

Abstract

The occurrence of some diatoms depends on degree of pollution and water quality. Due to this attribute are diatoms used as indicators for the environmental bioassessment. But the maximum use of diatoms for this purpose is complicated by high number of species which are defined based on the ultrastructural morphological features which are indistinguishable without the electron microscope.

The aims of this study were to find out the influence of environmental factors, types of habitat and geography on the structure of diatom community. And find out if richness of higher taxonomic levels is correlated with species richness, in this case if it responds with the genetic diversity within diatom species complex *Frustulia crassinervia-saxonica*.

In this study, 49 permanent slides from natural samples were analyzed. Samples were taken from benthos of different types of freshwater habitat – lakes, dams, pools, peat bogs, stream, wet wall on diverse localities in Europe, Canada, Greenland, Chile and New Zealand. In all slides were counted 300 cells which were determined based on the morphological features on genera level.

Altogether 43 benthic genera were identified. The results of this thesis showed that number of genera correlated with pH gradient but do not correlate with other environmental factors – conductivity, altitude, amplitude temperature and freezing days. The structure of diatom benthic communities was influenced by conductivity. These results correspond with already published studies. Subsequently, was observed that diversity of diatom community corresponds with the genetic diversity within the genus *Frustulia*.