

IDENTIFICATION OF ECTOPARASITE TOWARDS
SEA BASS (*Lates calcarifer*) IN CAGE CULTURE IN SETIU, TERENGGANU

MOHAMAD RAIMI BIN MOHAMAD NOR

FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
UNIVERSITI MALAYSIA TERENGGANU
2008

**IDENTIFICATION OF ECTOPARASITE TOWARDS
SEA BASS (*Lates calcarifer*) IN CAGE CULTURE IN SETIU, TERENGGANU**

By

Mohamad Raimi bin Mohamad Nor

**Research Report submitted in partial fulfillment of
the requirements for the degree of Bachelor of
Science (Marine Biology)**

**Department of Marine Science
Faculty of Maritime Studies and Marine Science
UNIVERSITI MALAYSIA TERENGGANU
2008**

This thesis should be cited as:

Mohamad Raimi, M. N., 2008. Identification Of Ectoparasite towards Sea Bass (*Lates calcarifer*) In Cage Culture In Setiu, Terengganu. Undergraduate Thesis, Bachelor of Science in Marine Biology. Universiti Malaysia Terengganu. Terengganu, Malaysia. 58p.

No part of this project report may be produced by any mechanical, photographic, or electronic 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 the author and the supervisor(s) of the project.

1100061845



**JABATAN SAINS MARIN
FAKULTI PENGAJIAN MARITIM DAN SAINS MARIN
UNIVERSITI MALAYSIA TERENGGANU**

PENGAKUAN DAN PENGESAHAN LAPORAN

PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk : **Identification of Ectoparasite towards Sea bass (*Lates calcarifer*) In Cage Culture In Setiu, Terengganu** oleh **Mohamad Raimi bin Mohamad Nor**, No. Matrik UK 12370 telah diperiksa dan semua pembedaan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Marin sebagai memenuhi sebahagian daripada keperluan memperolehi ijazah **Sarjana Muda Sains (Biologi Marin)**, Fakulti Pengajian Maritim dan Sains Marin, Universiti Malaysia Terengganu.

Disahkan oleh:

(Penyelia Utama)

Nama : Prof. Dr. Faizah bt. Shaharom

Tarikh:

PROF. DR. FAIZAH BT SHAHAROM
PENGARAH
INSTITUT AKUAKULTUR TROPIKA
UNIVERSITI MALAYSIA TERENGGANU (UMT)
21030 KUALA TERENGGANU.

Cop Rasmi:

(Ketua Jabatan)

Nama : Dr. Razak bin Zakariya

Tarikh: 12/5/08.

DR. RAZAK ZAKARIYA
Ketua Jabatan Sains Marin
Fakulti Pengajian Maritim dan Sains Marin
Universiti Malaysia Terengganu
(UMT)

Cop Rasmi:

ACKNOWLEDGEMENT

In the name of Allah, The Most Gracious and The Most Merciful.

First of all, I am very grateful to Allah S.W.T for His blessing and for being able to complete this thesis. I would like to express my sincere appreciation and deepest gratitude to my supervisor, Prof. Faizah bt. Shaharom who is willing to take me under her supervision and give me a chance to present and show my talent. She also taught and give guidance so that I be able to complete this thesis well.

I also want to thank a lot to all of the staffs and laboratory assistant, En. Mat Zan, En. Jalal and En. Syed and the special thanks to Pn. Kartini for her willingness to guidance in my laboratory work.

Thanks also to all my friends for their kindness and support in helping me to complete my project. Lastly, my greatest appreciation and acknowledge the sacrifices, guidance and encouragement received throughout these years from my beloved family members especially for my parents and my siblings.

I hope this valuable thesis just not for me, but will be for ours to take the advantages of. Thank you very much.

TABLE OF CONTENTS

Content	Page
TITLE PAGE	i
ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF APPENDICES	vii
LIST OF ABBREVIATIONS	viii
ABSTRACT	ix
ABSTRAK	x
CHAPTER 1: INTRODUCTION	1
CHAPTER 2: LITERATURE REVIEW	4
2.1 Parasitism	4
2.1.1 The host-parasite relationship	6
2.2 Fish ectoparasites	6
2.2.1 Protozoa	7
2.2.2 Monogenea	7
2.2.3 Parasites Crustaceans	8
2.3 Sea bass (<i>Lates calcarifer</i>)	10
2.3.1 Taxonomy of <i>Lates calcarifer</i>	12
CHAPTER 3: METHODOLOGY	13
3.1 Sampling site	13
3.2 Samples	14
3.3 Data of fish	14
3.4 Fish parasite examination	14
3.4.1 Killing the fish	14
3.4.2 Skin smear	14
3.4.3 Gill smear	15
3.5 Parasite preservation	15

3.6	Parasite identification	16
3.7	Parasite estimation	17
CHAPTER 4: RESULT		18
4.1	Parasites Identification	19
	4.1.1 Monogenea	19
	4.1.2 Protozoan (Ciliated)	23
	4.1.3 Protozoan (Flagellated)	27
	4.1.4 Parasitic Crustaceans	29
CHAPTER 5: DISCUSSION		42
CHAPTER 6: CONCLUSION		48
REFERENCES		49
APPENDIX		53
CURRICULUM VITAE		58

