

INTRASPECIFIC RESOURCE PARTITIONING BY
Tilapia macrolepidota (VAN HASSELT)
IN LOTIC AND LENTIC ENVIRONMENT
OF KEDAH RESERVOIR,
MALAYSIA

BY
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MASTER OF SCIENCE
UNIVERSITI PERTANIAN MALAYSIA
1995

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SF 458 .B3 C4 1995



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Intraspecific resource partitioning by *Hampala*
macrolepidota(Van Hasselt) in lotic and lentic environment of
Kenyer reservoir, Malaysia / Ahmed Jalal Khan Chowdhury.



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HALMAH

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AHMED JALAL KHAN CHOWDHURY

**Thesis Submitted in Fulfilment of the Requirements
for the Degree of Master of Science in the
Faculty of Fisheries and Marine Science
Universiti Pertanian Malaysia**

December 1995

1000331098

DEDICATION

This work is dedicated to
my parents, wife and son .

ACKNOWLEDGEMENTS

First and foremost, I would like to express my gratitude to my Chairman of the supervisory committee, Assoc. Prof. Dr. Hj. Mohd. Azmi Bin Ambak for his invaluable contribution, inputs and careful supervision of my Master programme in the Universiti Pertanian Malaysia. Without his constant encouragement this thesis would never have been written. I would like to extend my most sincere gratitude and deep appreciation to late Professor Dr. A. K. M. Mohsin for his profound sympathy and guidance during my study.

I am also indebted to the other members of my committee, Associate Professor Dr. Fatimah M. Yusoff and Dr. Sakri bin Ibrahim for their encouragement, meaningful comments and review of my work throughout the study period.

I would like to acknowledge Universiti Pertanian Malaysia for the Research Assistantship under IRPA project 50258-J3 which was kindly awarded to me during the tenure of my candidature as M.S. Student. It is indeed not an exaggeration to say that this study would never have been possible without this financial assistance. This kind of magnanimous support will hopefully harbinger in a new era in my life and continue to remain as a perennial source of inspiration. I wish to express my deep thanks to all the staff of FPSS in Terengganu for their hospitality and for their enthusiastic acceptance of me as part of the community. Acknowledgements are also due to the following friends, colleagues and well-wishers who were instrumental and have provided valuable inputs directly or indirectly in the presentation of this

dissertation: Dr. M.S. Khan, Mr. Zaidi Zakaria, Mr. M.A.Rouf, Mr. Tafazzal Hoque, Mr. A.Hadi, Mr. Yusaini, Mr. Akedah, Mr. Mannaf, Mr. Matnong, Mr. Sukiman, Mr. Sulaiman, Mr. Hosni, Mr. Mokhtar, Mr. Johari, Mr. K.Kasim, Mr. Shahbuddin, Mr. Shamsuddin, Mr. Sukree, Miss Rohaiza, Miss Eiza, Miss Rohana, Miss Rose, Mrs. Marhaini and Mrs. Farida Shamsuddin.

I also appreciate the assistance of Assoc. Prof. Dr. Hj. Mohd. Zaki Mohd. Said, Dean of the Faculty of Fisheries and Marine Science and the Dean of Graduate School, Universiti Pertanian Malaysia. I would also like to extend heartfelt thanks to Dr. Md. Lokman Husain, Head of the Department FPSS, Terengganu and Mr. Abdul Aziz bin Bahsir, Senior Assistant Registrar, Graduate School, UPM, who helped me in every possible way.

I wish to extend my gratitude to the Department of Fisheries and Ministry of Fisheries and Livestock, Bangladesh for their support and encouragement for my studying in Malaysia. I am sincerely grateful to Mr. Daud (David Harrison) , a teacher in English, Pusat Pengajian Matrikulasi, UPM, Terengganu for editing the manuscript.

