The role of species functional traits for distributional patterns in lowland stream vegetation (Cavalli et al 2013) [1]

Aquatic macrophytes suffer from widespread and profound habitat deterioration that has led to dramatic changes in species distributional patterns. We explored linkages between species functional traits and abundance patterns by analyzing mean community trait values in 1083 Danish lowland streams.

We expected that widespread macrophytes would share common traits and that species with smaller ranges would be negatively associated with these traits. We selected 11 traits to characterize the ecological features of 52 amphibious and submerged species. We examined the relationships between species abundance and species traits with multivariate ordination and coinertia analysis (COIA), and identified groups of species with similar distributional patterns and ecological traits by hierarchical cluster analysis. Local abundance and geographical range size of submerged and amphibious species were significantly positively related. Species abundance and species traits tables were significantly correlated, and species were separated into 5 groups based on life form, productivity, meristem characteristics, ability to fragment, and the size of the root-rhizome system. Widespread plant species in Danish lowland streams shared common traits, such as meristem, dispersal, and productivity characteristics, and we infer that these traits are likely to have adaptive value in eutrophic and hydromorphologically disturbed habitats. On the other hand, species with narrower range sizes were characterized by a different set of trait characteristics. We conclude that species abundance and distribution patterns are closely correlated with ecological trait characteristics and that traits associated with resilience to anthropogenic disturbance confer success in Danish streams.

Key words: abundance patterns, disturbance, eutrophication, resilience, weed cutting, aquatic plants, macrophyte, COIA analyses

Publication Date:

Wednesday, 3 September 2014

Full reference:

Cavalli, G., Baattrup-Pedersen, A., Riis, T. (2013) The role of species functional traits for distributional patterns in lowland stream vegetation. Freshwater Science 33: 1074-1085.

Link to DOI:

http://www.bioone.org/doi/full/10.1086/678048 [2]

Links
[1] https://reformrivers.eu/role-species-functional-traits-distributional-patterns-lowland-stream-vegetation-cavalli-et-al-2013
[2] http://www.bioone.org/doi/full/10.1086/678048

REFORM has received funding from the European Union's Seventh Programme for Research, Technological