

cn 1519

1100024959

LP 10 FST 4 2003



1100024959

Determination of primary productivity and Chlorophyll-a of Phytoplankton in Terengganu river, estuary / Hoo Lee Khing.



1100024959

PERPUSTAKAAN KOLEJ UNIVERSITI SAINS & TEKNOLOGI MALAYSIA (KUSTEM)			
Pengarang HOO LEE KHING		No. Panggilan LP 10	
Judul DETERMINATION OF PRIMARY		FST 4 2003	
Tarikh	Waktu Pemulangan	Nombor Ahli	Tanda tangan
27/1/05		UK 2003	

9/3/10

LP
10
FST
4
2003

DETERMINATION OF PRIMARY PRODUCTIVITY AND CHLOROPHYLL *a*
OF PHYTOPLANKTON IN TERENGGANU RIVER, ESTUARY

BY

HOO LEE KHING

**This project report is submitted in partial fulfillment of
the requirements for the Degree of Bachelor of Science
(Marine Biology)**

Faculty of Science and Technology

KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

2003

1100024959

This project report should be cited as:

Hoo, L. K. 2003. Determination of primary productivity and chlorophyll *a* of phytoplankton in Terengganu River, estuary. Undergraduate thesis, Bachelor of Science in Marine Biology, Faculty of Science and Technology, College University of Science and Technology Malaysia. 99 p.

No part of this project may be reproduced by any mechanical, photographic, or electric process, or in the form of phonographic recording, nor may it be stored in a retrieval system, transmitted, or otherwise copied for public or private use, without written permission from author and the supervisors of the project.

ACKNOWLEDGEMENTS

I wish to convey my sincere gratitude to my first supervisor, *Dr. Siti Aishah Abdullah @ Christine A. Orosco* and my second supervisor, *Prof Dr. Law Ah Theem*; for their invaluable guidance, generosity and encouragement.

My appreciation extended to *Mr. Sulaiman Kassim, Mr. Fadhil Mat Nooh* and all the laboratory assistants for their kindness, technical assistance and co-operation in the process of sampling and research conducting. Special thanks are also due to *Mr. Jong Khiam Jan, Mr. Alan Lau Han Guan, Mr. Yeoh Beng Hooi* and the entire members who helped in collecting the samples.

I am, especially, grateful to *Mr. Chin Kam Yew* for his constructive comments and suggestions throughout my study period. Without his precious encouragement, I might be unable to handle my project fluently and successfully.

My deepest thankfulness goes to all of my family members for their care and endless support through my years in KUSTEM. Not forgetting to all my dear coarse mates, in particular, my housemates who helped in whatever way in completing this project.

Last but not least, I would like to express my heartfelt thanks to my companion, *Mr. Low Wei Min* who always lend me a shoulder whenever I fall down and being the one beside me all the way.

ABSTRACT

This study was undertaken to assess the distribution of photosynthetic rate, chlorophyll *a* and dissolved oxygen (DO) level in Terengganu River, estuary. Two cruises were conducted; 27th June (Southwest monsoon season, SW - from *May to September*) and 7th November (Northeast monsoon season, NE - from *November to March*) of 2002. A total number of thirteen sampling stations were established in the study area.

The monsoon season period had played a great role on the result. The overall parameters were detected comparatively lower during the 2nd sampling than the 1st sampling due to highly freshwater flushing rate and little seawater intrusion occurred in the estuary during the NE monsoon season.

The DO detected was in low level with an average of 5.53 mg.L⁻¹ and 4.80 mg.L⁻¹ for the 1st and 2nd sampling trip respectively. The minimum level was detected near the upper part of the estuary. This may reveal that the consumption rate of DO was high, where this area was considered polluted by the sewage input from adjacent town area.

The net photosynthetic rate and chlorophyll *a* values in the water column of the estuary were generally low which recorded the average values of 48.611 mg C.m⁻³.hr⁻¹ and 8.257 mg.m⁻³ for the 1st sampling respectively. While for the 2nd sampling, the values were 43.186 mg C.m⁻³.hr⁻¹ and 2.704 mg.m⁻³. These values indicated that the study area is not productive. This is because the area does not provide a sufficient residence time for the phytoplankton to establish their biomass.

ABSTRAK

Kajian ini telah dijalankan untuk menaksirkan taburan fotosintesis, klorofil *a* dan oksigen terlarut (DO) dalam muara Sungai Terengganu. Sebanyak dua kali penyampelan telah dijalankan, iaitu pada 27hb Jun (Monsun Barat Daya, SW - dari *Mei ke September*) dan 7hb November (Monsun Timur Laut, NE - dari *November ke Mac*) tahun 2002. Sejumlah tiga belas station penyampelan telah dipilih di kawasan kajian ini.

Musim monsun telah memainkan peranan yang penting ke atas keputusan. Kesemua parameter yang diperolehi adalah lebih rendah pada penyampelan kedua berbanding dengan penyampelan pertama disebabkan oleh kadar pengaliran air tawar yang tinggi dan kurang kemasukkan air laut ke dalam muara sungai pada monsun NE.

Taburan DO yang dikesan adalah pada tahap rendah dengan purata nilainya 5.53 mg.L⁻¹ dan 4.80 mg.L⁻¹ untuk penyampelan pertama dan kedua masing-masing. Tahap minimum telah dikesan berhampiran dengan bahagian hulu muara. Ini menunjukkan bahawa kadar penggunaan DO yang tinggi pada kawasan ini yang dianggap telah dicemari oleh kemasukkan kumbahan dari kawasan pusat bandar yang berdekatan.

Kadar fotosintesis dan klorofil *a* di dalam air muara sungai ini adalah rendah secara umumnya, dengan nilai puratanya 48.611 mg C.m⁻³.jam⁻¹ dan 8.257 mg.m⁻³ masing-masing untuk penyampelan pertama. Manakala bacaan pada penyampelan kedua adalah 43.186 mg C.m⁻³.jam⁻¹ dan 2.704 mg.m⁻³. Nilai-nilai ini menandakan bahawa kawasan kajian adalah kurang produktif dimana ia tidak memberi masa penetapan yang memadai kepada fitoplankton untuk mengukuhkan biomasnya.