

WATER QUALITY STATUS AND THE PLANKTONIC CONSTITUENTS OF UNDRAINABLE WATER RESERVOIRS IN THE SEMI-ARID NAROMORU AREA OF CENTRAL KENYA

Mwangi, Benson M.¹, Ndiwa Titus² and Kairu Eunice³

Department of Zoological Sciences

Kenyatta University

P.O. Box 43844 - 00100

Nairobi, Kenya

Naromoru is a semiarid area in Central Kenya occurring on the leeward side of Mt. Kenya. Its water sources include a few permanent rivers such as Nairobi River, intermittent streams and a large number of undrainable water reservoirs. Most of the undrainable water resources have been stocked with fish but their suitability and potential for fish rearing and production has not been investigated. The water quality status and planktonic community of the undrainable water reservoirs was therefore studied in order to assess their suitability and potential for fish production. Samples were collected from three reservoirs (Gathathini, Lusoi and Kianda Dams) differing in their habitat characteristics. Water quality status differed strongly between sites, with conductivity ranging from $350\mu\text{Scm}^{-1}$ at Gathathini Dam to over $1350\mu\text{Scm}^{-1}$ at Lusoi Dam. pH however showed only a slight variation from 8-9.6. Water temperature and transparency also varied significantly between the sites, while cationic constituents (Ca^{2+} , K^{+} , Mg^{2+} and Na^{+}), anions (SO_4^{2-} , HCO_3^{2-} , and Cl^{-}), heavy metals (Pb^{2+} and Cu^{2+}) and nutrients (NO_3^{-} and PO_4^{2-}) were all within the recommended WHO levels for fish production. The three sites also showed appreciable differences in planktonic species composition and richness although the blue green algae, *Microcystis* sp. dominated at all sites but with variable proportions. Other species such as *Pediastrum*, *Scenedesmus*, *Spirulina*, *Gonosphaerium* and *Phacus* varied from being rare to frequent at the three sites. Zooplankton were most common in Kianda Dam being dominated by the rotifer, *Branchionus* sp. Rotifers also occurred frequently in samples from Lusoi and Gathathini Dams. Cladocerans only occurred in Kianda Dam. Benthic invertebrates were most abundant in Kianda Dam where they were by Oligochaetes. At Kianda and Gathathini Dams, benthic invertebrates were dominated by Chironomid larvae with abundances ranging from 61,000 to 73000 indiv/m² as compared to over 85000indiv/m² at Kianda Dam. Generally the water quality status, fertility and planktonic production levels suggested good potential for fisheries production with Kianda Dam showing the greatest potential albeit the water source unreliability.

Email addresses

¹mwangibenson2002@yahoo.com, telephone 0722462905

²ndiwatitus@yahoo.com, telephone 0720827154

³eunicekairu@yahoo.com