ABSTRACT
The occurrence of ichthyofauna on the territory of the Jizera Mountains (Northern Bohemia, Czech Republic) is limited, besides other factors, by the water chemistry. pH value and pH-related concentration of inorganic monomeric aluminum (Ali) are crucial parameters of the water, determining the survival of fish in streams. Low pH and high concentrations of Ali cause severe damages to fish gills. The thesis deals with the influence of the water chemistry on distribution of ichthyofauna in the Jizera Mts and gill morphology in brook charr (*Salvelinus fontinalis*), a dominant fish species of the upper plateau of the mountains. The results show that the species diversity of fish in acidified streams is lower than that in streams without meaningful acidic episodes. Histopathological analyses of gills of brook charr individuals from an acidified stream confirm, that low pH values and high concentrations of Ali have a cummulative effect and lead to degenerative changes on gills.

Key words: The Jizera Mountains, ichthyofauna, brook charr, gill morphology, water chemistry, toxic aluminium, acidification