

## Abstract

The silica scale shape variation in *Synura echinulata* has been investigated only in laboratory conditions, so far. The aim of this thesis was to study scale shape variation in natural populations and to determine which environmental parameters influence the scale shape. The scale shape variation was investigated using landmark-based methods of geometric morphometrics. Scale shape changes related to environmental factors were analyzed using the two-block method PLS (Partial Least-Squares analysis) and adonis (R). The scale shape was mostly influenced by locality, pH and altitude. Shape distinguished populations of *S. echinulata* probably exist in different localities. The more distant localities are, the less similar are scales of *S. echinulata* in their shape. This scale shape variation is probably genetically determined, even though all so far sequenced populations belong to the same species. High morphological disparity which was probably caused by anthropogenic pollution, was recorded in the locality Brdy.

During sampling of the natural populations of *Synura echinulata* in the Czech Republic, several localities representing a significant reservoirs of species diversity, were found. Therefore, the thesis was extended and biodiversity research in the Czech Republic was added. A few samples were taken from Aquitaine region (south-western France), samples were searched for silica-scaled chrysophytes. Eighty-four taxa of chrysophytes was observed in thirty-seven localities (comprising thirty-three in the Czech Republic and four in France).

*Mallomonas* cf. *jejuensis*, *M. labyrinthina*, *M. madagascariensis*, *M. palaestrica*, *Chrysosphaerella coronacircumspina* and *Paraphysomonas poteriophora* were reported for the first time from the Czech Republic. *M. cf. jejuensis*, *M. labyrinthina* and *M. madagascariensis* lost the status of a Asian, North American and African endemics, respectively. In Pekelské Ponds at the southeastern part of Liberec, a new species *Mallomonas decora* sp. nov. was discovered and formally described. Considering a high number of recorded taxa at several localities in the Czech Republic, these sites may represent the world „hotspots“ of Chrysophytes with extremely high ratio of local to global species diversity.

Key words:

*Synura echinulata*, silica scales, shape dynamics, Geometric morphometrics, Synurales, Paraphysomonadales, hotspots