MORPHOLOGICAL APPROACH TO THE IDENTIFICATION, DISTRIBUTION AND DIVERSITY OF FISH SPECIES UNDER CLUPEIDAE FAMILY IN THE CHATTOGRAM COAST

Fahmida Sultana

Roll No: 0119/07

Registration No: 706

Session: 2019-2020

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

Khulshi, Chattogram-4225, Bangladesh

April 2021

AUTHORIZATION

Authorization I hereby declare that I am the sole author of the thesis entitled with **Morphological Approach to the Identification, Distribution and Diversity of Fish Species Under Clupeidae Family in the Chattogram Coast** I authorize the Chattogram Veterinary and Animal Sciences University (CVASU) to lend this thesis to other institutions or individuals for the purpose of scholarly research. I further authorize the CVASU to reproduce the thesis by photocopying or by other means, in total or in part, at the request of other institutions or individuals for the purpose of scholarly research.

I, undersigned, and author of this work, declare that the electronic copy of this thesis provided to the CVASU Library, is an accurate copy of the print thesis submitted,within the limits of the technology available.

(Fahmida Sultana)

MORPHOLOGICAL APPROACH TO THE IDENTIFICATION, DISTRIBUTION AND DIVERSITY OF FISH SPECIES UNDER CLUPEIDAE FAMILY IN THE CHATTOGRAM COAST

Fahmida Sultana

Roll No: 0119/07

Registration No: 706

Session: 2019-2020

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	Co-supervisor
Prof. Dr. Mohammad Alamgir Hossain	**Sk. Istiaque Ahmed**
Dean	**Assistant Professor**
Faculty of Veterinary Medicine	**Dept. of Fisheries Resource Management**
CVASU	**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

Khulshi, Chattogram-4225, Bangladesh

April 2021

ACKNOWLEDGEMENT

I am indebted to the Almighty Allah who enabled me to complete the research work and write up the dissertation successfully for the Master of Science (MS) degree in Marine Bioresource Science under the Department of Marine Bioresource Science of Chattogram Veterinary and Animal Sciences University (CVASU).

I want to convey my sincere thanks and gratitude to dynamic supervisor **Dr. Mohammad Alamgir Hossain, Professor**, Department of Pathology and Parasitology, CVASU, for his valuable supervision and guidance. It was a great pleasure to work under his supervision. It was an opportunity to work under his creative direction.

It is a pleasure to convey gratitude to my co-supervisor, **Mr. Sk. Istiaque Ahmed**, Assistant Professor, Department of Fisheries Resource Management, CVASU, for his valuable advice, educational guidance.

I am showing my gratitude to **Mr. Avijit Talukder**, Assistant Professor, Department of Marine Bioresource Science, CVASU, for his encouragement and cooperation at every stage of this study from its inception to completion.

I sincerely express the most profound sense of gratitude to our honorable Vice-chancellor, **Prof. Dr. Goutam Buddha Das**, and **Prof. Dr. Mohammed Nurul Absar Khan**, Dean, Faculty of Fisheries, CVASU, for their supportive administrative co-ordination to fulfill this research.

I am also grateful to **Sumi Akter**, Assistant Professor, Department of Marine Bioresource Science, and **Abrar Shakil**, Assistant Professor, CVASU, for their inspiration, technical support, and kind suggestion during the research work.

I sincerely thank all postgraduate students and technical staff of the Department of Marine Bioresource Science for their encouragement and support during research.Last but not least, I express my most profound sense of gratitude to my beloved parents and friends for their sacrifice, blessings, and encouragement.

The Author

Fahmida Sultana

Table of Contents

List of Tables

List of Figures

List of Acronyms and Symbols Used

Abbreviation and symbols	Elaboration
cm	Centimeter
g	Gram
DoF	Department of Fisheries
et al.	Associates

ABSTRACT

In the case of marine fisheries resources of Bangladesh, Clupeidae is considered as the leading fish family and in terms of availability of marine fishes, Chattogram coast is at the top position. The present study aimed to identify the available Clupeidae fish species in the Chattogram coast on the basis of morphological characters and to highlight their distribution and diversification. During the one year sampling period a total of 375 fish specimens were collected from three sampling stations among them six species (*Tenualosa ilisha, Escualosa thoracata, Sardinella fimbriata, Sardinella longiceps, Hilsa kelee* and *Anodontostoma chacunda*) were identified as the member of Clupeidae fish family. By analyzing the morphometric and meristic characters it was found that the meristic characters remained constant. On the other hand due to having variations, the morphometric characters were taken for further analysis. Application of Pearson Correlation revealed most of the morphometric characters are highly correlated with each other, cluster analysis indicated monthly variation among the characters and Principal Component Analysis and its biplot demonstrated similarities between the sampling stations based on the morphometric characters. Finally length-weight relationship was measured for *Tenualosa ilisha, Escualosa thoracata, Sardinella fimbriata, Sardinella longiceps, Hilsa kelee* and *Anodontostoma chacunda* as $W=0.0386L^{2.6523}$, $W=0.0167L^{2.7344}$, $W=0.0084L^{3.0346}$, $W=0.0609L^{2.4474}$, $W=0.0032L^{3.4408}$ and $W=0.002L^{3.7169}$ respectively. The findings of the study will provide baseline information for both future research and management of the fish family in the Chattogram coastal region.

Key words: Clupeidae, Morphometric, Meristic, Correlation, Cluster analysis