SEASONAL VARIATION OF PHYTOPLANKTON IN THE COASTAL WATERS OF CHATTOGRAM

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This is to certify that we have examined the above Master's thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made

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Dedicated

To

My Beloved Parents

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The Author

Md. Shafiul Alam Anik

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List of Abbreviations

Words	Abbreviation
NO_2	Nitrite
PO_4	Phosphate
SiO_3	Silicate
mL	Milliliter
%	Percent
Km	Kilometer
Mg	Milligram
M	Meter
Psu	Practical salinity unit
mg/L	Milligram per liter
g/L.	Gram per liter
^oC	Degree Celsius
µg/L	Microngram Per liter
mS/cm	Milisiemens Per Centimer
e.g	Example
et al	And his associates
etc	Et cetera
Ppm	Parts Per million
St	Station
Cm	Centimeter
TDS	Total Dissolved Solids
TSS	Total suspended Solids
Sig.	Significance
MS	Master of Science
<	Less than
>	Greater than

ABSTRACT

Phytoplankton has profound influence in ocean biogeochemical processes and contributes in ocean productivity. Bio-diversity, fisheries, and food production are directly impacted by ocean and coastal production, in the fight against climate change. Phytoplankton abundance, availability and its distribution are concerned to this study along the northeastern Bay of Bengal (BoB). Standard techniques were used to measure the fluctuations in coastal productivity (Chlorophyll-a), dissolved nutrients and other physico-chemical parameters. To initiate the study, two coastal areas were selected as Cox's Bazar and Kutubdia, each having two sampling stations. The sampling were done following seasonal pattern of BoB as pre-monsoon, monsoon, post-monsoon and winter during the hydrological cycle 2021-22. During the sampling period, three classes of dominating phytoplankton were identified as Bacillariophyceae, Dinophyceae, and Coscinodiscophyceae. Among the three major groups of phytoplankton, total eleven prominent genera were identified. The highest amounts of phytoplankton was recorded in Cox`s Bazar (st_1) as 3.931×10^3 Cells/ L while, in Kutubdia (st_3) the amount reported as 2.471×10^3 Cells/L during monsoon period. The Bacillariophyceae taxonomic family was the most common type of phytoplankton found in all samples. The number of phytoplankton was found to be positively correlated by Chlorophyll-a and nutrients availability. Chlorophyll (Chl-a) content was investigated 0.1986-0.741 µg/L, whereas nutrients concentration (nitrite, phosphate, silicate) showed the crucial factors for phytoplankton abundance specified in statistical test. The other physico-chemical parameters also showed statistically significant changes ($p<0.05$) among the four seasons and stations. Furthermore, these finding may assist policymakers in enhancing management strategies for ensuring water quality and the phytoplankton population as it indicates a wide spectrum of primary productivity which come from coast or sea.

Keywords: Seasonal variation, phytoplankton, nutrients, northern BoB, Bangladesh