



Old river beds under urbanization pressure. Can we protect valuable aquatic ecosystems within the cities?

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Old river channels are valuable ecosystems in the scale of whole Europe. Protected as Natura 2000 habitats they are characterized by high biodiversity and provide various ecosystem services. River regulation, eutrophication or lack of annual flooding result in an impoverishment and disappearance of these habitats. Moreover they are subjected to severe pressure from uncontrolled expansion of the cities. The aim of this study was to determine factors associated with urbanization mostly contributing to impoverishment of the vegetation associated with the old channels and to identify landscape characteristics favouring high diversity and naturalness. We were seeking for indices that could be implemented in spatial management for preservation of these ecosystems. Vegetation inventory of 28 lakes, being former river Vistula beds near Warsaw was held. The lakes were located in an urban-rural gradient from the city centre, suburban zone to rural areas. Mapping of vegetation was performed for aquatic vegetation, rushes and vegetation of the shores (321 relevés). Human pressure was assessed on the basis of landscape composition of the lakes neighbourhood, characteristic features of the reservoir and water physio-chemical properties. High diversity and naturalness of the vegetation associated with former Vistula River beds was proved. Effects of the human pressure in the vegetation composition were recognized in high share of alien species and impoverishment of native plants. Composition was dependant on the intensity of human pressure in the neighbourhood and was mostly related to percentage of built-up areas and road density. Selected measures allowed to explain not more than 30% of plants composition variation which implies strong effect of local factors. Vegetation composition of former river beds changed significantly along urban-rural gradient, though the trend could be noted only to the city border. Several protection activities were proposed favouring high biodiversity and naturalness of the vegetation, especially for the suburban zone where the lakes were characterized by high diversity but also subjected to highest pressure from increasing percentage of built-up areas in the neighbourhood.