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Impact of catchment land use on hydromorphological status of streams in rural areas

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According to the Water Framework Directive by 2015 most of rivers and streams throughout Europe should reach "good ecological and chemical status". To preserve the processes and functions of riverine ecosystems the appropriate measures have to be applied also in field of hydromorphological status (HMS). On base of land-use structure analysis in catchments and survey results conducted at 20 sites in 100 sub-survey units we identified the key factors that affect the recent HMS of the streams in South West part of Slovakia. Performed statistical analysis showed the existence of strong and moderate relationship between the land use character in catchment and total HMS ($0.484 < |r| < 0.682$). High level of statistical dependence was found between total score of HMS and percentage of forest area in catchment with positive correlation of 0.68 (statistically significant with $p < 0.005$). The other land-use categories are significantly negatively related to the hydromorphological status - agriculture $r = 0.57$ ($p < 0.01$) and urban areas $r = 0.48$ ($p < 0.05$). The obtained results provide a reason to reject our hypothesis that streams, which are under human pressure are able within the process of passive restoration achieve a good hydromorphological status.

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Biography

Peter Halaj is an Assoc. Professor at Slovak University of Agriculture in Nitra, Department of Landscape Engineering. He has published more than 50 articles in scientific journals, proceedings and books. His fields of specialization are river restoration, flood control and water management in rural areas.

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