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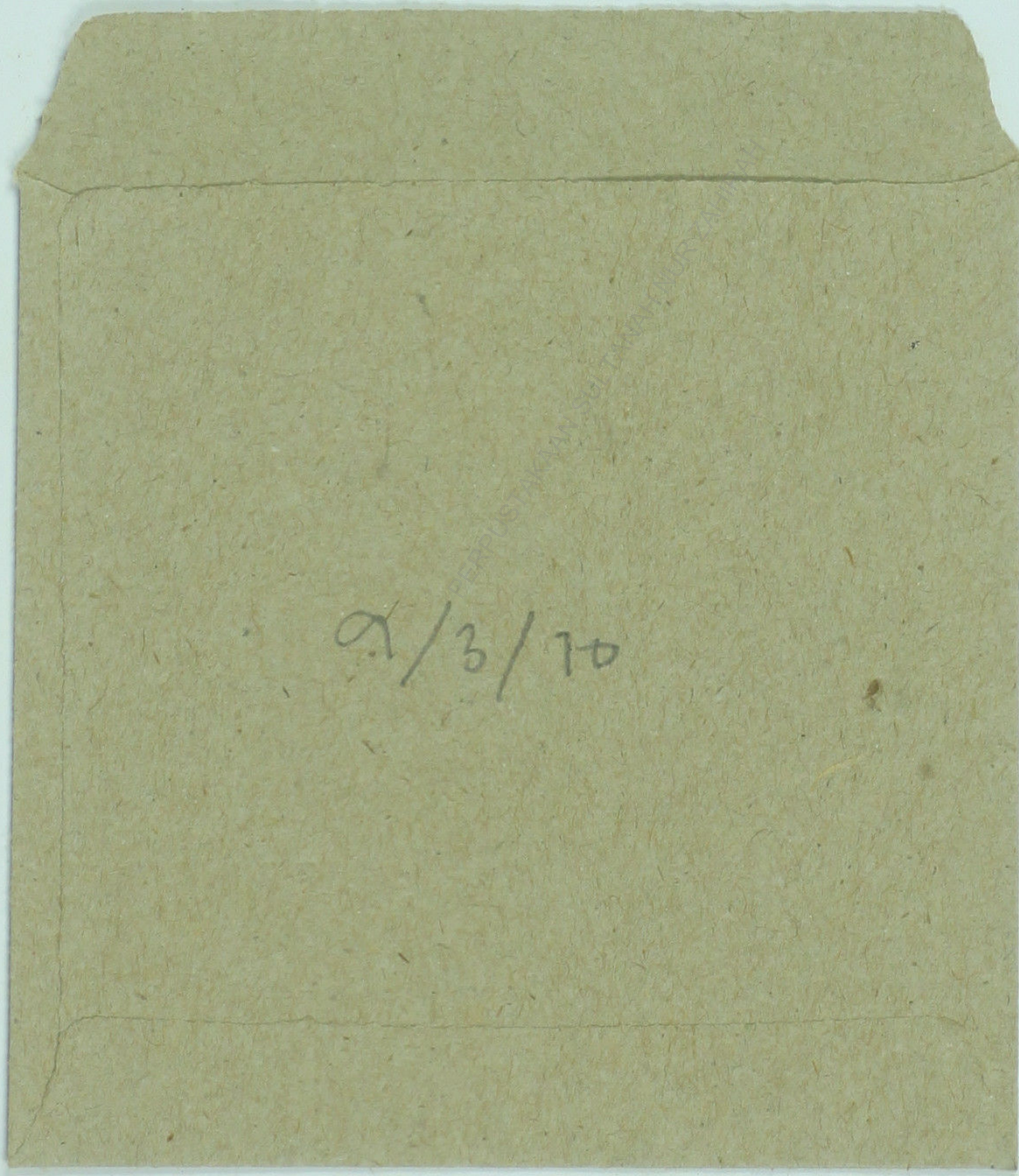
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Phytoplankton diversity and abundance in Terengganu river estuary / Alan Lau Han Guan.



