

## **Abstract**

There are many areas with extreme environmental conditions in the world. One of them are high mountain lakes which are located above treeline. Bachelor thesis presents the main abiotic conditions as determinants of phytoplankton structure in high mountain lakes. It has to cope with significant changes in light conditions and high intensity of sunlight during ice-free periods and with an important diminution of radiation by snow and ice cover. The thesis also discusses the influence of temperature, which is related to the duration of the ice and snow cover and a stratification of lakes. It characterizes local factors, such as topographic shading, morphology of lakes and character of basins, which affect chemical and physical properties of lakes. The thesis also mentions the impact of atmospheric deposition and other factors on nutrient concentrations in the water column. In addition, it discusses the adaptations of phytoplankton to environmental conditions, which include development of deep chlorophyll maximum, biosynthesis of protective compounds and nutrition strategy (mixotrophy). The thesis shows that there are many specific abiotic factors, which influence phytoplankton in high mountain lakes and all these factors interact. This results in a characteristic species composition with prevalence of flagellates.

*keywords:* high mountain lakes, phytoplankton, ice and snow, temperature, nutrients, mixotrophy, UVR and PAR