



**REPRODUCTIVE BIOLOGY OF
Acanthopagrus datnia COLLECTED FROM THE
BAY OF BENGAL, BANGLADESH**

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Roll No.: 0123/04

Registration No.: 1276

Session: 2023-2024

**A thesis submitted in the partial fulfillment of the requirements for the degree of
Master of Science in Fish Biology and Biotechnology**

Department of Fish Biology and Biotechnology

Faculty of Fisheries

Chattogram Veterinary and Animal Sciences University

Khulshi, Chattogram-4225, Bangladesh

December, 2024

Authorization

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This is to certify that we have examined the above Master's thesis and have found that is complete and satisfactory in all respects, and all revisions required by the thesis examination committee have been made

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Acknowledgements

With gratitude and humility, all praise and thanks are offered to the Almighty, the most gracious, the most merciful, and the most benevolent. It is with his divine assistance that the author has successfully pursued his Master's course and submitted this thesis for the degree of Master of Science in Fish Biology and Biotechnology. The author remains indebted to the Almighty for the strength and capability granted to complete both the research work and the thesis within the stipulated timeframe. The author's profound gratitude is directed towards his esteemed teacher and research supervisor, Dr. Md. Mahiuddin Zahangir, Associate Professor and Head of the Department of Fish Biology and Biotechnology at Chattogram Veterinary and Animal Sciences University (CVASU). His guidance, constructive critique, advice, and consistent motivation have been invaluable. Without his unwavering support and encouragement, this work would not have reached its fruition.

I would like to express my gratitude to Shifat Ara Noor and Azmaien Naziat, Lecturer in the Department of Fish Biology and Biotechnology, for their co-operation, constant inspiration, warmth and indomitable guidance throughout the period of research work. Special recognition is extended to the co-supervisor, Dr. Mohammad Sadequr Rahman Khan, Associate Professor of the Department of Marine Bio-Resources Science, for his insightful guidance and invaluable suggestions in refining the research content. The author holds in high esteem the revered teachers and instructors at the Faculty of Fisheries, Chattogram Veterinary and Animal Sciences University, for their impactful teaching and unending encouragement throughout the academic journey. The author acknowledges the collaborative effort of the lab technician Mrs. Priyanka Sharma, Senior lab attendant Md. Mojibor Rahman and all members of the Fish Biology and Biotechnology lab for their unwavering support during laboratory analyses. I also want to convey my genuine gratitude, real appreciation, and deep indebtedness to everyone who has helped me finish the research job, whether directly or indirectly.

Lastly, the author's heart brims with appreciation for his beloved parents, Anil Das and Rupna Das, for their boundless love, blessings, care, relentless efforts, earnest prayers, and unwavering support throughout his academic journey.

The Author

December, 2024

TABLE OF CONTENTS

SL. NO.	TITLE	PAGE NO.
	AUTHORIZATION	i
	SIGNATURE PAGE	ii
	ACKNOWLEDGEMENTS	iii
	LIST OF PLATES	vii
	LIST OF FIGURES	vii-viii
	LIST OF TABLES	ix
	LIST OF APPENDICES	ix
	LIST OF ABBREVIATIONS	x
	ABSTRACT	xi
1	INTRODUCTION	1-4
	1.1 Aim and objectives of the study	4
2.	REVIEW OF LITERATURE	5-11
	2.1 Taxonomy and general features of <i>Acanthopagrus datnia</i>	5
	2.2 Importance of <i>Acanthopagrus datnia</i> in the fisheries sector of Bangladesh	5-6
	2.3 Insights into reproductive biology of <i>Acanthopagrus</i> sp.	6-7
	2.4 Seasonal trends and factors influencing reproduction	7-8
	2.5 Methods and indices for studying reproductive biology	8-9
	2.6 Challenges in studying reproductive biology of <i>Acanthopagrus</i> sp.	9-10
	2.7 Significance and necessity of research on reproductive biology in the Bay of Bengal	10-11
3.	MATHERIALS AND METHODS	12-22
	3.1 Sampling sites and sample collection	12
	3.2 Recording the length-weight data and length-weight relationship determination	12-13

