

Zooplankton communities in a river downstream from a lake restored with hypolimnetic withdrawal



Restoring lakes with hypolimnetic withdrawal can severely threaten water quality and biocenosis downstream. The objective of this study was to evaluate the effect of lake restoration on riverine zooplankton during a period of intense hypolimnion water inflow. Zooplankton density and biomass were determined in water samples. The water samples were also analyzed to determine the following physicochemical parameters: flow rate, dissolved oxygen, hydrogen sulphide, sulphate, ammonium nitrogen, nitrate nitrogen, total phosphorous, soluble reactive phosphorus, total organic carbon, and temperature. The results of multiple regression indicated that water flow was the most significant variable and was the best predictor of total zooplankton and rotifer density. Soluble reactive phosphorous was the main predictor of copepod biomass and density. Our study showed that hypolimnetic withdrawal disturbed the natural process of planktic community transformation, which was linked to the environmental shift from lacustrine to riverine.

During the study, zooplankton density and biomass were low, but not as low as when the pipeline was operating at maximum output. At present, this lake restoration method has become more sustainable, because the adverse effects of hypolimnetic withdrawal on the recipient river have been minimized and limited to several weeks.

Auteurs du document : Magdalena Bowszys, Renata Tandyrak, Iwona Gołaś, Ewa Paturej

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