

DETERMINATION OF NUTRIENT DISTRIBUTION AROUND THE  
COASTAL WATERS OF BIDONG ISLAND, TERRENGGANU

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**DETERMINATION OF NUTRIENT DISTRIBUTION AROUND THE COASTAL  
WATERS OF BIDONG ISLAND, TERRENGGANU**

**By  
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**Research Report submitted in partial fulfillment of  
the requirement for the degree of  
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DEPARTMENT OF MARINE SCIENCE  
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**DECLARATION AND VERIFICATION REPORT  
FINAL YEAR RESEARCH PROJECT**

It is hereby declared and verified that this research report entitled: Determination of nutrient distribution around the coastal waters of Bidong Island, Terengganu by Lee Xing Hooi, Matric No. UK16945 have been examined and all errors identified have been corrected. This report is submitted to the Department of Marine Science as partial fulfillment towards obtaining the Degree Bachelore of Science in Marine Science, Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

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## LIST OF ABBREVIATIONS

%	- percentage
$\text{PO}_4^{3-}$	- polyatomic ion phosphate
$\text{HPO}_4^{2-}$	- mono hydrogen phosphate
DNA	- deoxyribonucleic acid
ATP	- adenosine triphosphate
ADP	- adenosine diphosphate
$\text{N}_2$	- nitrogen
$\text{NH}_3$	- anhydrous ammonia
$\text{NH}_4^+$	- ammonium
$\text{NO}_2$	- nitrogen dioxide
$\text{NO}_3$	- nitrate
GPS	- Global Positioning System
m	- meter
mL	- milliliter
mm	- millimeter
GFC	- grade of filter paper
cm	- centimeter
$\text{MgCO}_3$	- magnesium carbonate
Rpm	- revolution per minute

nm	- nanometer
mg/cm <sup>3</sup>	- milligram per cubic centimeter
µg/L	- microgram per liter
mg	- milligram
m <sup>3</sup>	- cubic metre
NEDA solution	- N-(1-naphthyl)-ethylenediamine dihydrochloride solution
NO <sub>3</sub> <sup>-</sup>	- nitrate
N	- normality
M	- molarity
ANOVA	- analysis of variance
SPSS	- Statistical Package for the Social Sciences
N	- North
E	- East
mg/m <sup>3</sup>	- milligram per cubic meter
mg/L	- milligram per liter
±	- plus-minus

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## ABSTRACT

Bidong Island is located at the coastal waters of Terengganu. This study is to determine the nutrients and chlorophyll-a concentration in the waters around the Bidong Island. Two sampling trip were conducted on 25<sup>th</sup> March 2010 and 8<sup>th</sup> July 2010 to collect water samples from eight predetermined transect with four stations each. The water samples are filtered with a GFC filter paper and preserved with acid and stored for further analysis. Methods by Parson et al. and APHA are used to determine the chlorophyll-a, nitrate, nitrite, amoniacal-nitrogen and orthophosphate concentration of the water samples. The average chlorophyll-a concentration during first and second sampling are  $287.24 \pm 132.19 \mu\text{g/L}$  and  $313.14 \pm 104.62 \mu\text{g/L}$  respectively. The mean and standard deviation for the concentration of nitrates during the first and second sampling are  $151.85 \pm 4.88 \mu\text{g/L}$  and  $95.89 \pm 12.05 \mu\text{g/L}$  respectively. The average concentration of nitrite during first and second sampling is at  $36.82 \pm 2.10 \mu\text{g/L}$  during first sampling and  $40.86 \pm 2.93 \mu\text{g/L}$ . As for ammoniacal-nitrogen, the mean during the first sampling is  $16.79 \pm 7.09 \mu\text{g/L}$  and  $33.43 \pm 4.68 \mu\text{g/L}$  during the second sampling. Last but not least is orthophosphate where its average concentrations for the first and second sampling are  $25.41 \pm 8.05 \mu\text{g/L}$  and  $16.91 \pm 3.88 \mu\text{g/L}$  respectively. No visible land based effect can be observed throughout the stations in each transect. All the nutrients level in the study area did not exceed the prescribed safety level.

**PENENTUAN NUTRISI AIR DI SEKITAR KAWASAN PERAIRAN  
PULAU BIDONG, TERENGGANU.**

**ABSTRAK**

Pulau Bidong terletak do kawasan perairan pantai Terengganu. Penyelidikan ini bertujuan untuk menentukan kepekatan nutrisi dan klorofil-a di perairan sekitar Pulau Bidong. Sampel air dikumpul sebanyak dua kali di pada 25 Mac 2010 dan 8 Julai 2010 di 8 transek yang mempunyai 4 stesen dalam setiap transek. Sampel air ditapis dengan menggunakan penapis GFC, diawet dengan acid dan disimpan untuk analisis yang seterusnya. Kaedah oleh Parson et al. dan APHA digunakan untuk menentukan kepekatan klorofil-a, nitrate, nitrit, ammonia dan juga ortofosfat dalam sampel air. Min kepekatan klorofil-a untuk sampling yang pertama dan kedua masing-masing adalah  $287.24 \pm 132.19 \mu\text{g/L}$  dan  $313.14 \pm 104.62 \mu\text{g/L}$  dengan transek 4, 5, 6 dan 8 lebih tinggi pada sampling pertama dan transek 1, 2, 3 dan 7 pada sampling kedua. Tahap nitrat lebih tinggi pada sampling pertama dengan kepekatan  $151.85 \pm 4.88 \mu\text{g/L}$  berbanding sampling yang kedua  $95.89 \pm 12.05 \mu\text{g/L}$ . Untuk nitrit pula, kepekatan nitrit pada sampling kedua adalah  $36.82 \pm 2.10 \mu\text{g/L}$  iaitu lebih tinggi berbanding sampling pertama dengan kepekatan  $40.86 \pm 2.93 \mu\text{g/L}$ . Ammonia mempunyai kepekatan yang lebih tinggi dalam semua transek semasa sampling kedua dengan min sebanyak  $16.79 \pm 7.09 \mu\text{g/L}$  berbanding  $33.43 \pm 4.68 \mu\text{g/L}$  pada sampling pertama. Kepekatan ortofosfat lebih tinggi

semasa sampling pertama dengan min  $25.41 \pm 8.05 \mu\text{g/L}$  berbanding sampling kedua dengan min  $16.91 \pm 3.88 \mu\text{g/L}$ .