3.3	Determination of condition factor (K) and relative condition factor (K_n)	13-14
3.4	Collection of internal organs and determination of biological indices	14-16
3.4.1	Determination of gonado-somatic index (GSI) and hepato-somatic index (HSI)	14-15
3.4.2	Determination of the length at first maturity (L_m)	15
3.4.3	Determination of fecundity	15
3.4.4	Estimation of oocyte diameter	15-16
3.5	Histological analysis of gonad	16-21
3.5.1	Fixation	16
3.5.2	Dehydration	17
3.5.3	Cleaning	17
3.5.4	Infiltration	18
3.5.5	Embedding	18
3.5.6	Trimming	19
3.5.7	Sectioning	19
3.5.8	Transferring the ribbon into water bath	19
3.5.9	Attachment of the section on the slide and drying	20
3.5.10	Staining	20
3.5.11	Mounting	22
3.5.12	Microscopic observation of the tissue sections	22
3.6	Statistical analysis	22
4.	RESULTS	23-36
4.1	Hermaphroditism	23
4.2	Length-weight relationship	23-24
4.3	Condition factor and relative condition factor	24
4.4	Fecundity	25
4.5	Length at first sexual maturity (L_m)	26-27
4.6	Hepatosomatic index	28
4.7	Gonadosomatic index	29-30
4.8	Oocyte diameter	30
4.9	Gonadal maturation stages in females	31-33

4.9.1 Immature stage	31
4.9.2 Maturing stage	31
4.9.3 Mature stage	32
4.9.4. Ripe stage	32
4.9.5. Spent/ regressing stage	33
4.10 Gonadal maturity stages in male	33-36
4.10.1 Immature	33
4.10.2 Developing	34
4.10.3 Pre-spawning	34
4.10.4 Ripe	34-35
4.10.5 Spawning	35
4.10.6 Post-spawning	35-36
5. DISCUSSION	37-43
5.1 Length-weight relationship	37-38
5.2 Condition factor (K) and relative condition factor (K _n)	38-39
5.3 Length at First Maturity (<i>L_m</i>)	39
5.4 Fecundity	40
5.5 Hepatosomatic index and gonadosomatic index	40-41
5.6 Oocyte Diameter	41-42
5.7 Reproductive season	42-43
6. CONCLUSIONS	44
7. RECOMMENDATIONS	45
REFERENCES	46-52
APPENDICES	53-60
BRIEF BIOGRAPHY OF THE AUTHOR	61

LIST OF PLATES

SL. NO.	TITLE	PAGE NO.
1.	The Bengal Yellowfin Seabream, <i>Acanthopagrus datnia</i>	3
2.	Study area map	12
3.	Length and weight measurement of <i>A. datnia</i>	13
4.	Dissection of fish	14
5.	Fish gonad separation	14
6.	Egg counting	16
7.	Measurement of oocyte diameter	16
8.	Histological stages: A. Fixation in Bouins solution, B. Preservation of gonad in ethanol	16
9.	Histological stages: A. Dehydration, B. Cleaning, C. Infiltration, D. Embedding	19
10.	Histological stages: A. Trimming, B. Sectioning, C. Transferring the ribbon into water bath	20
11.	Histological stages: A. Attachment of the section on the Slide, B. Drying in slide warmer, C. Staining, D. Stained slide, E. Mounting, F. Microscopic observation	22

LIST OF FIGURES

SL. NO.	TITLE	PAGE NO.
1.	Gonads with both oocytes and spermatocytes	23
2.	Power equation and log transformed length-weight relationship in <i>Acanthopagrus datnia</i> collected from the Bay of Bengal, Bangladesh. A. Combine (n = 169), B. Male (n = 96), C. Female (n = 73)	24
3.	Length at first maturity of <i>Acanthopagrus datnia</i> female from Bay of Bengal, Bangladesh. A) GSI (%) Vs TL, B) MGSi (%) Vs TL, C) DI Vs TL	26