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PHYTOPLANKTON DIVERSITY AND ABUNDANCE
IN TERENGGANU RIVER ESTUARY

BY

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the requirements for the Degree of
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PERPUSTAKAAN SULTANAH NUR ZAHIRAH

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ABSTRACT

Phytoplankton is plant plankton which is able to fix the solar energy by photosynthesis, using carbon dioxide, nutrients and trace metals (autotrophs). A study on phytoplankton abundance and diversity along 12 stations in Kuala Terengganu River Estuary was carried out before (June) and during (November) monsoon season in 2002.

Water samples were obtained (from approximately 0.5 - 1.0m deep) and filtered by a plankton net (20 μ m). Filtered samples was kept in glass bottles and preserved with Lugol's iodine. Identification of phytoplankton and cell counting (by using Lackey Drop Method) were done. Index diversity and evenness of phytoplankton were calculated using the Shannon-Weaver Index and correlated with salinity.

From the results, Phytoplankton abundance increased from station 1 to 12 before monsoon; while phytoplankton abundance during monsoon season did not show significant difference among the 12 stations. This was because during monsoon season, estuarine water was diluted by rainfall and river flow. Diatoms dominate stations 4 to 12. Dinoflagellates found only in stations 8 to 12. Most of the green algae found in freshwater habitats (stations 1, 2 and 3). *Chaetoceros* showed dominant before monsoon season. The index diversity of phytoplankton plankton ranged from 2.2 to 3.0 and can be considered as high values.

From the statistical analysis, it showed the result that there was a correlation between salinity and the diversity of phytoplankton before monsoon season; while, there was no correlation between salinity and the diversity of phytoplankton during the monsoon season.

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ABSTRAK

Fitoplankton merupakan plankton yang berupaya menggunakan tenaga cahaya, karbon dioksida, nutrien dan unsur-unsur surih dalam proses fotosintesisnya (autotrofik). Kajian atas taburan dan diversiti bagi fitoplankton di sepanjang 12 stesen kawasan muara sungai Kuala Terengganu telah dilakukan sebelum (Jun) dan selepas (November) musim tengkujuh dalam tahun 2002.

Sampel air ditelah diambil (lebih kurang 0.5 - 1.0m dalam) dan ditapis dengan menggunakan jaring plankton (20 μ m). Hasil sampel yang ditapis disimpan dalam botol kaca dan diawet dengan Lugol's iodine. Kerja identifikasi bagi fitoplankton dan pengiraan bilangan fitoplankton (dengan menggunakan Lackey Drop Method) telah dijalankan. Pengiraan indeks diversiti dan kesamarataan bagi fitoplankton telah dilakukan dengan menggunakan formula dari Shannon-Weaver dan menghubungkan dengan saliniti.

Daripada keputusan yang didapati, jumlah bilangan per liter bagi fitoplankton meningkat dari stesen 1 ke stesen 12 bergantung kepada saliniti dalam sampel yang diperolehi sebelum musim tengkujuh; manakala bagi sampel yang diperolehi semasa musim tengkujuh, jumlah bilangan per liter bagi fitoplankton telah menurun. Ini adalah disebabkan semasa musim tengkujuh, air di kawasan muara sungai dicairkan oleh hujan yang turun secara berturutan dan juga pengaliran masuk air dari sungai. Diatoms dominan dalam stesen 4 hingga 12. Dinoflagellates hanya dapat di stesen 8 hingga 12 sahaja. Kebanyakan alga hijau terdapat dalam habitat air tawar (stesen 1, 2 dan 3). *Chaetoceros* menunjukkan dominan dalam sampel sebelum musim tengkujuh.

Indeks diversiti bagi fitoplankton adalah dalam julat 2.2 hingga 3.0 dan boleh dikatakan sebagai diversiti yang tinggi.

Daripada analisis statistik, didapati ada hubungkait di antara saliniti dengan fitoplankton diversiti bagi sampel yang diperolehi sebelum musim tengkujuh. Manakala, tidak ada hubungkait di antara saliniti dengan fitoplankton diversiti bagi sampel yang diperolehi semasa musim tengkujuh.

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