

University of South Bohemia in České Budějovice  
Faculty of Science

**Spatial and temporal changes of  
benthic macroinvertebrate assemblages  
in acidified streams in the Bohemian  
Forest (Czech Republic)**

RNDr. Thesis

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### **Annotation**

Two outflows from atmospherically-acidified Čertovo and Laka lakes in the Bohemian Forest in the Czech Republic were surveyed in 2005 and 2007. Water chemistry and macrozoobenthic community composition in longitudinal gradient of both streams were analyzed to determine the present status of the streams. Streams' chemistry reflects the current situation of both lakes. The progress in chemical reversal to natural conditions was observed in longitudinal gradients of both streams (greatly induced by chemically-inert tributaries). Macrozoobenthic recovery was evident only in Laka Lake's outflow, mainly by increasing Ephemeroptera and Trichoptera taxonomy richness in longitudinal gradient. In Čertovo Lake's outflow, there were no considerable changes in benthic community composition, because chemistry in the whole locality of Čertovo Lake was limiting for acid-sensitive taxa.

### **Declaration [in Czech]**

Prohlašuji, že svoji rigorózní práci jsem vypracoval/a samostatně pouze s použitím pramenů a literatury uvedených v seznamu citované literatury.

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Mgr. Jana Peltanová

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### **Co-author agreement**

The co-author Josef Matěna fully acknowledge that Jana Peltanová is the first author of this publication. Jana Peltanová was responsible for sorting and determination of samples and writing the manuscript and was participating on macrozoobenthos sampling and statistical analyse of data with the help of co-authors.

Josef Matěna

This thesis originated from a Faculty of Science, University of South Bohemia.



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## **Spatial and temporal changes of benthic macroinvertebrate assemblages in acidified streams in the Bohemian Forest (Czech Republic)**

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### **Abstract**

Outflows from two atmospherically acidified lakes in the Bohemian Forest were studied in 2005 and 2007. While Lake Čertovo has been strongly acidified (~pH 4.6), Lake Laka was only slightly acidified in the past and is recovering now (~pH 5.2). The water chemistry and macrozoobenthos composition were analysed along longitudinal gradients of both lake outflows to determine the present status of their streams. A certain progression in stream chemistry to more neutral conditions was observed along the longitudinal gradients of both streams. However, a possible recovery of macrozoobenthos was evident only in the Lake Laka outflow, mainly via an increasing number of Ephemeroptera and Trichoptera taxa, and an increasing number of *Gammarus fossarum*, both along the longitudinal gradient and during the period of study. In contrast, no considerable changes were observed in the macrozoobenthos composition of the Lake Čertovo outflow, presumably because its chemistry was harmful for acid-sensitive taxa such as Ephemeroptera and Trichoptera. Plecoptera and Chironomidae were the most numerous groups in this stream. The biological recovery of both streams will depend on further chemical improvement in their catchments as well as on the dispersal ability of benthic organisms.

Keywords: atmospheric acidification; stream recovery; Lake Laka; Lake Čertovo

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