4.	Length at first maturity of <i>Acanthopagrus datnia</i> male from Bay of Bengal, Bangladesh. A) GSI (%) Vs TL, B) MGSi (%) Vs TL, C) DI Vs TL	27
5.	Monthly variation of hepatosomatic index (HSI) of <i>A. datnia</i> . A. Male, B. Female. Different superscripts of alphabet are statistically significant at $p < 0.05$	28
6.	Monthly variation of gonadosomatic index (GSI) in <i>A. datnia</i> . A. Male, B. Female. Different superscripts of alphabet are statistically significant at $p < 0.05$	29
7.	Oocyte diameter (μm) and GSI of <i>A. datnia</i> collected from Bay of Bengal, Bangladesh	30
8.	Ovarian maturation stages of <i>A. datnia</i> showing immature stage (A, B)	31
9.	Ovarian maturation stages of <i>A. datnia</i> showing maturing stage (C, D)	31
10.	Ovarian maturation stages of <i>A. datnia</i> showing the mature stage (E, F)	32
11.	Ovarian maturation stages of <i>A. datnia</i> showing the Ripe stage (G, H)	32
12.	Ovarian maturation stages of <i>A. datnia</i> showing the spent stage (I, J)	33
13.	Testicular maturation stages of <i>A. datnia</i> showing the immature stage (A, B)	33
14.	Testicular maturation stages of <i>A. datnia</i> showing the developing stage (C, D)	34
15.	Testicular maturation stages of <i>A. datnia</i> showing the pre-spawning stage (E, F)	34
16.	Testicular maturation stages of <i>A. datnia</i> showing the ripe stage (G, H)	35
17.	Testicular maturation stages of <i>A. datnia</i> showing the spawning stage (I, J)	35
18.	Testicular maturation stages of <i>A. datnia</i> showing the partially spent (K) and completely spent stage (L)	36

LIST OF TABLES

SL. NO.	TITLES	PAGE NO.
1.	The dehydration schedule	17
2.	The cleaning schedule	17
3.	The infiltration schedule	18
4.	The staining schedule	20-21
5.	Condition factor and relative condition factor data of male and female <i>A. datnia</i>	25

LIST OF APPENDICES

SL. NO.	TITLE	PAGE NO.
1.	Maximum and minimum value with obtained months of all parameters of <i>Acanthopagrus datnia</i>	53
2.	Data of total length (TL), body weight (BW) of collected <i>Acanthopagrus datnia</i> .	53-59
3.	Gonadosomatic index and hepatosomatic index data (Male and Female)	59
4.	Oocyte diameter and GSI (Female) data	60

LIST OF ABBREVIATIONS

ABBREVIATION	FULL FORM
gm	Gram
cm	Centimeter
µm	Micrometer
ml	Milliliter
°C	Degree Celcius
FY	Fiscal Year
MT	Metric tons
LWR	Length-weight relationship
<i>L_m</i>	Length at first maturity
OD	Oocyte diameter
GSI	Gonadosomatic index
HSI	Hepatosomatic index
CN	Chromatin nucleous
PO	Perinuclear oocyte
Sz	Spermatozoa
GE	Germinal epithelium
Oo	Oogonia
OL	Ovarian lamellae
EPO	Early perinuclear oocyte
LPO	Late perinuclear oocyte
YV	Yolk vesicle
YG	Yolk granule
ZR	Zona radiata
At	Atresia
TL	Testicular lumen
Sg	Spermatogonia
Sc	Spermatocyte
St	Spermatid
RS	Residual sperm
TC	Testicular cavity

ABSTRACT

Studying the life-history traits and reproductive biology of commercially important species are important for successful conservation and management of fishery resources. Bengal yellowfin seabream, *Acanthopagrus datnia*, is a commercially important species from the Bay of Bengal, Bangladesh with scanty information on the reproductive biology and life history. A total of 169 samples, both male and female, were collected from January 2023 to July 2024. Biological parameters such as length-weight relationship (LWR), condition factor (K), gonadosomatic index (GSI), hepatosomatic index (HSI), length at first maturity (L_m), fecundity, oocyte diameter and gonadal histology were investigated to find out the overall life-history of the fish. Histological analysis revealed that this species is protandric hermaphrodite. The coefficient of regression 'b' was 2.88, 3.01 and 2.34 for all fishes (combined), males and females respectively showing the negative allometric growth pattern for the pooled and females, however isometric for males. Mean K value was always higher than 1 indicating the good condition of the fishes. Length at first maturity (L_m) was estimated 15.9–18.4 cm for males and 16.8–17.4 cm for females. Oocyte diameter ranged from 23.9–232.6 μm , lowest in August and highest in February having a moderate alignment with the GSI that peaked in February. Histological examination shows that the highest number of yolk granule stage in females and spermatozoa in males in February which indicates the spawning season in this month. Fecundity ranged from 33,005–1,38,330 eggs/females. This study is the first record of life-history characteristics of this hermaphrodite fish from the Bay of Bengal. Information gathered in this research work will be helpful for successful conservation and management in the Bay of Bengal.

Keywords: *Acanthopagrus datnia*, reproductive biology, length-weight relationship, condition factor, histology, GSI, oocyte diameter