

Organization: Kenya Marine & Fisheries Research Institute

Project Location: Kenya, Tanzania, Uganda

Web address: <http://www.kmfri.co.ke/>

Title of Grant: "Phase One of a Lake Victoria Biodiversity Informatics Project"

Grant Amount: \$132,530 over one year

Principal Investigator: William O. Ojwang

Organization Background:

The Kenya Marine and Fisheries Research Institute (KMFRI) is part of the Ministry of Livestock and Fisheries. It is mandated to conduct aquatic research covering all the Kenyan waters and the corresponding riparian areas including Kenya's 200 nautical mile Exclusive Economic Zone in the Indian Ocean. The Institute was established by an Act of Parliament in 1979 and is run by a Board of Management. KMFRI's mission is to contribute to the management and sustainable exploitation of aquatic resources to help alleviate poverty, enhance employment creation, and food security through multidisciplinary and collaborative research in both marine and fresh-water aquatic systems.

Grant Description:

Lake Victoria is a key body of water that Kenya shares with Uganda and Tanzania and is one of the most well studied lakes in Africa. However, regardless of the huge amounts of scientific data generated about the Lake, it is startling that there is no repository of data and associated information on any aspect of the biodiversity of the Lake basin.

Whenever such information is available, its distribution is either restricted or accessibility limited. The inaccessibility of such data has been one of the major contributors to the apparent duplication of effort, the incomplete species accounts and inability to validate taxonomic problems. To remedy this situation the Kenya Marine and Fisheries Research Institute proposes to work with colleague organizations in Uganda and Tanzania toward the creation of a biodiversity database center.

The Problem:

The Lake Victoria basin is a mosaic of diverse aquascapes including the main lake, affluent rivers, satellite lakes, impoundments, swamps, and other small water bodies. The basin is home to characteristic and highly endemic terrestrial and aquatic biota, encompassing over 20 designated parks, reserves spread across the three East African countries. The Lake basin region thus hosts diverse ecosystems that are species rich in terrestrial plants, aquatic macrophytes,

planktonic species, micro-invertebrates, macro-invertebrates, birds, mammals and reptiles, but it is the extraordinary fish species diversity for which it is most famous.

It has been estimated that between 500 to 1000 endemic cichlid fish species must have evolved within 14,600 years which is the time since its last desiccation. However, in recent years the Lake Victoria basin has experienced immense anthropogenic pressure, resulting in widespread loss of biodiversity at species, population, and habitat levels. In particular, fisheries, forestry, wetlands and a wide range of aquatic and terrestrial flora and fauna have all suffered from the effects of human related activities. The basin area is on average much more densely populated than the respective average national population densities in the three countries that border it. The situation is worsened by heavy reliance on natural resources and small land holdings with 75% of the population subsisting on one hectare or less. About 40% of the population in the basin countries falls within the working age group of 15-64 years. These demographic characteristics translate into high and increasing pressure on Lake Victoria's ecosystem to supply the basic needs for food, employment and income.

The Solution:

KMFRI proposes the first phase of a project to provide a database that will store and manage datasets in a structured manner to offer easy access to and sharing of information on fish and associated biota (plankton, macro-invertebrates and macrophytes) which may later be upgraded to include the rest of the taxa within the basin. It would ultimately enable evidence-based formulation of policies to safeguard biodiversity resources for the region's livelihood and future generations.

The central database would also, for the first time, consolidate and make available knowledge on one of the world's great natural laboratories for observing the macro-evolutionary processes. Notably, the proposal is not for collection of new data other than validating where necessary. Once the database and network are in place, it would be continuously updated.

Global Impact:

It is hoped that out of this phase of the project a blueprint will evolve for a Lake Victoria biodiversity information repository.