PROFILE OF NUTRIENTS CONTENT (NITRATE, NITRITE AND AMMONIA) AND DISTRIBUTION IN ONE DAY CYCLE AT CAGE CULTURE AREA IN SETTU LAGOON, TERENGGANU

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RESEARCH PROJECT FINAL YEAR FINAL DRAFT APPROVAL AND VALIDATION FORM I AND II

I certify that the report of this year project entitled as:

Profile of Nutrients Content (nitrate, nitrite and ammonia) and Distribution in One Day Cycle at Cage Culture Area in Setiu Lagoon, Terengganu, by **Mohd Fahmi Bin Mohd Zam Zam,** Matric No. **UK 10503** has been read and all alteration and correction recommended by examiners have been done. This final draft submitted to Marine Science Department has been accepted as fulfillment of the requirement for **Bachelor of Science (Marine Science)** under the Faculty of Maritime Studies and Marine Science, University Malaysia Terengganu.

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LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS/ SYMBOLS

CO_2	=	carbon dioxide
$CuSO_4 \cdot 5H_2O$	=	cooper sulfate
$C_{12}H_{14}N_2.2HCl$	=	N-(1-naphthyl)-ethylenediamine dihydrochloride
H_2O	=	water
H_2CO_3	=	carbonic acid
H_2SO_4	=	sulfuric acid
NH_4Cl	=	ammonium chloride
$(NH_4)_6Mo_7O_{24}.4H_2O$	=	ammonium molybdate
$4\text{-}N_2H_8C_6SO_2$	=	sulfanilamide
N_2	=	nitrogen
NH_3	=	ammonia
NH_4^+	=	ion ammonium
NO_2^-	=	nitrite
NO_3^-	=	nitrate
O_2	=	oxsigen
BOD	=	Biological Oxygen Demand
TAN	=	Total Ammonia Nitrogen
ND	=	No detected
GPS	=	Global Positioning System
°C	=	degree Celsius
atm	=	atmosphere pressure
cm	=	centimeter
g	=	gram

L	=	liter
mg/L	=	milligram per liter
ml	=	mililiter
nm	=	nanometer
µm	=	micrometer (micron)
m	=	meter
µg/L	=	microgram per liter
ppt	=	part per thousand
w/v	=	weight/volume
v/v	=	volume/volume

LIST OF APPENDIXS

ABSTRACT

Study on nutrients content (nitrite, nitrite and ammonia) and distribution in cage culture area of Setiu Lagoon, Terengganu was carried out with two sampling; the first sampling on 19 - 20 December 2006 and the second sampling on 17 - 18 January 2007. The sampling involved only one station but carried out in one day cycle. Nutrients that were measured in water samples were nitrate, nitrite and ammonia. The objectives of this study are to determine the factor that gave effects to the nutrient distribution and content and to determine the effect of North East Monsoon season to the nutrient distribution. Based on the results of water samples analysis, the average value and the range of nitrate concentration during the first sampling are 0.811 mg/L (0.155 – 1.572 mg/L) for surface water and 0.936 mg/L (0.346 – 1.609 mg/L) for bottom water. The average value and the range of nitrate concentration during the second sampling are 1.740 mg/L (0.293 – 3.473 mg/L) for surface water and 0.771 mg/L (0.486 – 1.361 mg/L) for bottom water. The average value and the range of nitrite concentration during the first sampling are 0.014 mg/L (0.009 – 0.020 mg/L) for surface water and 0.020 mg/L (0.004 – 0.042 mg/L) for bottom water. The average value and the range of nitrite concentration during the second sampling are 0.022 mg/L (0.004 – 0.080 mg/L) for surface water and 0.032 mg/L (0.010 – 0.053 mg/L) for bottom water. The average value and the range of ammonia concentration during the first sampling are 0.358 mg/L (0.075 – 0.625 mg/L) for surface water and 0.388 mg/L (0.119 – 0.673 mg/L) for bottom water. The average value and the range of ammonia concentration during the second sampling are 0.353 mg/L (0.073 – 0.590 mg/L) for surface water and 0.369 mg/L (0.092 – 0.807 mg/L) for bottom water. From the study, during the first sampling the concentration of nitrate was higher than the

second sampling. The concentration of nitrite and ammonia were not very difference. The differences of nutrient during both of sampling times were more influence by two major factor which are Northeast Monsoon factor and tidal factor. The cage culture activity in study area also is a factor but the effect is not conspicuous.

ABSTRAK

Kajian mengenai profil kandungan dan taburan nutrient di kawasan ternakan ikan dalam sangkar di lagun Setiu, Terengganu telah dijalankan sebanyak dua kali persampelan iaitu pada 19 – 20 Disember 2006 dan 17 – 18 Januari 2007. Kajian ini hanya melibatkan satu stesen tetapi meliputi satu kitaran masa yang lengkap (24 jam). Nutrien yang dikaji adalah nitrat, nitrit dan ammonia. Tujuan kajian ini dilakukan adalah untuk menentukan faktor yang mempengaruhi profil kandungan dan taburan nutrien selain ingin melihat kesan musim monsun Timur Laut ke atas taburan nutrien. Berdasarkan keputusan penganalisaan sampel air, nilai purata kepekatan nitrat dan julat kepekatannya pada persampelan pertama adalah 0.811 mg/L (0.155 – 1.572 mg/L) untuk air permukaan dan 0.936 mg/L (0.346 – 1.609 mg/L) untuk air dasar. Nilai purata kepekatan nitrat dan julat kepekatannya pada persampelan pertama adalah 1.740 mg/L (0.293 – 3.473 mg/L) untuk air permukaan dan 0.771 mg/L (0.486 – 1.361 mg/L) untuk air dasar. Nilai purata kepekatan nitrit dan julat kepekatannya pada persampelan pertama adalah 0.014 mg/L (0.009 – 0.020 mg/L) untuk air permukaan dan 0.020 mg/L (0.004 – 0.042 mg/L) untuk air dasar. Nilai purata kepekatan nitrit dan julat kepekatannya pada persampelan kedua adalah 0.022 mg/L (0.004 – 0.080 mg/L) untuk air permukaan dan 0.032 mg/L (0.010 – 0.053 mg/L) untuk air dasar. Nilai purata kepekatan ammonia dan julat kepekatannya pada persampelan pertama adalah 0.358 mg/L (0.075 – 0.625 mg/L) untuk air permukaan dan 0.388 mg/L (0.119 – 0.673 mg/L) untuk air dasar. Nilai purata kepekatan ammonia dan julat kepekatannya pada persampelan kedua adalah 0.353 mg/L (0.073 – 0.590 mg/L) untuk air permukaan dan 0.369 mg/L (0.092 – 0.807 mg/L) untuk air dasar. Berdasarkan daripada kajian yang telah dijalankan, pada persampelan pertama

kepekatan nitrat adalah lebih tinggi daripada persampelan kedua. Kepekatan nitrit dan ammonia pula tidak banyak perbezaan. Perbezaan nutrien bagi kedua-dua persampelan banyak dipengaruhi oleh dua faktor utama faktor utama iaitu pengaruh pasang surut dan musim Monsun Timur Laut. Aktiviti ternakan ikan dalam sangkar juga turut mempengaruhi taburan nutrien tetapi kesannya tidak begitu nyata.