



European perspectives on regional estimates of standing water bodies and the relevance of man-made ponds

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Until recently, the small water bodies have been disregarded in the environmental management and protection policies. For example, the European Water Framework Directive 2000/60/EC proposes the threshold surface area of water bodies for typology and reporting as 50 ha. The inventories on state level or scientific studies took into account smaller water bodies (e.g. <10 ha for Meybeck, 1995, <1 ha for Rjanžin, 2005, or <0.05 ha for Kuusisto and Raatikainen, 1988) but these methods of estimations has been region-specific and not suitable for global estimates. The increasing awareness about the important roles that terrestrial standing water bodies play in the biodiversity or hydrological and biogeochemical cycles has facilitated new global and regional inventories of lakes and water bodies. Although with differences in the total counts and in the statistical estimates of abundance-size relationship, these recent global estimates reveal the quantitative importance of the terrestrial standing water bodies in the global hydrology (Downing et al., 2006; Verpoorter et al., 2014). Yet, our analysis of the abundance and distribution EU water bodies suggest that these global counts underrepresents the hydrologically complex terrain of the European territory. One of the main limits is the high cutoff limit that excludes small water bodies below ~0.2 ha. For example, in France, Bartout and Touchart (2013) report that including water bodies below 0.01 ha in the estimates resulted in 16 times higher number of water bodies with the surface area one-third higher than officially registered inventories. Also, in Estonia, the water bodies with a surface area below 1 ha are almost 50 times more abundant than those above 1 ha and 92% of all standing water bodies are smaller than 0.2 ha. Using the OpenStreetMap database we will discuss the differences between global inventories and EU-level analysis. We will show the alternative regional estimates of water bodies with the surface size threshold limit 0.01 ha which will illustrate the quantitative importance of very small often man-made ponds, which are however, abundant cultural heritage in many parts of Europe. Secondly, by comparing detailed national inventories compiled for France and Estonia, we will introduce usefulness of the 'local to global' approach in which the local databases may significantly strengthen the precision of the regional (EU) level analysis. Overall, we will disss that all standing water bodies – including small and man-made ponds – play an important role in ecosystem services and require careful management to avoid hydrological and environmental deterioration.

References:

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