A STUDY ON THE BIOLOGY AND STATUS OF THREADFIN BREAM (FAMILY: NEMIPTERIDAE) WITH SPECIAL REFERENCE TO *N. peronii* CAUGHT IN WATERS OFF TERENGGANU COAST

MOHD ZAKI BIN MOHD SAID

DOCTOR OF PHILOSOPHY (FISHERIES)
UNIVERSITI PERTANIAN MALAYSIA

1988

It is hereby certified that we have read this thesis entitled 'A Study on the Biology and Status of Threadfin Bream (Family: Nemipteridae) with Special Reference to N. Peronii Caught in Waters Off the Terengganu Coast' by Mohd. Zaki Mohd. Said, and in our opinion it is satisfactory in terms of scope, quality, and presentation as partial fulfilment of the requirements for the degree of Doctor of Philosophy

.....
SULAIMAN M. YASSIN, Ph.D.
Professor/Dean of Graduate Studies
Universiti Pertanian Malaysia
(Chairman Board of Examiners)

.....
SAUL B. SAILA, Ph.D.
Professor
The Graduate School of Oceanography
University of Rhode Island
U.S.A.
(External Examiner)

.....
JOHN M. GREEN, Ph.D.
Professor
Department of Biology and Marine Science
Memorial University of New Foundland
Canada
(External Examiner)

.....
HAJI MOHD. AZMI AMBAK, Ph.D.
Associate Professor/Dean
Faculty of Fisheries and Marine Science
Universiti Pertanian Malaysia
(Internal Examiner)

A.K.Md. Mohsin

ABU KHAIR MOHAMMAD MOHSIN, Ph.D.
Associate Professor/Coordinator
Fisheries Biology Unit
Faculty of Fisheries and Marine Science
Universiti Pertanian Malaysia
(Internal Examiner/Supervisor)

This thesis was submitted to the Senate of Universiti Pertanian Malaysia and was accepted as partial fulfilment of the requirements for the degree of Doctor of Philosophy

Date:

Prof. Dr. Sulaiman M. Yassin
Dean of Graduate School
Universiti Pertanian Malaysia
43400 UPM Serdang, Selangor
Malaysia

A STUDY ON THE BIOLOGY AND STATUS OF THREADFIN BREAM (FAMILY: NEMIPTERIDAE) WITH SPECIAL REFERENCE TO *N. PERONII* CAUGHT IN WATERS OFF THE TERENGGANU COAST

by

MOHD ZAKI MOHD SAID

A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in the Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia

May, 1988

Dedication

This work is dedicated to all the members in my family

ACKNOWLEDGEMENT

I would like to express my greatest appreciation to Dr. Abu Khair Mohammad Mohsin who has been very patient in the supervision of this study. I am also indebted to Dr. Mohd. Azmi Ambak, the Dean of the Faculty of Fisheries and Marine Science, for his comments and suggestions.

I wish to express my gratitude to Nelson Marshall of the University of Rhode Island for his advice on the scope of the study and to Dr. John Munro of ICLARM for securing funds from FAO for Length-Frequency analysis at ICLARM.

I am also expressing my thanks to Dr. Daniel Pauly for his help and advice in data analysis during my visit to ICLARM. Thanks also go to Dr. Harlem Lampe for his advice on some statistical analysis.

Thanks are also due to all the staff of the Faculty of Fisheries and Marine Science both in Serdang and Kuala Terengganu who have given support for the success of this study.

Finally, my thanks to UPM for the research funding and facilities for carrying out the research.

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LIST OF ABBREVIATION

Cuv. & Val.	-	Cuvier and Valenciennes
C	-	Centigrade
cm	-	centimeter
CPUE	-	catch per unit effort
E	-	east
EEZ	-	Exclusive Economic Zone
ELEFAN	-	Electronic Length Frequency Analysis
Fig.	-	figure
g	-	gram
G.S.I.	-	gonadosomatic index
Hp	-	horse-power
km	-	kilometer
L	-	length
LKIM	-	Lembaga Kemajuan Ikan Malaysia (Fisheries Development Authority of Malaysia)
m	-	meter
max	-	maximum
min	-	minimum
ml	-	milliliter
mm	-	millimeter
m/s	-	minute per second
N	-	north
NA	-	not available
VBGF	-	von Bertalanffy Growth Function
wt	-	weight

An abstract of the thesis presented to the Senate of Universiti Pertanian Malaysia in partial fulfilment of the requirements for the Degree of Doctor of Philosophy.

THE STUDY OF THE BIOLOGY AND STATUS OF THREADFIN BREAM (FAMILY: NEMIPTERIDAE) WITH SPECIAL REFERENCE TO *P. PERONII* CAUGHT IN THE WATERS OFF THE TERENGGANU COAST

by

Mohd. Zaki Mohd. Said

May, 1988

Supervisor : Associate Professor Dr. Abu Khair Mohd Mohsin

Co-Supervisor : Associate Professor Dr. Mohd Azmi Bin Ambak

Faculty : Faculty of Fisheries and Marine Sciences

In this study 11 species of threadfin bream, namely *Nemipterus mesoprion*, *N. bathybus*, *N. tolu*, *N. marginatus*, *N. delagoe*, *N. nematophorus*, *N. hexodon*, *N. peronii*, *N. tambuloides*, *N. nemurus* and *N. japonicus* were identified. *N. bathybus* was reported for the first time from waters around Malaysia. Descriptions and a key to the 11 species were presented.

Relationship of several morphometric characters and standard length/head length ratios for six dominant species were described and the meristic characters were also presented.

The length-weight relationships of N. peronii, N. nemurus, N. marginatus, N. tambuloides, N. nematophorus and N. bathybus were given. The length-weight relationship between male and female N. peronii were calculated separately and were found to be significantly different. Formulae for inter-conversions of lengths were also given for the six species.

Condition factor for both male and female N. peronii were found to be similar. The food of N. peronii consisted of five groups, namely fishes, shrimps, crabs, squids and miscellaneous. Monthly variation in food items seemed to coincide with the availability of the item in the environment. Food taken by the fish does not show any difference with season. Shrimps were found to be preferred by the smaller fish and fish as a food item was favoured by larger fish.

The overall sex ratio did not deviate from 1:1. The fecundity estimate varied from 10,179 to 91,029. The gonadal-somatic index (GSI) and the percentage of mature females suggested that the fish spawn during an extended period, with peaks in the months of January and February.

The von Bertalanffy growth parameters, L_∞, K and t_o were estimated for male and female N. peronii. L_∞ and K values are recorded higher in males than females. The total mortality rate (Z) was found to be 1.4 while the exploitation rate is 36% of the present stock. Selection of fish by the sampling gear occurs over a wide range of lengths. Recruitment occur from October to January. Three age groups were estimated for N. tambuloides and four age groups for N. nemurus and N. marginatus. The L_∞ and K values for the three species are also given.

In the three subareas, juveniles of several species dominated the Inshore Region, while N. peronii dominated the Middle Region and N. nemurus dominated the Offshore Region. The threadfin bream accounted for from 9.7% (Offshore Region) to 11.2% (Inshore Region) of the total demersal landings. Catch per unit effort is lower in the Offshore than the Middle Region.

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