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Ciliate diversity in shallow lakes in Belgium

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Introduction

Ciliates are a diverse group of protists which play important roles in aquatic ecosystems as grazers of bacteria, phytoplankton and heterotrophic nanoflagellates. Species containing zoochlorellae may even contribute significantly to primary production. Nevertheless, relatively few studies exist dealing with ciliate species composition.

Methodology

To compare limnetic ciliate communities, 30 shallow lakes of contrasting characteristics were sampled twice during summer 2000. In each pooled sample, 200 ciliates were identified up to species level, using the QPS (Quantitative Protargol Stain) method and enumerated.

Results

148 taxa were identified, corresponding to > 20 % of all described freshwater species. Taxon richness varied between 5 and 47 per lake with an average of 23. About 50 % of the ciliates encountered, belonged to the Oligotrichida (*Pelagohalteria cirrifera, Rimostrombidium brachykinetum, Tintinnopsis cilindrata*), 28 % were Prostomatida (*Urotricha furcata, Coleps hirtus viridis*) and 16 % were Hymenostomatea (*Cyclidium* cf. *C. heptotrichum*).

A ''Canonical Correspondence Analysis'' of the dominant (> 0.5 % of total abundance) ciliate species observed in the 30 lakes, divided the ciliate taxa into different groups. *Codonella cratera*, *Tintinnopsis cilindrata* and *Phascolodon vorticella* are found mainly in turbid, often large lakes with high SPM concentrations, high phytoplankton biomass and without submersed macrophytes.

A second group contains species which are found mostly in clear lakes with low SPM concentrations, low phytoplankton biomass but without submersed macrophytes (e.g. *Limnostrombidium planctonicum*, *Pelagostrombidium mirabile*). *Frontonia* sp. and *Urotricha globosa*, among others, are found mainly in lakes with a pronounced cover of submersed macrophytes. *Pelagohalteria cirrifera*, *Rimostrombidium brachykinetum* and *Urotricha furcata* are found in all lake types).

This research is part of the BIOMAN-project (BIOdiversity and huMAN impact in Shallow Lakes) which deals with a comparison of the biodiversity of organisms belonging to the microbial loop and the classical food web in a variety of meso- to hypertrophic shallow lentic waters along a north-south gradient in Europe.

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