

This thesis is based on five publications dealing with plankton assemblages of lakes in two heavily acidified mountain areas in Central Europe, the Bohemian Forest and the High Tatra Mountains. As both lake districts are the object of long-term systematic ecological research, a unique set of complex limnological data was gathered, enabling a comparison with other affected regions throughout the world and also some attempts at generalisation. My role in the team consisted chiefly in the study of phytoplankton as the key component of the food web. I was mainly concerned with the structure, seasonal development and function of the phytoplankton assemblages, and I also focused on the evaluation of general biological response to the current chemical recovery of the lakes from acidification.

The main questions addressed in this thesis with an emphasis on phytoplankton assemblages are the following:

- What is the recent progress in chemical and biological recovery of the Bohemian Forest lakes from acidification?
- What are the key factors and mechanisms influencing species composition and structure of plankton biomass in the Bohemian Forest lakes?
- What is the role of episodic acidification in shaping both phytoplankton abundance and biomass in a non-acidified high mountain seepage lake (L'adové Lake, High Tatra Mountains)? Are there any changes associated with the decrease of acid deposition?