

Abstract

Acidic atmospheric deposition and acidification of soil and water on the Earth's surface, due to emissions of sulfur and nitrogen into the atmosphere, have led to drastic changes in the composition of surface waters and their biota in many regions of the world over the last century. The number of species and biomass of phytoplankton, zooplankton and benthos were reduced, or some components (zooplankton, zoobenthos, fish) became extinct. In the Jizera Mountains (Northern Bohemia, Czech Republic), the man-made acidification has always been combined with a natural acidity (dystrophy) of waters, caused by a high amount of organic acids. Despite a strong recovery of water chemistry from acidification, that has started in the 1990s, biological recovery is delayed and much more complex. This master thesis is a study of the succession of zooplankton (crustaceans) in mountain reservoirs Souš, Bedřichov and Josefův Důl after decades of strong acidification.

Biological recovery from acidification has been in progress differently in the drinking water reservoir Souš, which has long been limed, in the Bedřichov reservoir with naturally high content of organic material, and in the drinking water reservoir Josefův Důl, which is the largest and deepest one and which was most affected by acidification. Recovery of biological components of water in the case of crustaceans is partly covered with the naturally acidic character of the water, moreover, it was influenced by liming and re-introduction of salmonid fish. Throughout the whole observing period, a typical dystrophic water species *Ceriodaphnia quadrangula* was dominating in on all the reservoirs. In the first few years, a significantly acidotolerant cladoceran *Chydorus sphaericus* was present in spring and summer. Improving water quality had returned some native species (*Daphnia longispina* gr., *Bosmina longirostris*, *Eudiaptomus gracilis*) and also new species (*Polyphemus pediculus*, *Holopedium gibberum*, *Sida crystallina*, *Cyclops strenuus*) have occurred. All three reservoirs are populated by stable populations of brook charr (*Salvelinus fontinalis*) since the 1990s, Souš is currently inhabited by a brown trout (*Salmo trutta* m. *fario*) as well. The results suggest that biological recovery from acidification is after the improvement of chemical conditions of water significantly conditioned by biotic factors such as availability, quantity and quality of food, competition, predation and life strategy of species.