

Parameters structuring macrophyte communities in rivers and lakes – results from a case study in North-Central Poland



We analysed macrophyte species composition and abundance, water chemistry and hydromorphological parameters of all major river stretches and lakes in the catchment of the lowland river Wel, Poland. We studied (i) which hydromorphological and physico-chemical factors best explained macrophyte species composition, (ii) if environmental factors structuring macrophyte communities were different between rivers and lakes; and (iii) if macrophyte indices developed to indicate eutrophication correlated with nutrient concentrations. Based on two-way indicator species analysis, correlation analysis and canonical correspondence analysis, we found that river substrate was most important in structuring macrophyte species composition and abundance in rivers, while water quality parameters were most important in lakes; species richness and diversity were correlated with river size and substrate type in rivers, but not in lakes; the relative abundance of macrophyte growth forms was best explained by total organic carbon and Secchi depth in lakes, but it was not correlated with any of the water chemical or hydromorphological parameters in rivers.

Irrespective of which factors best explained macrophyte community composition, macrophyte metrics developed to indicate ecological status responded most strongly to total phosphorus concentrations, both in rivers and lakes. We conclude that macrophyte metrics are valuable tools for ecological status assessment also in ecosystems where parameters other than nutrients shape macrophyte community composition.

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