Words are not enough to express my heartfelt feelings to my parents for providing me with their untiring guidance and support since my childhood. Last but not least, special note of thanks is due to my wife, Luna, whose inspirational role and enthusiasm helped boost my mental strength towards achieving the noble cause of education.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
LIST OF TABLES	x
LIST OF FIGURES	xii
LIST OF PLATES	xiv
ABSTRACT	xvi
ABSTRAK	xix
CHAPTER	
I INTRODUCTION	1
Background of the Study	1
Statement of the Problem	9
Suppression of Riverine Fish Populations	9
Changes in Species Composition	10
Decrease in Fish Production	11
Alteration of Habitat	11
Alteration of Tail-Waters	12
Drowning of Spawning Ground	13
Resource Competition	13
Significance Of the Study	15
Objectives of the Study	18

II	LITERATURE REVIEW	19
	Resource Partitioning	19
	Definition	19
	Natural History	19
	Habitat Partitioning	21
	Food Partitioning	22
	Temporal Partitioning	23
	Ecological Segregation in the Tropics	24
	Predation	24
	Competition	25
	Intraspecific Resource Partitioning	25
III	THE STUDY AREA	27
	Selection of Sites	27
	Description of the Sampling Stations	29
	Station 1	29
	Station 2	29
	Materials and Methods	30
	Transparency	30
	Temperature	30
	Dissolved Oxygen	30
	Conductivity	34
	pH	34

	Ortho-phosphate	34
	Nitrate-nitrogen	35
	Water Level	36
	Rainfall	36
Results		36
	Transparency	36
	Temperature	37
	Dissolved Oxygen	37
	pH	38
	Conductivity	38
	Ortho-phosphate	39
	Nitrate-nitrogen	39
	Water Level	40
	Rainfall	40
Discussion		45
IV	HABITAT PARTITIONING	53
	Macrohabitat	54
	Aquatic Macrophytes	56
	Microhabitat	57
	Objective	58
	Materials and Methods	59
	Electrofishing	59

	Underwater Observations	60
	Gill net	61
	Macrohabitat	69
	Microhabitat	69
	Statistical Analysis on Habitat Overlap	70
	Results	72
	Electrofishing	72
	Underwater Observations	73
	Gill net	74
	Microhabitat	75
	Macrohabitat	77
	Habitat overlap	87
	Discussion	98
V	FOOD PARTITIONING	107
	Objective	108
	Materials and Methods	109
	Gut Content Analysis	109
	Numerical Score	110
	Volumetric	110
	Frequency of Occurrence	111
	Relative Importance Index	112
	Statistical Analysis by Niche Breadth and Dietary Overlap	115

	Results	118
	Discussion	123
VI	TEMPORAL PARTITIONING	126
	Objective	127
	Materials and Methods	127
	Results	128
	Diel Pattern of Feeding Activity	129
	Seasonal Pattern of Feeding Activity	132
	Discussion	135
VII	SUMMARY AND CONCLUSION	138
	Summary	138
	Conclusion	144
	Further Study	145
	BIBLIOGRAPHY	146
	APENDICES	165
	Additional Tables	165
	VITAE	170

LIST OF TABLES

Table

1	Microhabitat Characteristics of Lotic and Lentic Environment	41
2	Logarithmic Abundance Categories Used in Estimates of Abundance of Numerically Dominant Fish Species (Russ, 1985)	65
3	Description of the Gill Nets	67
4	Selection of Habitat Types for Different Sizes <i>Hampala macrolepidota</i> by Electrofishing in Lotic and Lentic Habitat	72
5	Logarithmic Abundance Categories Used (Russ, 1985) in Estimates of Numbers of Different Size of <i>Hampala macrolepidota</i>	73
6	Length-Frequency Distribution of <i>Hampala macrolepidota</i> in Different Depth of Lotic and Lentic Habitat	74
7	Flow of Current in Lotic and Lentic Environment	76
8	Spatial Overlap of Different Size Classes in Each Depth of Lotic Habitat	88
9	Spatial Overlap of Different Size Classes in Lotic Habitat	89
10	Spatial Overlap of Different Size Classes in Each Depth of Lentic Habitat	90
11	Spatial Overlap of Different Size Classes in Lentic Habitat	91
12	Overlap of Different Size Classes <i>H. macrolepidota</i> in Each Depth of Lotic and Lentic Habitat.	92
13	Overlap of Different Size Classes <i>H. macrolepidota</i> in Lotic and Lentic Habitat.	93
14	Overlap Between Males and Females <i>H. macrolepidota</i> of Different Size Classes in Each Depth of Lotic Habitat	94
15	Overlap Between Males and Females <i>H. macrolepidota</i> of Different Size Classes in Lentic Habitat	95

