How do land use structures influence the ecological status of the aquatic environment at three different spatial scales? An Austrian example.

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The objective of this paper is to illustrate the land use- and habitat composition of near natural as well as anthropogenically altered riverine landscapes at different spatial scales as a determinant attribute of the status of the aquatic environment.

The pattern of river landscapes is characterised by the composition and structure of natural as well as human induced elements and patches. The relative proportion of these elements shows a characteristic template for different alpine river types and changes along the course of a river from the source to its mouth. Under natural conditions, the patterns and the spatial heterogeneity of these patterns are determined by physiographic characteristics and by particularly driven hydro-morphological dynamics. However, since hundreds of years these patterns and processes have been altered by human uses.

Within the framework of the M I R R-Project (**M**odel-Based **I**nstrument for **R**iver **R**estoration in Austria) data of near natural as well as anthropogenically altered catchments have been compiled. A huge set of abiotic data comprising geology, geomorphology, hydrology, catchment size, catchment altitude, ecomorphological attributes as well as land use data and fish data was statistically analysed.

The results show that at the *reach scale*, the adjacent environment is a determinant factor for the ecological status of river stretches. The land use structures along the riparian

zone document the degree of anthropogenic intervention and are strongly correlated with the results of detailed ecomorphological investigations.

At the *floodplain scale* the extension and structure of floodplains and the interface between river and floodplain units determine the physical environment of rivers and their habitat quality and functions. The data of altered morphological and hydrological conditions assist to explain habitat degradation at this scale.

At the nationwide spatial scale, comprising the entire *catchment* area of Austrians large rivers (n=53), the identified land cover types document the different degree of human uses and indicate the pressure on the physical environment of the rivers depending on their regions characteristics.

These results assist to explain the degradation of riverine landscapes and provide data for a comprehensive management approach, including the physical characteristics and human impacts at the catchment scale.