

Abstract

Today, the study of fluvial-morphological processes is focused on evaluating hydromorphological status of streams and on proposing restoration measures. A fundamental prerequisite for assessing the current hydromorphological status of streams is establishing reference conditions for each stream type that serve as a benchmark and represent the target status after restoration. The aim of this thesis is to describe type-specific hydromorphological reference conditions for rivers on the territory of the Czech Republic with the help of determining river types, developing the REFCON method for establishing reference sites and recording characteristics of reference status. The approach to establishing reference sites is based on meeting the criteria of having minimal anthropogenic impact that are first assessed using cartographic data and subsequently verified through field survey. Parameters – altitude, sinuosity, and valley floor slope – for classifying river reaches into types were determined on the basis of the results of statistical methods applied on 3197 river reaches covering the whole territory of the Czech Republic. The classification of river reaches into 9 river types was verified through field survey at 44 sites. Detailed field survey and measurements of characteristics of natural channel behavior were conducted at sixteen reference sites that serve as the basis of the describing of the type-specific reference conditions. Classifying river reaches into types confirmed a significant difference between channel behavior in the Bohemian Massif and on the flysch belt of the Western Carpathians. The results of the field surveys and measurements at reference sites confirmed that threshold values of river type characteristics are not always clear. Therefore, the reference conditions are necessary to describe as a set of characteristics or conditions of the type. A variability of characteristics within a river type is influenced by stream order and lithology. Therefore, assessing the characteristics or their threshold values separately may skew the overall interpretation of reference conditions. Presented type-specific reference conditions have been determined for physiographic conditions of rivers on the territory of the Czech Republic and can be used for the assessment of hydromorphological status of streams and also as restoration target conditions. Developed REFCON method enables user to individually establish local or regional reference conditions for each stream when required on the basis of conducted field survey.