LIST OF TABLES

TABLES		PAGE
4.1	The value of prevalence and mean intensity of <i>Lates calcarifer</i> . This value for total species of parasite.	36
4.2	Data number of fish effected, prevalence of parasite, mean intensity of parasite and percentage abundance of parasite.	36
4.3	Data number of physical parameter taken during sampling.	40

LIST OF FIGURES

FIGURES		PAGES
2.0	Sea bass (<i>Lates calcarifer</i>)	10
3.0	Map of Kampung Buluh, Setiu, Terengganu. The red circle indicates the location of sampling (Sungai Kuala Setiu).	13
4.1	The drawing morphology of <i>Pseudorhabdosynochus sp.</i> ; a. Full sketch, b. The picture of <i>Pseudorhabdosynochus sp.</i> was mounted.	21
4.2	Picture a., b., and c. <i>Pseudorhabdosynochus sp.</i> infected the gill of Sea bass.	22
4.3	Picture a. and b. the morphology of <i>Tricodina sp.</i> Picture was taken during diagnosing live specimen.	24
4.4	This picture was taken from the journal of Durborow, 2003.	24
4.5	Picture a., b., and c. the morphology of <i>Cryptocaryon irritans</i> .	26
4.6	The <i>Henneguya sp.</i> on the gill of sea bass.	28
4.7	The drawing of <i>Caligus sp.</i> (Dorsal view) and part of cephalothorax; a. Cephalic zone, b. Lateral zone, c. Thoracic zone, d. Tagma.	31
4.8	The drawing morphology of <i>Caligus sp.</i> ; a. Dorsal view, b. Ventral view.	32
4.9	The drawing morphology of <i>Lernanthropus latis</i> ; Full sketch.	34
4.10	Gill of sea bass that infected with <i>Lernanthropus latis</i> .	35
4.11	Graph of prevalence of parasites on <i>Lates calcarifer</i> .	37
4.12	Graph of mean intensity of parasites on <i>Lates calcarifer</i> .	38
4.13	Pie chart of percentage abundance of parasites on <i>Lates calcarifer</i> .	39

LIST OF APPENDICES

Appendix		PAGE
1	Number of ectoparasite found from <i>Lates calcarifer</i>	53
2	Measurement of <i>Lates calcarifer</i>	54
3	Fish was killed by pitching.	56
4	The size of sea bass was measured.	56
5	Sea bass cage culture at sampling location, Setiu.	57
6	Physical parameter of water was measured by using YSI.	57

LIST OF ABBREVIATIONS

%	Percentage
±	Plus-minus sign
μm	Micrometer
mm	Milimeter
N	North
E	East
°	Degree
'	Minute

ABSTRACT

Identification, prevalence and mean intensity of ectoparasites on 40 commercial-mariculture fish seabasses (*Lates calcarifer*) kept in floating cages from mariculture farms in Setiu, Terengganu were studied. Parasites were identified from the fin, skin, eye, operculum and gills of the fish. Three species of parasitic protozoa (*Cryptocaryon irritans*, *Henneguya* sp. and *Trichodina* sp.), two species of copepod (*Caligus* sp. and *Lernanthropus latis*) and a monogenean species (*Pseudorhabdosynochus* sp.) were identified from seabasses. Parasites were found from all parts of the body but gills were more heavily infected. Prevalence and mean intensity of *Pseudorhabdosynochus* sp. was the highest compared to others parasites. Prevalence and mean intensity on Sea bass (*Lates calcarifer*) were 100% and 84.95 respectively.

**Pengenalpastian Ektoparasit Ke Atas Ikan Siakap (*Lates calcarifer*)
Dalam Sangkar Kultur Di Setiu, Terengganu.**

ABSTRAK

Pengenalpastian, prevalen dan min keamatan ektoparasit pada 40 ekor ikan marikultur komersil iaitu ikan siakap (*Lates calcarifer*) yang dipelihara dalam sangkar terapung di Setiu, Terengganu telah dikaji. Penentuan parasit ditentukan pada bahagian sirip, kulit, mata, operkulum dan insang. Tiga jenis spesis protozoa iaitu *Cryptocaryon irritans*, *Henneguya* sp. dan *Trichodina* sp., dua kopepod iaitu *Caligus* sp. dan *Lernanthropus latis* serta satu spesis monogenea iaitu *Pseudorhabdosynochus* sp. telah dikenalpasti daripada ikan tersebut. Parasit ditemui pada hampir semua badan ikan yang diperiksa dan bahagian insang paling sering dijangkiti. Prevalen dan min keamatan *Pseudorhabdosynochus* sp. adalah paling tinggi berbanding parasit-parasit lain. Prevalen dan min keamatan parasit dalam ikan siakap (*Lates calcarifer*) adalah 100% dan 84.95 masing-masing.