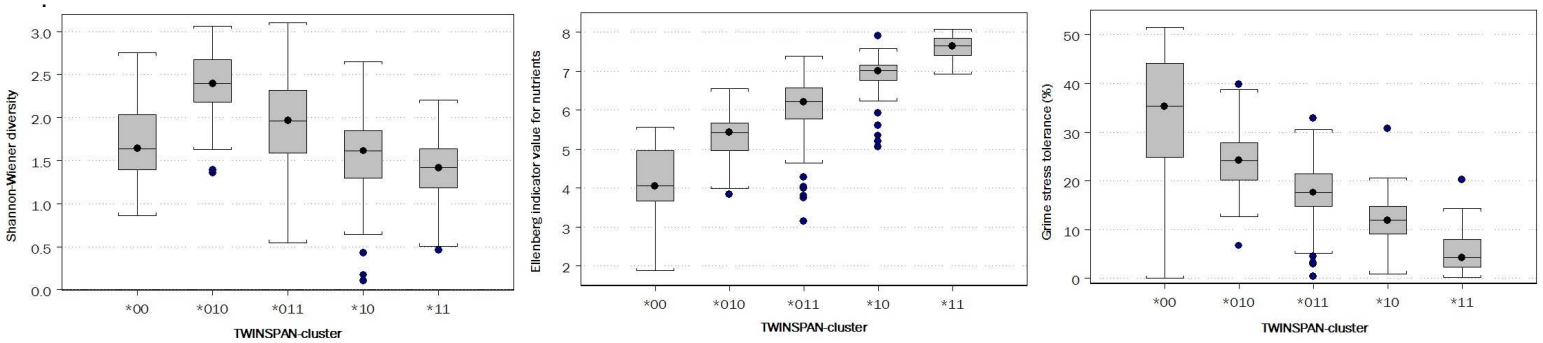

Figure 1. Box-plot diagrams of main clusters and Shannon-Wiener diversity, Ellenberg indicator value for nutrients and Grime's stress tolerance.

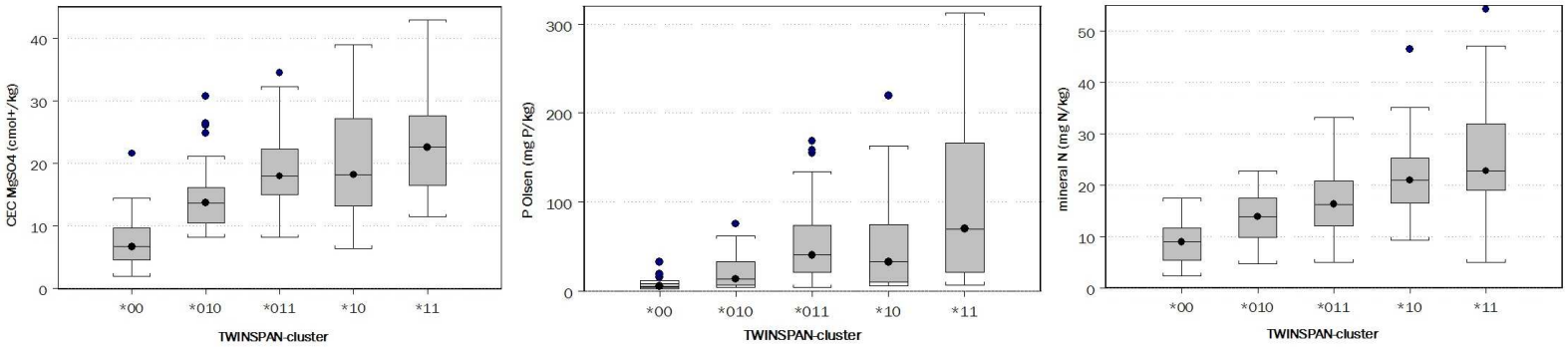

Figure 2. Box-plot diagrams of main clusters and cation-exchance capacity, mineral nitrogen and Olsen phosphorus.

In closing

Understanding the influence of abiotic variables on vegetation composition can contribute to an appropriate ecological conservation, management or restoration of embankments along navigable waterways.

References

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