

Published: 10 April 2014

# Phytoplankton patterns along a series of small man-made reservoirs in Kenya

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## Abstract

We studied nine small man-made reservoirs located in different climate regions of Kenya to get an insight into the relationship between phytoplankton community structure and its environment. The investigated ponds form three groups of three reservoirs each found in the rural areas of Machakos district, Mount Kenya region, and Lake Victoria area with varied climatic characteristics. The ponds were sampled in monthly intervals between May 2007 and June 2008 for physicochemical variables including water chemistry, phytoplankton community composition, zooplankton abundance, and bacterial numbers. All ponds were classified as hypertrophic. Seasonal changes were reflected in the phytoplankton pattern, as all ponds showed a community shift after the short dry season in February. Due to high nutrient loads and increased turbidity, Cyanobacteria, which were initially thought to be predominating in all investigated water bodies, were found to play only a minor role except for the Bomet reservoir in Lake Victoria region. Instead, Chloro- and Streptophyta, Dinophyta, and Euglenophyta were abundant in the pelagial. A principal component analysis explained around 85 % of the data variance with four principal components (PCs) interpreted as “location”, “ions”, “zooplankton”, and “particulate matter”. A clear separation of ponds with and without cattle access based on algal species community data was found indicating the need for a sustainable use and regular monitoring program as the local population is largely dependent on these sensitive small-scale ecosystems.

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