

PhD projects at the Research Group of Vegetation Ecology

Development of Flora and Fauna Indicators for Assessing Impacts of Anthropogenic Activities hotspots in Ewaso Narok Swamp, Kenya

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Wetlands are important ecosystems not only for biodiversity, but for human utilization. This has made them centers for human activities, sometimes leading to negative impacts, thus compromising their production and ecological character. Understanding the implications of anthropogenic disturbances on a wetland ecosystem is complicated by the variability in ecological responses. Thus identifying indicator species which capture key ecological responses to human actions provide a useful tool for improving understanding of ecological effects of disturbances for management and wise use of wetlands ecosystems as anticipated by the Ramsar Convention. This study intends to document and classify the various anthropogenic activities and their impacts on the biophysical characteristic in Ewaso Narok swamp, Laikipia, Kenya. Selected indicator species (flora and fauna) base on of their sensitivity to environmental change, well know taxonomy and their distribution and previous studies done on them for the various anthropogenic activities. Indicator plants will be developed from those identified by the SWEA project and the floral inventory collected during the typology tour of 2013.

The sampling protocol will follow four land use forms based on hemeroby; undisturbed, animal access corridors, cropping and fallow. Five replications and three hydrological situations flooded, seasonally flooded and not flooded will be considered. This will be done in wet and dry season based on 10m x 10m² plots. Sampling matrix will be based on abiotic environment and vegetation attributes. In the abiotic environment water physical-chemical parameters, soil trophic levels and soil physics will be analyzed. Vegetation attributes, structure and function traits will be recorded. Vascular plants indicators will be based on releves and species identification. Indicator fauna will be sampled from a cross section of above ground species; bees, dragonflies, butterflies, species occurring on the ground surface including beetles, arachnids and gastropods will be sampled. Gastropods and nematodes will represent below ground fauna. All these fauna will be sampled following standard methods and equipment.

Species abundance and distribution data will be described using various biodiversity indices. Multivariate statistics will be used to analyze the trends of environmental and the species data. An important output of the study will be a first inventory of invertebrates of Ewaso Narok swamp. Development of selected indicator species based on their sensitivity to the various environmental parameters and human activities will be based on their tolerance value. These species will be validated in another site selected within the swamp. The linkages of disturbance and benefits of wetlands to the various user groups and the tolerance value of the indicator species to the various abiotic parameters and human activities will be used in making recommendation for conservation and land use planning by policy makers.



Contact:

Jane Macharia

Wetlands section
Museums Hill
P.O Box 40658-00100
Nairobi
Kenya

jmwihaki2000@yahoo.com
jmacharia@museums.or.ke

www.wetlands-africa.de



Work Package	A1 / A4
Countries of work	Kenya
1 st Supervisor	Dr. Helida Oyieke (National Museums of Kenya) Prof. Dr. Mathias becker (University of Bonn)
2 nd Supervisor	Dr. Charles Warui (National Museums of Kenya) Dr. Bodo Maria Mösele (University of Bonn)
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