



**MORPHOLOGICAL APPROACH TO THE IDENTIFICATION  
AND DISTRIBUTION OF AVAILABLE MUGILIDAE  
FAMILY IN CHATTOGRAM COAST**

**Hossain Md. Ershed**

Roll No.: 0119/12

Registration No.: 711

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**A thesis submitted in the partial fulfillment of the requirements for the degree of  
Master of Science in Marine Bioresource Science**

**Department of Marine Bioresource Science  
Faculty of Fisheries  
Chattogram Veterinary and Animal Sciences University  
Chattogram 4225, Bangladesh**

**OCTOBER 2022**

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

-----  
**Supervisor**  
**Dr. Mohammed Nurul Absar Khan**  
**Professor and Dean**  
**Faculty of Fisheries**  
**CVASU**

-----  
**Co-supervisor**  
**Avijit Talukder**  
**Assistant Professor**  
**Dept. of Marine Bioresource Science**  
**CVASU**

-----  
**Dr. Mohammad Sadequr Rahman Khan**  
**Chairman of the Examination Committee**

**Department of Marine Bioresource Science**  
**Faculty of Fisheries**  
**Chattogram Veterinary and Animal Sciences University**  
**Chattogram-4225, Bangladesh**

**OCTOBER 2022**

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## LIST OF ABBREVIATIONS

<b>SL</b>	Standard length
<b>TL</b>	Total length
<b>FL</b>	Fork Length
<b>HL</b>	Head Length
<b>POL</b>	Pre-orbital Length
<b>PDL</b>	Pre-dorsal fin length
<b>PVL</b>	Pre-Pelvic fin length
<b>PPL</b>	Pre-Pectoral fin length
<b>PAL</b>	Pre-anal length
<b>KG</b>	Kilogram
<b>G</b>	Gram
<b>MG</b>	Milligram
<b>DOF</b>	Department of Fisheries
<b>FAO</b>	Food and Agriculture Organization
<b>RAPD</b>	Random Amplification of Polymorphic DNA
<b>RFLP</b>	Restriction Fragment Length Polymorphism
<b>BFDC</b>	Bangladesh Fisheries Development Corporation
<b>PCA</b>	Principle Component Analysis
<b>MT</b>	Metric Ton
<b>FY</b>	Fishing Year
<b>KM</b>	Kilometer
<b>ID</b>	Identification
<b>MM</b>	Millimeter

<b>E</b>	East
<b>N</b>	North
<b>ST</b>	Station
<b>WT</b>	Weight
<b>ANOVA</b>	Analysis of Variance
<b>%</b>	Percent
<b>DFA</b>	Discriminant function analysis
<b>CVASU</b>	Chattogram Veterinary and Animal Sciences University

## ABSTRACT

Marine and coastal ecosystems of Bangladesh are promising habitats for various fish family supporting as the third richest fish resource in the world. Among the fish family, Mugilidae has moderate diversity along the northeastern coastal belt of the Bay of Bengal. The morphometric and meristic characters have been used to analyze the potential differentiation of Mugilidae collected from different part of Chattogram coast during this study. A detailed one-year (February 2019 to January 2020) survey was conducted, including two months of ban periods (June-July 2019), to assess the availability of Mugilidae, which included three stations as Patenga (St1), Kattoli (St2) and Cox's Bazar (St3). The survey's morphometric data were statistically analyzed using correlation and simple regression (intra-species) and independent sample T-test (inter species). Nine morphological data (length) and six meristic counts were collected from each sample for statistical analysis and the creation of a fin formula for each species. The fin formula found among 4 species *Rhinomugil corsula*, *Chelon parsia*, *Mugil cephalus* and *Liza subviridis* were gradually revealed as D1. IV, D2. I/7-8, P1.15-16, P2. I/5, A. 3/9; D1. IV; D2. 1/8; P1. 14-15; P2. 1/5; A. 3/9; D1 IV; D2 I 8; A III 8; P 15; V I 5; D1. IV; D2. 1/8-9; P1. 15-16; P2. 1/5; A. 3/9. The value of the meristic counts in this investigation did not significantly differ considerably. The standard length (SL) was explained as  $R^2= 0.978$  by the linear relationship with the total length & according to that, the linear relationship between total length and Head length (HL), Pre-orbital length (PrOL), Pre-pectoral length (PrPL), Pre- pelvic length (PrVL), Pre-dorsal length (PrDL), Pre- anal length (PrAL), and Body Weight (BW) predicted 96.8%, 87.3%, 97.2 %, 94.4 %, 77.6%, 65.6%, and 77.8%. Significant morphometric differences were discovered. The Shannon diversity index clearly indicates Chattogram has a higher diversity of species compared to Cox's Bazar where  $H=1.35091$  for St1 and St2 in Chattogram and  $H=1.31028$  for St3 which is situated in Cox's Bazar. *Rhinomugil corsula* had the highest frequency of availability among the species both in stations and months. Above all, the Mugilidae family has significant impact on the environment, and this research is initial step toward coastal and maritime planning and management. These findings can be used as a baseline experiment for future scientific research on Mugilidae family.

**Keywords:** Morphometric, meristic characters, variation, diversity, Mugilidae, Chattogram.