

John Vorster

*Aquatic Studies within Submerged Lands*

**Biography**

I am a Research Assistant working for Victoria Institute for Research on Environment and Development (VIRED Int'l). The organization is based in Kisumu, Kenya along the shoreline of Lake Victoria-the second largest freshwater lake in the world and the largest in the tropics. Have worked for numerous overseas Universities graduate students, bi-lateral and multi lateral aid agencies as a consultant and among these are: IUCN, World Bank, UNDP, CIDA-Canada, SIDA-Sweden, the Royal Dutch government, FAO, WHO among others. I have written numerous topical reports on issues pertaining to Lake Victoria fisheries and freshwater wetlands around Lake Victoria. I have presented on behalf of the organization in both international conferences and symposiums in Europe, Africa and North America-Canada where my paper presentations have been very instrumental. Some of my contributions are evidenced in the ongoing World Bank funded programme-the lake Victoria Environmental Management Programme (LVEMP) for the East African Communities.

**Abstract**

The freshwater ecosystems around Lake Victoria, which is the second largest freshwater lake in the world, are quite diverse and form different ecological niches or habitats for the lake's rich species diversity. The study here focuses on three major freshwater wetlands on the Kenyan part of Lake Victoria, Yala Swamp, Nyando and Sondu-Miriu wetlands. Yala Swamp is the largest Swamp in the Kenya part of Lake Victoria, with a composition of about 90 % papyrus. The main species here are *Cyperus papyrus* and *phragmitis mauritius*. Of particular interest is the satellite Lake Kanyaboli which is considered to be one of the most important within Lake Victoria's catchments. Lake Kanyaboli supports a lucrative fishery with a unique fish fauna. The lake and the adjoining giant Yala Swamp provides suitable habitat for various endangered animal species. On contrary, the Yala Swamp was reclaimed in the early 1970's for agricultural purposes, which later changed the ecological balance. The second part of the paper will give an in-depth study on Rivers Nyando and Sondu-Miriu wetlands, which are draining their waters into Lake Victoria. The study will focus on the large-scale agricultural activities on the upper river catchments and the agro-based chemical and sugar industries, which are discharging their effluents directly into the river channel. Downstream at the river mouths, the problem is rather compounded by the destruction of wetlands resulting in high levels of nutrients entering Lake Victoria. The situation at these wetland study sites, calls for immediate attention to restore their lost glory. Yala River formerly flowed through reclaimed swamp into Lake Kanyaboli, then into the Swamp before finally into Lake Victoria via a small gulf. After the diversion of the River flow into the Swamp, and heavy siltation dike cuts off Lake Kanyaboli, which receives its water from the catchment and through back-seepage from the Swamp. The quality of water in the main channel is well oxygenated, but oxygen levels in the stagnant parts of the Swamp are very low and turbid. Biodiversity value of the Giant Yala Swamp should be recognized by affording the site some formal protection, such as listing as a wetland of international importance. This is due to the fact that Yala Swamp is a type of wetland that supports an appreciable assemblage of threatened and endemic species. The main threats to these two wetlands are agricultural intensification, burning of vegetation, construction of dykes/dams and drainage. In summary the paper will give evidence to the extent that freshwater ecosystems when scored on the area they cover and a diverse species they harbour, are indeed the most species-diverse habitats on earth. Ecosystems provide an estimated US\$ 33

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trillion per annum to societies of which an estimated 26% comes from the precious freshwater ecosystems. Literally, wetlands suffer from over-extraction of freshwater, overuse of their resources, drainage and pollution. The degradation of wetlands puts the local livelihoods and biological diversity at risk. Over 800 freshwater wetlands species around the world are now threatened with extinction.