

## Document details

### Title

Microbial population dynamics as a function of sediment salinity gradients in the Qua Iboe Estuary mangrove swamp (Nigeria).

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### Abstract

In this investigation the extent to which sediment salinity gradients can be used to predict the sensitivity of microbial populations in mangrove ecosystem was investigated. The microbial groups monitored were heterotrophic bacteria, coliform bacteria, actinomycetes, fungi and yeasts. Pearson's Product-Moment Correlation ( $r$ ) analyses were done on Log<sub>10</sub>-transformed estimates of population densities. The values obtained from the intertidal (epipellic) and subtidal (benthic) sediments were less than the critical value of 0.707 ( $n=8$ ,  $p=0.05$ ). This indicates that salinity was less closely related to the microbial population densities. A positive but insignificant relationship was found for fungi ( $r=0.03$ ) in intertidal sediment. The total heterotrophic bacteria ( $r=-0.69$ ), coliforms ( $r=-0.54$ ), actinomycetes ( $r=-0.43$ ) and yeasts ( $r=-0.56$ ) were negatively affected by salinity in epipellic sediment. But in the benthic sediment, total heterotrophic bacteria ( $r=0.55$ ) and unexpectedly, the fungi ( $r=0.58$ ) and actinomycetes ( $r=0.29$ ) exhibited positive but insignificant correlations while coliform and yeast counts in the benthic sediments were negatively influenced by salinity. However the coefficient of determinations ( $R^2$ ) revealed that total heterotrophic bacteria (48.06%) and yeasts (31.18%) were more extensively distributed in the intertidal sediments than

coliforms. (29.38%), actinomycetes (18.68%) and fungi (0.09%). In contrast, the fungi (33.48%) demonstrated a wider distribution in benthic sediment. This may be ascribed to their existence, mostly as dormant, but culturable spores in the anoxic bottom sediment. The weak relationship exhibited by coliforms further confirms their usefulness as indicator of faecal contamination in estuarine ecosystem.

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