16	Overlap Between Males and Females <i>H.macrolepidota</i> of Different Size Classes in Each Depth of Lentic Habitat	96
17	Overlap Between Males and Females <i>H. macrolepidota</i> of Different Size Classes in Lentic Habitat	97
18	Niche Breadth of Different size classes of <i>Hampala macrolepidota</i> in Kenyir Reservoir	165
19	Relative Importance Index of Small Sized <i>H.macrolepidota</i>	166
20	Relative Importance Index of Medium Sized <i>H.macrolepidota</i>	167
21	Relative Importance Index of Large Sized <i>H.macrolepidota</i>	168
22	Diet Overlap of Different sizes <i>Hampala macrolepidota</i> in Kenir Reservoir	169

LIST OF FIGURES

Figure

1	Map of Peninsular Malaysia Showing Kenyir Reservoir	4
2	Map of Kenyir Reservoir	5
3	Different Sizes <i>Hampala macrolepidota</i>	8
4	Location of the Sampling Stations	28
5	Vertical Profile of Dissolved Oxygen in Lotic Habitat	42
6	Vertical Profile of Dissolved Oxygen in Lentic Habitat	42
7	Vertical Profile of Temperature in Lotic Habitat	42
8	Vertical Profile of Temperature in Lentic Habitat	43
9	Water Level Fluctuation in Kenyir Reservoir	44
10	Monthly Rainfall in Kenyir Reservoir	44
11	Vertical Distribution for Different Sizes of <i>H. macrolepidota</i> in Lentic Habitat	80
12	Horizontal Distribution for Different Sizes of <i>H. macrolepidota</i> in Lentic Habitat	80
13	Vertical Distribution for Different Sizes of <i>H. macrolepidota</i> in Lotic Habitat	81
14	Horizontal Distributions for Different Sizes of <i>H. macrolepidota</i> in Lotic Habitat	81
15	Seasonal Distributions of <i>H. macrolepidota</i> in Lotic and Lentic Habitat	82

16	Macrohabitat Used by Different Sizes of <i>H. macrolepidota</i> in Lotic Habitat	83
17	Substrates Used by Different Sizes of <i>H. macrolepidota</i> in Lotic Habitat	84
18	Substrates Used by Different Sizes of <i>H. macrolepidota</i> in Lentic Habitat	85
19	Relation Between Rainfall and Occurrence of <i>H. macrolepidota</i> in Lotic Habitat	86
20	Relation Between Rainfall and Occurrence of <i>H. macrolepidota</i> in Lentic Habitat	86
21	Relative Importance Index of the Common Food Items in the Diets of Different Sizes of <i>H. macrolepidota</i>	121
22	Relative Importance Index of Dominant Group of Insects in the Diets of Different Sizes of <i>H. macrolepidota</i>	122
23	Diel Pattern of Feeding Activity for Different Sizes of <i>H. macrolepidota</i> in Lotic Habitat	130
24	Diel Pattern of Feeding Activity for Different Sizes of <i>H. macrolepidota</i> in Lentic Habitat	131
25	Seasonal Pattern of Feeding Activity for Different Sizes of <i>H. macrolepidota</i> in Lotic Habitat	133
26	Seasonal Pattern of Feeding Activity for Different Sizes of <i>H. macrolepidota</i> in Lentic Habitat	134

