

ABSTRACT

This thesis focuses on ecological processes among plankton organisms. It especially questions the influence of food quality on growth and survival of freshwater plankton. I focused on the influence of various ratios of nitrogen and phosphorus in available food. I am also interested in finding out the food requirements of chosen consumer *Daphnia longispina*. Within this broad topic, I specify a question, whether various quality and quantity of food influences the life history parameters of the species *Daphnia longispina* and whether the absence of common species of Cladoceran *Daphnia longispina* in Plešné Lake is caused by unsuitable quality of food.

I have bred *Daphnia longispina* in laboratory conditions for two years. I fed it by algae *Monoraphidium dybowskii* isolated from Plešné Lake and grown in two media P-limited (C:P 1174), P-unlimited (C:P 290) and three concentration (1,2, 4 mg C/L).

Cladocerans fed by food from medium that had a C:N:P ratio approximately the same as can be found in Plešné Lake (C:P 1174) lived for a significantly shorter period of time and during the experiment they did not reproduce even in the case with the largest amount of food (4 mg C/L). This is a possible reason why *Daphnia longispina* did not return to Plešné Lake after the period of strong acidification, climax of which was in the 1980s. From the results I can suggest that the food (*Monoraphidium*) is unsuitable for this Cladoceran by its C:N:P ratio, even though there is excessive amount of food in the lake.

Keywords: Stoichiometry, C:N:P, *Daphnia longispina*, Plešné Lake, zooplankton