Original Research Article

Ecohydrological conditions in two catchments in the Gorce Mountains: Jaszcze and Jamne streams – Western Polish Carpathians

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ABSTRACT

The results of the analysis of ecohydrological (hydrobiological and hydrodynamic) parameters of neighboring catchments, the Jaszcze and Jamne streams, located in the Gorce Mountains in Polish Carpathians are presented. Analysis of the abiotic properties of those river channel ecosystems including shear stress, granulometric properties of gravel, water movement numbers as well as biotic parameters calculated using the Polish Biological Monitoring Working Party (BMWP-PL) benthic invertebrate-based index suggested that even though the two small streams valleys are similar in size and geological characteristics, and are nearby, they have different flow conditions which reflect on the hydrobiological status of those rivers. The aim of this article is to compare the parameters we measured in the field to help develop an understanding of the relationships between different processes at the river channel scale to improve sustainable development in the Jaszcze and Jamne stream catchments. This is especially important in light of the river channel regulation works already undertaken there and in light of the EU Water Framework Directive which main aim is to achieve good ecological status of all water bodies by the end of 2015. An assessment of stream conditions done without a detailed description of the hydrobiological and hydrodynamical parameters could lead to serious errors. This paper shows ways to examine the above-mentioned parameters in order to compare and analyze them and hopefully use them for catchment management. © 2014 European Regional Centre for Ecohydrology of Polish Academy of Sciences. Published by Elsevier Urban & Partner Sp. z o.o. All rights reserved.

1. Introduction

At present, Poland is evaluating criteria connected with the improvement of ecological status of all water bodies modified by river engineering works, as required by the European Union’s Water Framework Directive (2000/60/WE Directive) by the end of 2015. Other types of evaluations of morphological and biological conditions of the streams have been conducted previously. It should be noted that in mountain streams, even those located...