This thesis is a literature review summarizing methodology and the possibility of use of diatoms (Bacillariophyta) for paleoecological reconstructions of extinct lacustrine ecosystems. In addition, the theoretical part of the thesis is devoted to basic characteristics, evolutionary history and ecology of the group, lakes and the fossil record. In the practical part, two samples of sediments of a fossil lake that has been discovered and studied within the Morava Project in Strážnické Pomoraví are compared.