**ACKNOWLEDGEMENT**

All praises are due to the Almighty Allah, the most gracious, merciful, beneficent who enables the author to pursue his education in fisheries discipline and to complete the research work as well as to submit the thesis for the degree of Master of Science in the department of Fisheries Resource Management.

It is a matter of dignity and pride for the author to express his sincere appreciation and deep sense of gratitude to his honorable supervisor, Tasnuba Hasin, Assistant Professor, Department of Fisheries Resource Management, Chittagong Veterinary and Animal Sciences University for her kind co-operation, valuable suggestion, affectionate feelings, generous inspiration and helpful comments during the study period as well as reviewing the manuscript.

The author expresses his heart-squeezed gratitude, sincere indebtedness and deepest sense of respect to his reverend teacher and research co-supervisor, Dr. Sk. Ahmad Al Nahid, Assistant Professor and Head, Department of Fisheries Resource Management, Chittagong Veterinary and Animal Sciences University for his sincere and scholastic guidance, sympathetic encouragement, and constructive criticism throughout the research work as well as reviewing the manuscript.

The author extends his special grateful thanks to Sk. Istiaque Ahmed, Assistant Professor, Department of Fisheries Resource Management, Chittagong Veterinary and Animal Sciences University for his outstanding teaching on research planning and methodology. He also helped the author to prepare research proposal through providing intellectual knowledge on the methodology of writing a research proposal.

It is proud for the author to convey thankfulness to Dr. Md. Manzoorul Kibria, Associate Professor, Department of Zoology, University of Chittagong, for his outstanding help to start my experiment, valuable suggestions and inspiration for the completion of the research work in Halda River.

It’s my pleasure to express heartiest gratefulness to Larry page and Sergey Brin who are the inventor of Google. The author took necessary help from the Google. So, Author expresses heartfelt thanks to those heroic people.

The author never forgets the contribution of Supriya Biswas, Lab Technician, Eden Dutta and Bokhtiar for their cordial assistance during research work in the laboratory

The author expresses love and gratefulness to his younger brother Md. Alauddin Shakil for his kind co-operation during the research work Halda River. He helped the author from first to last during collecting sample from Halda River cordially.

Cordial greetings are expressed to all his friends specially Shahida Arfine Shimul, Lecturer, Department of Fisheries Resource Management and Nayeema Ferdausi Hoque, Lecturer, Department of Marine Bio resources Sciences for their co-operation, encouragement and moral support.

Finally, the author is ever grateful to his parents, younger brother (Md. Shahed Uddin), younger sister (Shahajadi Akter), Uncles and Aunts who sacrificed a lot and provided moral support during the entire academic life.

**AUTHOR**

**2018**

**ABSTRACT**

An experiment on Limnological study of spawning ground in the Halda River in relation to some physico-chemical characteristics of Estuary (Kalurghat), Khondokiakhal, Modunaghat and Sattarghat of Halda River in Bangladesh was carried out for six months. Sample was collected from four locations both for plankton and water quality parameters for the period of six months from April to September. The mean values of temperature were 29.970C, 29.70C, 29.720C and 29.630C in Estuary, Khondokiakhal, Modunaghat and Sattarghat respectively. The mean value of Transparency was found 24.42cm, 15.33cm, 29.46cm, and 28.83cm in Estuary, Khondokiakhal, Modunaghat and Sattarghat respectively. The mean value of dissolve oxygen found 6.75 mg/l, 6.53 mg/l, 6.87 mg/l, and 6.80 mg/l in Estuary, Khondokiakhal, Modunaghat and Sattarghat respectively. The mean value of pH 6.5, 5.68, 6.83, and 6.35 and the mean value of Alkalinity found 52.74, 52.70, 55.49, and 57.15 mg/l in Estuary, Khondokiakhal, Modunaghat and Sattarghat respectively. The number of phytoplankton genera was 20, 14, 19, and 20 and of 4, 4, 5, and 5 zooplankton genera in Estuary, Khondokiakhal, Modunaghat and Sattarghat respectively. A total number of 20 genera belonged to 5 divisions of phytoplankton was identified from Halda River. Division Bacillariophyceae had the highest number of species (11 species), followed by 3, 3, 3, and 1 species of Chlorophyceae, Cyanophyta, Dinophyceae and Pyrrophyta. The Zooplankton communities in Halda River in sixth month of sampling were composed of 5 genera of 3 divisions. Cladocera had the highest number of species (2), followed by the1, 2, 2 species of Copepoda, Cladocera, Rotifera. The number of phytoplankton in one liter was varied from 39 to 68, 15 to 44, 44 to 79 and 50 to 79 cell/liter in Estuary, Khondokiakhal, Modunaghat, Sattarghat respectively. The number of phytoplankton in one liter was varied from in, in and in. Water quality parameters were found to be poor in khondokiakhal and good in Sattarghat and Modunaghat.