

# Nutrient limitation of phytoplankton in five impoundments on the Manyame River, Zimbabwe

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## Abstract

Nutrient limitation was investigated in the Manyame lakes, namely, Harava Dam, Seke Dam, Lake Chivero, Lake Manyame and Bhiri Dam, during 2004-05. *Selenestrum capricornutum* was used as the test organism in one group of bioassays and the lakes' natural phytoplankton population in the other. Nitrogen was indicated to be the primary limiting nutrient in Harava Dam, Seke Dam and Lake Manyame. Phosphorus was found to be the primary limiting nutrient in Bhiri Dam while no nutrient was indicated to be limiting the growth of phytoplankton in Lake Chivero; instead, light was implicated to be limiting the growth of phytoplankton. Harava Dam and Seke Dam showed signs of enrichment, relative to 1977, attributed to sewage discharge from expanding urban settlements in Ruwa and surrounding areas. Lake Chivero has remained much the same in the last 30 years and was indicated to be acting as a nutrient trap, since the dams downstream of it were not found to be as eutrophic. Lake Manyame, Seke Dam and Harava Dam were concluded to be mesotrophic, Bhiri Dam oligotrophic and Lake Chivero eutrophic.

**Keywords:** bioassays, phytoplankton, nutrient limitation, eutrophication