

ABSTRACT

Artificial ponds are excellent for the study of phytoplankton ecology. They permit repeatable initial conditions and sufficient replication of independent experimental units in complex experiments to test hypotheses about the control of structure and function in natural communities. There were 20 experimental ponds constructed in Kokořínsko Protected Landscape Area, from which samples were taken and analyzed. This study was part of the EU BIOPOOL. During the first two years after the filling of the ponds the colonization and the seasonal development of phytoplankton communities in the ponds were examined. The phytoplankton species composition was determined, then species richness and relative abundance of individual taxa were quantified. Species composition data were compared with the environmental parameters measured (temperature, oxygen concentration, pH, transparency, conductivity, depth, chlorophyll-*a* concentration, and zooplankton). In the spring 2007, the ponds were periodic, and followed a similar trend over time (February–April). There were dominated by the following taxonomic groups: Dinophyta, Chrysophyta, Cryptophyta, and Euglenophyta. After installing foil on the bottom of the ponds, the ponds were of permanent character. In terms of environmental parameters, the individual ponds differed in conductivity, oxygen concentration, transparency, depth, chlorophyll-*a*, shade and in zooplankton species richness and composition. In the period July 2007–December 2008, the following taxonomic groups dominated: Chlorophyta, Cryptophyta and Euglenophyta. In July 2007, the ponds were inoculated with *Daphnia*, which significantly influenced further development of the ponds in terms of phytoplankton species richness and diversity. The inoculated ponds were quite similar in species composition. Species richness and diversity in ponds with *Daphnia* were lower in comparison with ponds without cladocerans. All the environmental parameters measured explained 8,5 % of the variability in species composition, the variable *Daphnia* explained 1 % of the variability.

Keywords: experimental ponds, phytoplankton, colonization, seasonal succession