

## ABSTRACT

Recently, there has been a growing interest in polar biology related to efforts towards understanding the consequences of climate change on terrestrial and limnetic biota. Due to species specific strong relationship to physico-chemical parameters diatoms (Bacillariophyta) represent an excellent tool for studying the impact of environmental changes in polar regions.

The aim of M.Sc. thesis is to present results concerning diatom taxonomy, ecology and biogeography in Antarctic (James Ross Island) and sub-Antarctic (Gough Island) regions. Furthermore, the description of new species confirmed the highly specific character of Antarctic diatom flora. This thesis is divided into four parts.

The first part (Chapter 1) contains results of primary research on the structure of diatom communities in seepages and streams on James Ross Island (Antarctica). Studied habitats were compared regarding both diatom flora and basic physico-chemical characteristics.

The second part (Chapter 2) includes the description of three new non-marine pennate diatom species (*Diadesmis inconspicua* Kopalová & Van de Vijver, *Eolimna jamesrossensis* Kopalová & Van de Vijver and *Luticola truncata* Kopalová & Van de Vijver), which were found in seepages in the vicinity of the Czech Antarctic Station “J.G.Mendel” on James Ross Island (Antarctica).

The third part (Chapter 3) presents the diatom flora in the inland streams, seepages and lakes of McMurdo Dry Valleys and James Ross Island (Antarctica). *Luticola austroatlantica* Van de Vijver et al., *L. dolia* Spaulding & Esposito, *L. laeta* Spaulding & Esposito and *Muelleria supra* Spaulding & Esposito are described as new species. A unique composition of diatom communities with high proportion of species with limited distribution is demonstrated.

The final chapter, (Chapter 4) describes a new aerophilic *Orthoseira* species, *Orthoseira gremmenii* Van de Vijver & Kopalová from bryophyte mats on Gough Island, located in the southern Atlantic Ocean.