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## STUDY ON THE ASSESSMENT OF THE EFFECT OF NATURE-FRIENDLY MEASURES IN THE OLEŠNÁ IN PELHŘIMOV CATCHMENT AREA USING THE BILAN, HEC-HMS AND HYPE MODELS

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A catalogue of natural restoration measures was created within several research programs under Ministry of the Environment of the Czech Republic, especially in the program for hydrological draught mitigation. As a next step suitable catchments for their application were identified. With use of hydrological models, the effect of designed restoration measures on three aspects of hydrological regime was assessed. This case study reports the results of this assessment in the Olešná stream catchment located to the east of Pelhřimov, in the central part of the Czech Republic. Changes in the long-term hydrological regime were assessed by the BILAN model using the daily step and more than 30-years long climatological time series. Effect on the extreme discharges was evaluated in the HEC-HMS and potential changes in nutrient fluxes were quantified with the HYPE model in the form of sensitivity analysis. Concerning the hydrological balance, slightly positive effect was identified in the wet summer months, whereas in the rest of the year the changes were rather negative. Extreme discharges with return periods up to 5 years were almost entirely retained by the measures designed, for longer return periods a high potential in reducing the runoff volumes and peak discharges or in delaying the peaks was proven. The sensitivity analysis of nutrient fluxes in HYPE showed, that turning arable land into grassland leads to decrease in concentrations of nitrogen and dissolved phosphorus, but not in solid phosphorus. The fertilizers dosage influences only the concentration of both forms of phosphorus, whereas the nitrogen remains unaffected.