



REPRODUCTIVE FEATURES OF THE LONG WHISKER CATFISH (*Mystus gulio*) COLLECTED FROM SOUTHEAST COAST OF BANGLADESH

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Master of Science in Marine Bioresource Science**

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July 2024

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The Author

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LIST OF ABBREVIATIONS

%	Percent
µm	Micrometer
BW	Body Weight
cm	Centimetre
DoF	Department of Fisheries
DI	Dobriyal Index
DPX	Dibutylphthalate Polystyrene Xylene (Resin-based slide mountant)
FAO	Food and Agriculture Organization
g	Gram
GDP	Gross Domestic Product
GSI	Gonado-somatic Index
ha	Hectare
HSI	Hepato-Somatic Index
Lm	Length at First Maturity
LWR	Length-Weight Relationship
MT	Metric Ton
oC	Degree Celsius
R ²	Coefficient of Determination
SD	Standard Deviation
SL	Standard Length
TL	Total Length
UAE	United Arab Emirates
W	Weight
WGS84	World Geodetic System 1984

ABSTRACT

Life-history information is important for fish conservation, population expansion, and broodstock management of fish especially with high monetary value. Still, very little is known about the life-history and breeding biology of commercially significant catfish species (*Mystus gulio*) through studying histological observation of gonad in southeast coast of Bangladesh. Therefore, the objective of this research was to investigate the reproductive biology of the long-whiskered catfish, *Mystus gulio*, which was collected from coastal waterbodies around Chakaria from September 2021 to August 2022. A total of 350 individuals of the species *Mystus gulio* were selected at random from selected Gher and pond sources in Chakaria. The analysis of morphometric parameters showed that the exponent 'b' value of the total length-weight relationship of *M. gulio* was 1.2871 for males, and 2.1968 for females suggesting negative allometric growth ($b < 3$). The monthly condition factor (K) values ranged from 0.87 to 2.622, with the highest value observed in September (2.62 ± 0.65) and the lowest value observed in August (0.88 ± 0.085). The Relative Condition Factor (Kn) values ranged from 0.96 to 1.17, with the highest value observed in March (1.167 ± 0.88) and the lowest value observed in September (0.96 ± 0.12). The total length ranges between 8.3 and 17.3 cm. Most of the females were between the size classes of 11.5 and 14.5 cm. The overall male and female sex ratio was 1:1.23. The length at first sexual maturity (Lm) for both sexes was 13.5 cm TL calculated through the gonado-somatic index, modified gonado-somatic index, and Dobriyal index. The fecundity was assessed by randomly collected gravid female fish samples. The number of eggs per individual ranged from 4200 to 45,589, with an average of 16,999 eggs. The gonado-somatic index (GSI) reached its peak in July for both males and females. Histological analysis also identified the existence of yolk granules in eggs at ripe stages of gonads in female and a quantity of fully developed spermatids in testes in the month of July. The findings of the research revealed that the peak breeding season of *M. gulio* is in July. This finding will serve as a baseline for conservation management and brood stock development in the southeast coastal area of Bangladesh.

