

Abstract

There is currently a rapid decline in the amount in freshwater species and they face extinction. The risk of extinction of freshwater organisms is much greater than that of terrestrial ones, and almost 40 % of freshwater fish are currently facing extinction. In addition to the overexploitation of freshwater ecosystems and their degradation, eutrophication is one of the most significant threats to river ecosystems, leading to significant changes in biodiversity. Eutrophication causes severe changes in river ecosystems, which have a positive effect on some fish species but an adverse effect on other fish species. Due to eutrophication, water becomes turbid due to the development of cyanobacteria and algae, changes in the oxygen concentration in the water, pH level fluctuation, the presence of toxic substances and clogging of the bottom with fine sediment. The aim of this master thesis was to describe the influence of environmental factors related to eutrophication on the number of selected fish species caught in the Czech Republic, in the Vltava and Ohře river basins, in a total of 47 locations. Individual environmental factors (14), which describe changes in the ecosystem caused by eutrophication, were tested for the caught fish using generalised linear mixed models (GLMM). The results of my work indicate a statistically significant declining trend (expressed as CPUE) of all selected fish species that were caught during the years 2000–2018. At the same time, there are obvious differences in the impact of eutrophication on individual fish species. Common bream reacts positively to the chemical oxygen demand and European chub to phosphates, on the contrary, both react negatively to dissolved organic carbon and European chub to chlorophyll-a. The European perch, the northern pike and pikeperch react negatively to dissolved organic carbon and nitrates, while all these species react positively to total nitrogen. In addition, the declining trend in perch is evident in solutes and in pike with chlorophyll-a. Common barbel is negatively affected by ammonia nitrogen at the same time with solutes.

Key word: eutrophication, river, fishes, CPUE, environmental factors

