

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

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RESEARCH PROJECT FINAL YEAR FINAL DRAFT APPROVAL AND
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LIST OF CONTENTS

	PAGE
VALIDATION	ii
ACKNOWLEDGEMENT	iii
LIST OF CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS/ SYMBOLS	xi
LIST OF APPENDIXS	xiii
ABSTRACT	xiv
ABSTRAK	xvi
CHAPTER	
1.0 INTRODUCTION	1
1.1 Research objectives	4
2.0 LITERATURE REVIEW	5
2.1 Estuary or lagoon	5
2.2 Nutrients	6
2.2.1 Nitrate	7
2.2.2 Nitrite	9
2.2.3 Ammonia	11
2.3 Nitrogen cycle	13

3.0	METHODOLOGY	16
3.1	Location study	16
3.2	Sampling method	17
3.3	Water samples analysis	17
3.3.1	Nitrate analysis	18
3.3.2	Nitrite analysis	22
3.3.3	Ammonia analysis	24
3.4	Statistical analysis	26
4.0	RESULTS	27
4.1	Tide table	27
4.2	Water parameter (temperature, dissolved oxygen, pH and salinity)	28
4.1.1	Temperature	30
4.1.2	Dissolved oxygen	32
4.1.3	pH	34
4.1.4	Salinity	36
4.2	Water samples analysis	38
4.2.1	Nitrate	40
4.2.2	Nitrite	42
4.2.3	Ammonia	46
5.0	DISCUSSION	50
5.1	Water parameter	50

5.2	Water samples analysis	54
5.2.1	Nitrate	54
5.2.2	Nitrite	57
5.2.3	Ammonia	58
5.3	The effect of cage culture activity and tidal	60
6.0	CONCLUSION	62
	REFERENCES	63
	APPENDICES	66
	CURRICULUM VITAE	78

LIST OF TABLES

	Page
Table 3.1 : Coordinate of study area.	17
Table 4.1 : Water depth and time of tidal	27
Table 4.2 : Water parameter for the first sampling.	28
Table 4.3 : Water parameter for the second sampling.	29
Table 4.4 : Concentration of nitrate (mg/L) on the first and second sampling.	39
Table 4.5 : Concentration of nitrite (mg/L) on the first and second sampling.	43
Table 4.6 : Concentration of ammonia (mg/L) on the first and second sampling.	47

LIST OF FIGURES

	Page
Figure 2.1 : Nitrogen cycle in ocean (Hobbie <i>et al.</i> , 1975).	15
Figure 3.1 : Map of study area (Setiu lagoon) Setiu, Terengganu.	16
Figure 3.2 : Flow chart of nitrate analysis method.	21
Figure 3.3 : Flow chart of nitrite analysis method.	23
Figure 3.4 : Flow chart of ammonia analysis method.	26
Figure 4.1 : Profile of temperature (°C) vs time (hour) in Setiu lagoon, Terengganu on the first and second sampling.	31
Figure 4.2 : Figure 4.2: Profile of dissolved oxygen (mg/L) vs time (hour) in Setiu lagoon, Terengganu on the first and second sampling.	33
Figure 4.3 : Profile of pH (unit) vs time (hour) in Setiu lagoon, Terengganu on the first and second sampling.	35
Figure 4.4 : Profile of salinity (ppt) vs time (hour) in Setiu lagoon, Terengganu on the first and second sampling.	37
Figure 4.5 : Profile of nitrate concentration (mg/L) vs time (hour) in Setiu lagoon on the first sampling.	40
Figure 4.6 : Profile of nitrate concentration (mg/L) vs time (hour) in Setiu lagoon on the second sampling.	40
Figure 4.7 : Profile of nitrate concentration (mg/L) vs time (hour) for surface water in Setiu lagoon on the first and second sampling.	41
Figure 4.8 : Profile of nitrate concentration (mg/L) vs time (hour) for bottom water in Setiu lagoon on the first and second sampling.	41
Figure 4.9 : Profile of nitrite concentration (mg/L) vs time (hour) in Setiu lagoon on the first sampling.	44
Figure 4.10 : Profile of nitrite concentration (mg/L) vs time (hour) in Setiu lagoon on the second sampling.	44
Figure 4.11 : Profile of nitrite concentration (mg/L) vs time (hour) for surface water in Setiu lagoon on the first and second sampling.	45
Figure 4.12 : Profile of nitrite concentration (mg/L) vs time (hour) for bottom water in Setiu lagoon on the first and second sampling.	45

Figure 4.13	: Profile of ammonia concentration (mg/L) vs time (hour) in Setiu lagoon on the first sampling.	48
Figure 4.14	: Profile of ammonia concentration (mg/L) vs time (hour) in Setiu lagoon on the second sampling.	48
Figure 4.15	: Profile of ammonia concentration (mg/L) vs time (hour) for surface water in Setiu lagoon on the first and second sampling.	49
Figure 4.16	: Profile of ammonia concentration (mg/L) vs time (hour) for bottom water in Setiu lagoon on the first and second sampling.	49

LIST OF ABBREVIATIONS/ SYMBOLS

CO_2	=	carbon dioxide
$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	=	cooper sulfete
$\text{C}_{12}\text{H}_{14}\text{N}_2 \cdot 2\text{HCl}$	=	N-(1-naphthyl)-ethylenediamine dihydrochloride
H_2O	=	water
H_2CO_3	=	carbonic acid
H_2SO_4	=	sulfuric acid
NH_4Cl	=	ammonium chloride
$(\text{NH}_4)_6\text{Mo}_7\text{O}_{24} \cdot 4\text{H}_2\text{O}$	=	ammonium molybdate
$4\text{-N}_2\text{H}_8\text{C}_6\text{SO}_2$	=	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
$^\circ\text{C}$	=	degree Celsius
atm	=	atmosphere pressure
cm	=	centimeter
g	=	gram

L	=	liter
mg/L	=	milligram per liter
ml	=	milliliter
nm	=	nanometer
μm	=	micrometer (micron)
m	=	meter
$\mu\text{g/L}$	=	microgram per liter
ppt	=	part per thousand
w/v	=	weight/volume
v/v	=	volume/volume

LIST OF APPENDIXS

	Page
APPENDIX 1 : Nitrate's data for surface and bottom water on the first sampling.	67
APPENDIX 2 : Nitrate's data for surface and bottom water on the second sampling.	68
APPENDIX 3 : Nitrite's data for surface and bottom water on the first sampling.	69
APPENDIX 4 : Nitrite's data for surface and bottom water on the second sampling.	70
APPENDIX 5 : Ammonia's data for surface and bottom water on the first sampling.	71
APPENDIX 6 : Ammonia's data for surface and bottom water on the second sampling.	72
APPENDIX 7 : Anova two ways without replication <ul style="list-style-type: none">• Nitrate	73
APPENDIX 8 : Anova two ways without replication <ul style="list-style-type: none">• Nitrite	75
APPENDIX 9 : Anova two ways without replication <ul style="list-style-type: none">• Ammonia	77

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 different. The differences of nutrient during both of sampling times were more influenced by two major factors 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 penganalisan sampel air, nilai purata kepekatan nitrat dan julat kepekatan 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 kepekatan 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 kepekatan 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 kepekatan 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 kepekatan 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 kepekatan 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.