

Abstract

The genus *Micrasterias* comprises one of the most beautiful organisms. It attracts, due to its spectacularly shaped cells, the attention of scientist and amateur biologist almost for almost 200 years. This thesis summarizes the current knowledge about these extraordinary organisms. The first part deals with the morphology and the life cycle of these algae. They share a unique type of reproduction (conjugation) with the other representatives of the class Zygnematophyceae. The second part concerns phylogeny of this genus. Several morphologically distinct species have been revealed with the aid of molecular phylogenetic methods to belong to the genus *Micrasterias*. A polyphasic evaluation of three species complexes within this genus also revealed an extensive hidden diversity. The last chapters summarize the knowledge about the influence of hidden diversity and accelerated morphological evolution on our understanding of diversity and biogeography of these organisms.