

The comparison development of two streams with different restoration of fluvial dynamics in the Ore Mountains of the Czech Republic

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Abstract

This contribution focuses on using geoinformatics tools to monitor the restoration of two brooks recently liberated from straight, deeply incised, and concrete-fortified channels. The restoration projects followed two distinct approaches: traditional "revitalisation" and more advanced "renaturation." The differences between these concepts are discussed and their outcomes documented using GIS. The study highlights that High-Resolution Digital Terrain Models (DTMs) derived from Unmanned Aircraft Systems (UAS) are indispensable for monitoring river renaturation. However, the results show that even state-of-the-art GIS tools cannot fully document the morphological development of these restored brooks. Thus, they should be complemented by field examinations of sections not fully captured by remote sensing. Finally, we demonstrate that the renaturation of watercourses more effectively fulfils the goals of the EU Nature Restoration Regulation (NRR) regarding the increase of free-flowing river length.

Keywords: lateral channel dynamics, UAS-borne LiDAR scanning, renaturation, Ore Mountains