SUMMARY

Cyanobacterial blooms caused by the massive growth of cyanobacteria in waterbodies are the serious threat to the integrity of biocenoses and the functioning of freshwaters. Many species of cyanobacteria have the ability to release cyanotoxins that can negatively affect aquatic organisms by modifying their species compositions, abundance or biomass and accumulate in the trophic chain. Relationships between ciliates, an important component of zooplankton, and cyanobacteria have so far been rarely discussed in comparison with metazooplankton–cyanobacteria relationships. Only recently has there been an extension of the PEG model (Plankton Ecology Group; Sommer et al., 2012) to include ciliates as important consumers of bacteria and phytoplankton.

The aim of my doctoral thesis was to evaluate whether mass cyanobacterial growth is a factor affecting ciliate assemblages in shallow eutrophic waterbodies.

In my work, I checked whether ciliates, as an important component of zooplankton, creates an alternative pathway for carbon and energy transfer in the trophic networks of shallow oxbow lakes **(article 1: Microbial Ecology 2017)**. I have analyzed the effect of cyanobacterial blooms, and demonstrated that they can modify the composition and size of ciliate assemblages in eutrophic waterbodies, especially those most threatened by anthropopressure **(article 2: Microbial Ecology 2018).** Using laboratory experiments, I tested whether cyanobacterial toxins can be a factor regulating the growth of both individual species and entire assemblages of ciliates **(article 3: Hydrobiologia 2019).** I also demonstrated that cyanobacterial blooms enhance the ciliates–predator copepod relationship **(article 4: accepted for publication in Hydrobiologia)**.

Understanding the behavior of ciliates in the presence of cyanobacteria allowed us to extend our knowledge on carbon transfer in the trophic network during cyanobacterial blooms and allowed me to develop new hypotheses to understand more precisely the phenomenon of cyanobacterial blooms. The results of my study are important in terms of changes that occur in aquatic ecosystems due to climate change. Global warming is a factor that increases the proliferation of cyanobacterial blooms.