



Connectivity at landscape scale as driver for different ecosystem processes in river systems

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At different spatial and temporal scales, the connectivity of habitats within the four dimensional riverine environment has been recognized as a central element in structuring and sustaining aquatic and riparian communities and controlling biogeochemical cycling in riverine landscapes. Floodplains for example are controlled by the patterns of connectivity with the river channel and the adjacent landscape elements. They are seen as biodiversity and biogeochemical hotspots and bear a strategic importance for nature conservation and ecosystem management targets in river basins and from a socioeconomic point of view, floodplains provide a multitude of ecosystem services. The deterioration of river systems and their landscapes due to regulation and land use change has prompted restoration measures aiming to improve the ecological conditions of river systems. One of the aims is to improve the connectivity between these landscape elements and by that also enhance overall the spatial heterogeneity and temporal variability within the riverine landscape. Thus, the responses of changes in connectivity are key to predict and understand effects of restoration measures. Even more insights on how species development and population dynamics are impacted can be gained by linking concepts of meta community ecology with spatial analysis and the connectivity patterns at different spatial scales as well as seasonal and long-term effects. In this presentation different aspects of connectivity, the changes due to restoration and effects for biodiversity and biogeochemical cycles are highlighted for complex riverine landscapes.