

A STUDY ON MORPHING, INTERSEX DISTRIBUTION
AND SEX RATIO

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**A STUDY ON INORGANIC NITROGEN DISTRIBUTION
AT TOK BALI LAGOON**

**By
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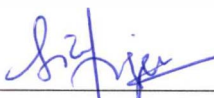
**PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk :

A STUDY ON INORGANIC NITROGEN DISTRIBUTION AT TOK BALI LAGOON

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LIST OF ABBREVIATIONS / SYMBOLS

°C	degree Celsius
g	gram
µg	microgram
µM	microMolar
L	litre
mL	millilitre
cm	centimetre
nm	nanometre
mm	millimetre
mg/L	milligram per litre
ppm	part per million
ppt	part per thousand
v/v	volume per volume
w/v	weight per volume
ANOVA	Analysis of variance
df	degree of freedom
R ²	r-squared
SD	standard deviation
SS	sum of square
P<0.05	significant difference
p>0.05	no significant difference

DIN	Dissolved Inorganic Nitrogen
DO	Dissolved Oxygen
DNA	Deoxyribonucleic Acid
GFC	Glass Fibre filter paper
GPS	Global Positioning System
HCL	Hydrochloric Acid
N	Nitrogen
NaOH	Sodium Hydroxide
NH ₃	Ammonia
NO ₂	Nitrite
NO ₃	Nitrate
P	Phosphorus

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ABSTRACT

The distribution of inorganic nitrogen in Tok Bali Lagoon, Kelantan was studied. The sampling stations were visited two times in non monsoon season (September and October 2005) and once in monsoon season (November 2005). Fourteen sampling stations were established and the water samples of these stations were taken during high and low tides at surface and mid-depth of the lagoon area. The first sampling was carried out on 17 September 2005, second sampling was conducted on 19 October 2005 while the last sampling was conducted on 23 November 2005. The average values of nitrite, nitrate and ammonia during the non monsoon season were $0.15 \pm 0.09 \mu\text{M}$, $1.09 \pm 0.06 \mu\text{M}$ and $3.92 \pm 0.24 \mu\text{M}$ respectively at high tide whereas for the low tide the values were $0.23 \pm 0.02 \mu\text{M}$, $3.45 \pm 0.62 \mu\text{M}$ and $12.95 \pm 1.44 \mu\text{M}$ respectively. The average values of nitrite, nitrate and ammonia during the monsoon season were $0.28 \pm 0.01 \mu\text{M}$, $7.06 \pm 0.71 \mu\text{M}$ and $15.18 \pm 7.33 \mu\text{M}$ respectively at high tide whereas for the low tide the values were $0.26 \pm 0.01 \mu\text{M}$, $13.21 \pm 0.01 \mu\text{M}$ and $15.17 \pm 1.92 \mu\text{M}$ respectively. Nitrite and nitrate showed significant difference ($p < 0.05$) between tides but ammonia showed no significant difference ($p > 0.05$) between tides. Nitrite, nitrate and ammonia indicated a significant difference ($p < 0.05$) between the non monsoon and monsoon sampling periods.

ABSTRAK

Kajian taburan nitrogen tak organik telah dijalankan di Lagun Tok Bali, Kelantan. Persampelan telah dilakukan sebanyak dua kali pada musim bukan tengkujuh (September dan Oktober 2005) dan sekali di musim tengkujuh (November 2005). Sampel air telah diambil pada kedalaman pertengahan dan permukaan mengikut pasang surut air di 14 stesen-stesen persampelan yang telah ditentukan. Persampelan pertama telah dijalankan pada 17 September 2005, manakala persampelan kedua pula telah dilakukan pada 19 Oktober 2005 dan persampelan terakhir telah dijalankan pada 23 November 2005. Nilai purata nitrit, nitrat dan ammonia pada musim bukan tengkujuh ialah $0.15 \pm 0.09 \mu\text{M}$, $1.09 \pm 0.06 \mu\text{M}$ dan $3.92 \pm 0.24 \mu\text{M}$ pada paras air pasang manakala pada paras air surut pula ialah $0.23 \pm 0.02 \mu\text{M}$, $3.45 \pm 0.62 \mu\text{M}$ dan $12.95 \pm 1.44 \mu\text{M}$. Nilai purata nitrit, nitrat dan ammonia semasa musim tengkujuh ialah $0.28 \pm 0.01 \mu\text{M}$, $7.06 \pm 0.71 \mu\text{M}$ dan $15.18 \pm 7.33 \mu\text{M}$ pada paras air tinggi manakala pada paras air surut ialah $0.26 \pm 0.01 \mu\text{M}$, $13.21 \pm 0.01 \mu\text{M}$ dan $15.17 \pm 1.92 \mu\text{M}$. Nitrit dan nitrat menunjukkan perbezaan yang nyata ($p < 0.05$) antara paras air pasang dan surut tetapi ammonia tidak menunjukkan perbezaan yang nyata ($p > 0.05$) antara air pasang dan air surut. Nitrit, nitrat dan ammonia menunjukkan perbezaan yang nyata ($p < 0.05$) sebelum dan semasa musim tengkujuh.