LIST OF PLATES

Plate		
1	Kenyir Reservoir (Near Gawi Dam)	6
2	Kenyir Reservoir (Near Kenyir Dam)	6
3	<i>Hampala macrolepidota</i> in Kenyir Reservoir	17
4	Potential for Ecotourism	17
5	Lotic Environment	31
6	Rapid Zone	31
7	Riffle zone	32
8	Pool Zone	32
9	Lentic Environment (Littoral)	33
10	Lentic Environment (Open water)	33
11	Electrofishing Boat	62
12	Boat Mounted Electroshocker	62
13	Sampling by Boatmounted Electroshocker	63
14	Catch During Electrofishing	64
15	Fishes in Rapid and Riffle Zone	66
16	Fishes in Pool Zone	66
17	Sampling by Gill Net (Lotic Habitat)	68
18	Sampling by Gill Net (Lentic Habitat)	68
19	Dominant Macrophyte in Kenyir reservoir	79
20	Sedgewick-Rafter Counting Cell	113

21	Identifying Stomach Contents in the Sampling Site	114
22	Dominant Food of <i>Hampala macrolepidota</i> (Odonata, Coleoptera)	120
23	Secondary Food of <i>Hampala macrolepidota</i> Juvenile fish (<i>Tor tambroides</i>)	120

Abstract of the thesis presented to the Senate of Universiti Pertanian Malaysia in fulfillment of the requirements for the Degree of Master of Science.

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RESERVOIR, MALAYSIA.**

by

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December 1995

Chairman : Assoc. Prof. Dr. Hj. Mohd. Azmi Bin Ambak

Faculty : Fisheries and Marine Science

A study of Intraspecific Resource Partitioning on a tropical sport fish 'Side bar barb' *Hampala macrolepidota* van Hasselt, was carried out in lotic and lentic habitat at Kenyir Reservoir, Terengganu, Malaysia.

Physico-chemical regimes of Kenyir Reservoir were also studied to determine the species ecological requirements. The water quality data showed that Kenyir Reservoir is suitable for fish culture. The most vital ecological factors, temperature and dissolved oxygen levels, were within the acceptable range for fish until 10.0 m depth. Waterlevel and rain fall both showed significant ($P < .05$) effects on the availability of fish in both habitats.

A significant difference ($P < .05$) of fish abundance have been observed in different depths of both habitat. Medium and large size fishes were ubiquitous in the study area. In the lotic habitat, medium and larger size fishes mostly used pool and riffle zones as their macrohabitat, whereas smaller size fishes preferred the rapid zone. In the lentic habitat, medium and large size fishes were found mostly around the submerged trees of the littoral area. Significantly, higher proportion ($P < .05$) of larger fish were available in the lotic than in the lentic habitat throughout the season. In lotic habitat cobble, boulder and bedrock were predominantly used as substrate by small, medium and large size fishes respectively, whereas sand and clay were predominantly used by medium and large size in lentic habitat. Openwater area had remarkably less density of fish and availability of all sizes in both littoral and open water showed significant difference ($P < .05$).

Habitat overlap values responsible for diet variation and food partitioning that evolved according to both temporal and ontogenic trends indicated that different size classes reduce spatial overlap by occupying different habitats and among depths within habitat. Segregation of sexes ($\alpha_{ws} < \alpha_w$) indicated that overlap within a habitat may be reduced by spatial separation of sexes.

Niche breadth ($B_j < 2$) indicated that all size of *Hampala macrolepidota* appeared to be extreme specialist feeders. Occurrence of food partitioning was not found extensively between size classes of *Hampala macrolepidota* in Kenyir Reservoir. Diet overlap α_w quantifying the sharing of food resources between the different size classes and high dietary overlap ($\alpha_w > .60$) between them indicates biological significance.

Individual size and diel period were the main factors responsible for diet variation and food partitioning that evolved according to cyclic (temporal) trends. Diel patterns of activity showed that *Hampala macrolepidota* was not a continuous feeder. It was observed that peak feeding time for small size was at noon (1000-1200 hours), for medium (2000-2200 hours) and for large size was at night (2200-2400 hours). Feeding activity changed with the different season. Feeding activity was comparatively high during dry season (nonmonsoon) and low during wet (monsoon) period. Thus, the feeding activity of different size fishes at different times would suggest that temporal differences could have a significant effect in partitioning food resources.

Nevertheless, habitat and temporal partitioning seemed as important as food partitioning in structuring the different sizes of *Hampala macrolepidota* in the lentic and lotic habitat of Kenyir Reservoir.