ABSTRACT

Genus *Chydorus* or more specifically the species of *Chydorus sphaericus* represents an extremely tolerant freshwater organism, which occurs in littoral zone of almost all kinds of aquatic habitats all over the world. It is usually associated with submerged macrophytes or substrate and also plays a key role in food webs of both vertebrate (fish) and invertebrate predators. Not only is this species in most localities the most common chydorid, but it is quite often the most common filtering cladoceran. Moreover, due to its little morphological variation most small globular representatives of the genus *Chydorus* were in the past all incorrectly ascribed to *Chydorus sphaericus*. However, thanks to more detailed studies it was suggested that so called species *Chydorus sphaericus* was not in fact a single taxonomic entity, but a group of several closely related species. It is clear today that for correct taxonomic desision it is necessary to combine all ecological, morphological, and genetic methods.

The aim of this study was to explore genetical and morphological variation in populations of *Chyrodis sphaericus* from localities representing different sets of environmental factors. Four model localities were chosen: eutrophic ponds, temporary pools, mountain lakes and waterbodies affected by mining activities. The genetic structure was tested by comparing DNA sequences of partial mitochondrial gene 16S rDNA. The morphological variability was examined mainly by elliptic Fourier methods which the focus on the complex outlines of studied organisms.

Based on DNA sequences, all studied populations of the genus *Chydorus* belong to the species *Chydorus sphaericus*. There was very little genetic divergence among populations (0,1 – 1,8 %). Populations formed two distinct clades in the fylogenetic reconstruction (high mountain populations and lowland populations). The high mountain clade also formed a distinct group in computed haplotype network. In the morphometrical analysis, populations divided according to the type of locality, although this distinction was not statistically significant. However, populations from all included localities differed significantly in size, mountain populations being larger than lowland ones.

This study brings the first combined results of genetical and morphometrical analysis of populations of *Chydorus sphaericus* (or of the family Chydoridae in general), and demonstrates great potencial for body outlines analysis into better understanding of its ecology.