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Understanding the impact of physical alteration of streams on their biocenoses

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The aim of this study is to reach a better understanding of the links between physical alterations of river channels and their ecological quality. This understanding is a first essential step towards river restorations, which are increasingly being considered to meet "good ecological status" as defined by the European Water Framework Directive. Although, clear links between the physical and the biological environments have been demonstrated many times, the consequences of physical alterations of river channels on their biocenoses are less clear. The methodology of this study involves comparing the ecological status of physically altered rivers to a reference model built from information obtained from a large number of non-altered sites in the chalky parts of the Seine Basin (northern France). The lengths of the studied sites are about 20 times the channel widths and the physical quality of the sites are determined using two adjustment parameters, the bankfull discharge and the hydraulic geometry. They are determined from topological surveys and discharge measurements at two different discharges (one high and one low). The river substrate (sediment composition, size and transport) is also considered; it is a control and adjustment parameter. A reference relationship between the bankfull discharge and the size of the catchment will be established. This allows auto-adjustments of streams in natural conditions to be evaluated and emphasises the morphological perturbations in channelised rivers. Biological data (mainly relative to fish populations) allow the structure of the communities in the reference rivers to be characterised and allow us to determine when and how physical alterations induce modifications in the biocenoses. This poster presents the objectives, methodologies and first results of this study.