Diversity of East African Wetland Vegetation: A Classification Based on Current and Historic Surveys

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Abstract

Wetlands in East Africa are important ecosystems for biodiversity conservation and ecosystem service provisioning. Due to their suitability for crop production, the use of wetlands is getting increasingly intensified as food demand rises. In consequence, wetlands are at high risk of degradation, especially when land use changes include the establishment of drainage infrastructure. In order to project sustainable management strategies and conservation plans, it is crucial to understand structures and dynamics of wetlands. Plant communities reflect ecological conditions and degrees of disturbances and may hence be used as bio-indicators. While many published works have been focused on classification of East African wetland vegetation, consistent classification schemes for the region are still missing. We hence conducted detailed studies of vegetation in two different wetland ecosystems in East Africa. The first site is the lowland floodplain of the Kilombero river in Tanzania, which is characterised by Tropical Savannah climate and two distinct rainy and dry seasons. The second site is located in Central Uganda and consists of small inland valleys with a climate at the transition between Tropical Monsoon and Tropical Rainforest. While at both study sites patches of natural vegetation and long-term fallows can be found, cultivation of rice is the dominating form of land use. We sampled vegetation in nearly 400 plots, each 4 m^2 size. They were chosen along gradients of land use intensity and flooding duration. A classification of the plots was conducted based on species composition using the Cocktail-Classification method. Formal definitions of plant communities were developed and compiled to an expert system and then applied in the classification of data stored in the vegetation-plot database "SWEA-Dataveg" (http://www.givd.info/ID/AF-00-006). In the study area, 18 plant communities were identified, of which most belong to the phytosociological classes of Phragmito-Magno-Caricetea (marshes and reeds) and Oryzetea sativae (weed and pioneer vegetation). While the two study sites did not share any communities, 9 were recognised in the database with the developed definitions. Integration of these results and literature resulted in an overview of East African wetland vegetation with reference to ecological conditions, degree of disturbance and geographic distribution for each unit.

Keywords: Classification, East Africa, land use changes, plant communities, vegetation ecology, wetland

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