

Abstract

This bachelor thesis summarizes the most commonly used species concepts in the class Zygnematophyceae. This group of algae and the molecular markers used in the zygmatophytes' molecular phylogeny will be presented in this thesis. Zygnematophytes have unicellular or multicellular forms and they generally occur in freshwater habitats. Desmids are useful as indicators of water quality and they are also used for scoring of conservation value. Therefore it is important to have the species well defined. The confusion in defining of desmid species was caused by often very variable morphology. Some authors had different opinions on the classifying of desmid species and their subunits. The combination of molecular phylogeny, electron microscopy and geometric morphometrics was used in revealing of (pseudo)cryptic species in the genera *Micrasterias* or *Xanthidium*. The geometric morphometrics was helpful for finding of important details for distinguishing of particular pseudocryptic species.

Key words: cryptic and pseudocryptic diversity, conjugation, desmids, *Micrasterias*, *Euastrum*, *Xanthidium*, molecular phylogeny, taxonomy, geometric morphometrics, biogeography, green algae