

Progressive eutrophication and observed climate warming are reasons of numerous changes of aquatic ecosystems. Higher mean annual temperature and increased nutrients availability induce intensification of natural processes, what sometimes brings irreversible changes in functioning of ecosystems, especially vulnerable ones, such as shallow water bodies. In natural cycle of seasonal succession of these reservoirs zooplankton develops with few-day-lag after phytoplankton which constitutes its food source. In undisturbed environments the dominating group of planktonic crustaceans are large cladocerans of genus *Daphnia* (Cladocera), which are further prey of juvenile and adult planktivorous fish. In effect of human activity (increased eutrophication and climate changes) long-lasting cyanobacterial blooms may become more frequent and harmful to aquatic trophic networks. Cyanobacteria are poor quality food (low nutritional value, potential toxicity) for planktonic animals, what may induce modification of their composition. Moreover, raise of mean annual temperature may promote blooms of filamentous cyanobacteria which (according to their elongated shape) may clog filtrating apparatus of cladoceran and inhibit food uptake. Poorly adapted cladocerans of genus *Daphnia* may decline during the occurrence of cyanobacterial bloom, and their place in trophic net may be filled with more selectively feeding copepods (belonging to orders Cyclopoida and Calanoida). Due to higher selectivity of food particles and wider spectrum of potential food sources (ability of predatory feeding) importance of copepods during the bloom periods may increase. The aim of the project is to define the trophic position of selected planktonic crustaceans (*Daphnia* spp., cyclopoid copepods, calanoid copepods) and to find how the cyanobacterial bloom influence source of food and trophic position of selected groups of freshwater planktonic crustaceans.

Research will be conducted on five shallow water bodies located in area of Cracow: three oxbow lakes of Vistula river (Tyniec 1, Tyniec 2, Jeziorzany) and two artificial ponds (Podkamycze 1 and Podkamycze 2). In Tyniec 1, Tyniec 2, Podkamycze 1 and Podkamycze 2 water bodies cyanobacterial blooms occur annually, they differ in periods of occurrence in the season, duration and species forming the bloom. Blooms do not occur in Jeziorzany oxbow lake, this water body will be treated as a control. Study will be consisted of qualitative and quantitative analyses of zooplankton (including ciliates), phytoplankton and analyses of stable isotopes of particular groups of planktonic crustaceans. Use of isotopic methods in freshwater research is innovatory approach. So far, these methods were used mainly in marine zooplankton researches.

Analyses of isotopes signatures will allow precise identification of source of food (on basis of carbon stable isotopes  $\delta^{13}\text{C}$  signature), trophic level (on basis of nitrogen stable isotopes  $\delta^{15}\text{N}$  signature) of each group, and defining if their isotopic niche (described on basis of  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  signatures) changes during the cyanobacterial bloom. The reason of undertaking described issue is need of better recognition of changes induced by cyanobacterial bloom. Understanding of complexity of interactions among ecosystems of shallow water bodies is crucial for their conservation, biodiversity sustaining and proper fishery management.