

Analysis and Study of Phytoplankton and the Environmental Characteristics of Tarkwa Bay, Lagos, South-Western, Nigeria

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Abstract : The phytoplankton and environmental characteristics of Tarkwa Bay, Lagos in South-western Nigeria were investigated from January to June 2012. Environmental characteristics within the Bay were largely determined by floodwater inflow in the wet months (April - June) and increased tidal marine conditions in the dry months (January - March). Similarly, rainfall distribution and possibly tidal seawater inflow were the key factors that govern the variation in phytoplankton distribution, species diversity, chlorophyll a concentration and environmental characteristics of the bay. Values for physico-chemical parameters were indicative of high levels of fluctuations inwards from the East mole towards Tarkwa Bay (e.g. T.S.S > 11mg/L, T.D.S > 33541.0mg/L, D.O. < 5.4). Chlorophyll A values did not show any discernable pattern and correlated negatively with total dissolved solids and total suspended solids ($r = -0.27$ and -0.04) as both were inconsistent throughout the study period. Four phytoplankton divisions were observed throughout the sampling period with the Bacillariophyta (diatoms) being the dominant group followed by Dinophyta (dinoflagellates), Cyanophyta (the blue-green algae) and Chlorophyta (the green algae). A total of twenty-one species from nine genera were recorded during the period of study. Diatoms formed the most abundant group making fifteen species from five genera. The centric forms dominated over the pennates in the diatom group with *Skeletonema* sp. *Chaetoceros* spp. and *Coscinodiscus* spp. being the dominant centric diatoms while *Navicula* spp. was the more dominant pennate form. The Dinoflagellates were represented by six species from one genus, the blue-green algae with five species from two genera while the green algae had one species from one genus. Comparatively, total biomass was more in the dry months (Jan. - Mar.) and decreased in the 'wet months' (Apr. - Jun.). Species diversity (S), Shannon Wiener index (Hs), Margalef Index (d) and Equitability Index (j) values were higher during the dry months while reduced value marked the wet months possibly as a result of dilution of rain effects. Outcomes of bio-indices variations were reflections of the degree of occurrence and abundance of species linked to seasons operating in the study site.

Keywords : coastal waters, phytoplankton, species abundance, ecosystems

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