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Tímea Chamutiová & Ladislav Hamerlík (eds.)



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Influence of fish introduction on subfossil Chironomidae in a mountain lake (Vyšné Račkovo pleso, Tatra Mts.)

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Introducing non-native fish into mountain lakes brings a range of direct and indirect consequences for the entire ecosystem. The presence of fish affects nutrient dynamics and by selective predation changes the structure and biomass of zooplankton and benthic fauna. Lakes of the Tatra Mountains, with two exceptions, were without a natural fish population in the past. Extensive but very weakly documented stocking of some lakes began in the mid-19th century. The species introduced to the Tatra lakes were mainly brown trout (*Salmo trutta* m. *fario*) and rainbow trout (*Oncorhynchus mykiss*) and in the Western Tatra lakes also alpine bullhead (*Cottus poecilopus*) as a natural food for brown trout. Since we do not know when exactly fish introduction took place and how it influenced the original lake ecosystem, we carried out a paleolimnological survey of the sediments of a mountain lake in the West Tatra Mts. The study lake, Vyšné Račkovo pleso, is a small lake (0.7 ha, max. depth 12.3 m) of glacial origin situated at 1697 m a.s.l. According to the historic data, populations of brown trout and alpine bullhead were introduced to the lake in the past and while the population of the trout went extinct, bullhead remained in the lake until now. To study the influence of changes in fish population on subfossil Chironomidae, a 24 cm long sediment core was taken from the deepest part of the lake in November 2018. In general, this amount of sediment accumulates in the nutrient poor Tatra lakes for more than 200 years. We have identified 30 taxa of Chironomidae from five subfamilies. Lacustrine taxa, such as *Heterotrissocladius marcidus*, *Tanytarsus lugens*-type and *Paratanytarsus austriacus*-type were dominating together with the rheofilous *Eukiefferiella fittkaui*-type and *Diamesa* spp. The results indicate that fish introduction did not impact significantly the taxonomic composition and diversity of Chironomidae. Changes in the assemblage composition in the youngest sediments with the extensive occurrence of thermally plastic taxa indicate warmer conditions. Results of dating and the analysis of other proxies, such as diatoms and cladocerans will bring a more complex view at the changes of the lake ecosystem. Research was supported by projects APVV-15-0292 and VEGA 1/0341/18.