Assessment of fecal bacteria contamination in sewage and non-sewage impacted mangrove ecosystems along the coast of Dar es salaam

Author(s)

AA Abbu, TJ Lyimo

Abstract

Microbiological quality of the intertidal pool water was evaluated in sewage impacted (Mtoni Kijichi) and non-sewage impacted (Rasi Dege) mangrove forest sites along the coast of Dar es Salaam, Tanzania. The Most Probable Number method was used for estimating the total coliform (TC), fecal coliform (FC) and fecal enterococci (ENT) levels. In addition, physicochemical parameters (temperature, pH, salinity and nutrients) were measured. The results for microbial fecal indicators were compared to the World Health Organisation (WHO) and United States Environmental Protection Agency (USEPA) guidelines for marine recreational and shellfish harvesting waters. Fecal bacteria contamination was significantly higher at Mtoni Kijichi than at Rasi Dege mangroves Nutrient levels were also significantly higher at Mtoni Kijichi than Rasi Dege). No significant variation was noted on the values of temperature, pH and salinity. A significant correlation between the levels of fecal bacteria indicators and nutrient concentrations was observed at both sites. Regarding compliance to WHO and USEPA guidelines, only one station at Mtoni Kijichi was found to have levels exceeding the recommended thresholds for marine recreational waters. The high level of fecal bacteria contamination and nutrients was attributed to anthropogenic activities. Further studies and education of the users of these ecosystems is recommended.