The aim of the thesis was to explain expansion of cyanobacterial blooms and the change of their species composition in surface standing waters during the last 2-3 decades as a result of fishery management, land use in catchments, and climate change. Cyanobacteria possess a range of unique and highly-adaptable eco-physiological traits, which enable them a mass occurrence and a dominance over the other phytoplankton groups under recent anthropogenic changes (nutrient loading and rising temperatures). Moreover, many species of cyanobacteria produce cyanotoxins, which increase their resistence against zooplankton grazing and cause severe deterioration of the water quality.

In consequence of changes in fishery management (a decrease in the use of superphosphate as a fertilizer during the year 1970), the fish stock density increased and the clear water phase disappeared. This is responsible for a change in species composition of cyanobacterial water blooms. Summer blooms of *Aphanizomenon flos-aquae* were replaced with *A. flos-aquae* var. *klebahnii*. The current composition of water blooms in ponds differs considerably from the typical composition in the 1990s. For example, recent expansion of *Woronichiniana naegeliana* is caused by the higher stock densities and the shift from a two-year cycle of fishery management to longer cycles.

Eutrophication of lakes and reservoirs is a result of an excessive supply of nutrients from catchments, due to agriculture practices (using industrial fertilizers, intensification), sewage waters, and the use of phosphate detergents. Changes in land use (e. g., drainage of wetlands) lead to water erosion and a higher load of phosphorus to catchments.

Climate change is expected to bring about longer, more stable periods of summer thermal stratification, and precipitation extremes - flood flows that cause a release of hypolimnetic phosphorus during mixing and droughts that lead to concentrating the nutrients. The development of cyanobacterial blooms depends mainly on nutrient concentrations and the increasing temperature is a factor that enhances this effect. Moreover, eutrofication and climate change create optimal conditions for spreading alien tropical species in the temperate zone.