Integration of environmental fluvial assessment with flooding analysis for restoration of urban rivers´ systems

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Restoration of urban rivers´ systems is a multidisciplinary field that comprise the analysis of urbanism, hydrodynamics, hydraulics, flooding, environmental, ecological, among others. This research proposes an innovative and robust methodology for the integration of environmental fluvial assessment with flooding mitigation analysis in the context of a broader framework for the restoration of urban rivers´ systems. The continuity of the Energy flow along the whole methodology is the unique restriction. For that, the methodology starts from the cartography of flooding prone areas. The second stage establishes a diverge into two branches, first, the analysis of Urban Land-use Planning (ULP), and second, the characterization of Main Interest Habitats (MIH) and the Phenology of associated species. Then, from the ULP branch, the study of the Ecological Analysis Type (EAT) will be developed at the Meso-habitat spatial scale based on the flow Biotope-Biocenosis analysis. The second branch will be completed with the specific study of requirements of flora and fauna for the Phenology refinement. Once this methodology is completed it will become a Decision Support System and guide to help managers to develop a restoration of urban rivers´ systems in rivers where flooding is a major concern. This study has been successfully applied to the Guadaiza river located in Marbella (South Spain).