

DECLARATION

I declare that the thesis entitled "Limnochemistry, diversity of plankton and ichthyofauna of some rivers of the Dooars region, West Bengal" has been prepared by me under the guidance of Prof. Joydeb Pal, Department of Zoology, University of North Bengal. No part of the thesis has formed basis for the award of any Degree or Fellowship previously.

Tapan Sarkar

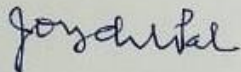
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CERTIFICATE

I certify that Mr. Tapan Sarkar has prepared the thesis entitled **“Limnochemistry, diversity of plankton and ichthyofauna of some rivers of the Dooars region, West Bengal”** for the award of Doctor of Philosophy (Ph.D.) degree in Zoology of University of North Bengal, under my supervision. He has carried out his research work at the Department of Zoology, University of North Bengal. No part of this thesis has been submitted elsewhere for the award of any degree.



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THIS LITTLE WORK DEDICATED TO
MY BELOVED BROTHER
LATE RATAN SARKAR



Govt. of West Bengal Sponsored National Seminar
 on
Current Trends in Plant & Microbial Research
(CTiPMR - 2017)

23rd March, 2017

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ABBREVIATIONS

ANOVA-Analysis of variance
AT-Air temperature
CL-Chloride
°C-Degree Celsius
CPUE-Catch per unit effort
DO-Dissolved oxygen
DW-Depth of water
EC-Electrical conductivity
EN-Endangered
END-endemic
FC-Free carbon dioxide
Fig.- Figure
IUCN- International Union for the Conservation of Nature and Natural Resources
Km- Kilometre
L- Litre
LC-lc- Low risk least concern
LR-nt-Low risk near threatened
m- Metre
mg- Milligram
mg/L-Milligram/Litre
mL- Millitre
PCA-principal component analysis
S.D- Standard Deviation
sp.- Species
S-W diversity index- Shannon-Wiener diversity index
TA-Total alkalinity
TDS- Total dissolved solid
TH-Total hardness
TS- Total solid
TSS- Total suspended solid
VU- Vulnerable species
WT-Water temperature

PREFACE

The Himalaya is often called the "Water Tower of India" as it is the source of many of the world's largest rivers. Because the rivers that originate in the Himalaya are primarily glacier fed, they have year-round flow. All rivers are vital to the flood plain and the downstream nation. Throughout the world, aquatic environments are experiencing serious threats to both biodiversity and ecosystem stability. Biodiversity loss is one of the world's most pressing crises at present. The Ganga and Brahmaputra drainage systems are considered the "fresh water biodiversity hot spot." A large number of coldwater as well as tropical fish species, plankton, periphyton, macrobenthic invertebrates, and vertebrates constitute unique species and are found in the above river. India is a biodiversity hotspot country with vast and diverse fish germplasm resources, contributing approximately 11.72 percent of global fish diversity, primarily from the greater eastern Himalaya, Eastern and Western Ghats. North Bengal is home to a large number of fish species, including several threatened, endemic, and unique species, making it the "Hot Spot" for fish resources.

The Dooars region is adjacent to the Eastern Himalaya biodiversity hotspot. The rivers Teesta, Jaldhaka, and Torsa originate from the Himalayas, and these three rivers are the lifeline of North Bengal. In the last few decades, due to natural and anthropogenic stresses including habitat loss and alteration, over exploitation of natural resources, diversion and reclamation of river bed flow for urbanization, construction of dams or barrages, unsustainable fishing, introduction of exotic fish species, fish germplasm has been threatened in the Dooars region, West Bengal. The extreme pressure from human populations on forests and the consequent changes in the water quality of rivers have adversely affected the fish fauna. Many dams have been made on the rivers Teetsa and Jaldhaka. Most of the riverine fishes are migratory in nature, moving up and down the river. Dams affect their normal behaviour and movement, isolating the feeding and spawning habitats of the fish. Besides this, the construction of dams across the rivers entirely changes the ecosystem of the river and causes irreversible damage to its aquatic organisms, particularly the fish. In addition to this, dams themselves create serious consequences, leading to siltation on one side and the growth of aquatic weed on the other. Conservation of the Himalayan riverine ecosystem is hamstrung by a lack of information. Information on biota, diversity, key-species, physico-chemical characteristics, spatiotemporal dynamics, interaction, influence, etc. is urgently needed.

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