

[Environmental controls of plant species richness in riparian wetlands: implications for restoration \(Audet et al. 2015\)](#) **[1]**

Wetland restoration projects often focus on mitigating losses of nutrients (nitrogen and phosphorus) toward downstream aquatic recipients and, so far, there is no clear guidance on how to restore environmental conditions to improve biodiversity values in the restored areas. However, to provide such guidance, it is necessary to obtain a better understanding of the factors driving biodiversity in natural wetlands. For this purpose, we investigated plant community characteristics in 35 plots located at 10 Danish riparian wetlands to identify critical factors required to sustain species diversity.

We hypothesized that species richness is influenced by groundwater characteristics and nutrient availability and that threshold values for these environmental variables can be defined to characterize conditions needed to sustain high diversity plant communities. We found that high groundwater level (less than 37 cm depth) and low soil phosphorus content ($<347 \mu\text{g cm}^{-3}$) were two important drivers of plant species richness. Furthermore, at high groundwater and low soil phosphorus content, low nitrogen concentration in the groundwater also favors greater species richness. Our results imply that establishment of a groundwater table close to the soil surface and low nutrient availability are important factors for improving species richness in restored areas.

Keywords: Wetland restoration; Biodiversity; Vegetation; Rich fen; Nitrate; Hydrology; Phosphorus

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