

Seasonal dynamics of phytoplankton communities residing in different types of shallow waters in the Kuibyshev Reservoir (Russia)

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Abstract

© 2015, The Author(s). Unstable water level regime in the Kuibyshev Reservoir affects coastline formation as well as allocation and development of aquatic vegetation on the coast. These factors determine the composition and structure of biocenosis in shallow waters of the reservoir. The aim of this study was to reveal the patterns of formation, distribution and dynamics in phytoplankton communities in the shallow coastal waters on two reaches of the Kuibyshev Reservoir (Volga and Volga-Kama, Russia). These reaches differ by the extent of anthropogenic influence, protection from wind and waves and other environmental conditions. The research was done during the growing season of 2002 in the thickets of *Typha angustifolia* L. and *Phragmites australis* (Cav.) Trin. Ex Steud., as well as in the open water areas. Seasonal changes in the total biomass and abundance of phytoplankton in the thickets of macrophytes and in the open areas of the reservoir differed little. On the outer edge of the thickets, where intensive contact with the open water occurs, the highest algal species diversity and abundance were revealed, which is known as the “edge effect”. Two peaks of phytoplankton development with maximums in June–July and late August were observed. By the end of the summer, a decrease in water level led to the autumn outbreak in volvocine algae abundance and biomass. The maintaining of an optimal water level in the reservoir is recommended for controlling of water “blooming” and thus maintaining high water quality.

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Keywords

Algae, Phytoplankton diversity, Phytoplankton dynamics, Thickets of macrophytes, Water reservoir