Abstract:

Doctoral research work embodied in the thesis was studies on the conservation and enhancement of biological diversity of economically and ecologically important ichthyofaunal resources of Paschim Medinipur district, West Bengal, India using Geoinformatics. An extensive study carried out in the twenty nine Community Development Blocks in Paschim Medinipur district to record the present status of freshwater finfish fauna of this district. Also the habitat of the fish was of major concern as because fish biology and diversity depends on the perennial water bodies with permissible range of physicochemical parameters. In this present research work a total of 76 numbers of finfish species recorded. They belong to 8 orders and 23 families. Most fishes come under order cypriniformes followed by perciformes and siluriformes. Among the families cyprinidae shares 29 fish species followed by bagridae, channidae and ambassidae. As per the IUCN conservation status (Ver 3.1) among the recorded 76 finfish species 1 species is vulnerable, 7 near threatened, 60 are least concern, 2 data deficient and 6 not evaluated. Water parameters recorded using water analyzer kit mostly on the spot and water samples also brought to laboratory for further examination. Geological positioning of the sampling stations recorded by handheld GPS device. The data of aquatic parameters and GPS was plotted on spreadsheet and map generated. The fishes were collected directly from the water bodies, from the local fish market and from the fish farmers. The fish specimens were preserved after taking their photograph and then subjected to taxonomic categorization. The raw data was then utilised to see the diversity, richness, correlation with the help of different diversity indices in PAST software. Maps generated on sampled aquatic habitats. Geocoding of the satellite image data was done and outputs were performed by ERDAS imagine software. Georeferencing and ground truthing was done using ERDAS and Arc GIS software. The Community Development Blocks having permissible and near permitted range of physicochemical parameter of water bodies exhibit high fish diversity than the unfavourable zones. Fish diversity is highest in Daspur-I & II, Pingla, Ghatal and Sabang in comparison to the remaining Community Development Blocks. Correlation matrix shows positive and significant correlation among temperature, TDS, turbidity, conductivity and salinity and negative relation with pH, DO, OD and fish species. The study will help fish farmers about the culture and capture of fin fishes scientifically and judiciously in sustainable manner. It will help Policy makers to formulate policies to conserve the threatened fish species and fish habitat. It will also help researcher to work on in this field of diversity and conservation. It is established that the aquatic reservoirs like beels, jheels, lake and pond have greater potentiality and opportunity in this district to enhance the wild fish species. As a whole this research study will provide better management strategies in conserving threatened fish species and to raise ichthyofaunal diversity in Paschim Medinipur district, West Bengal, India.

Keywords: Biodiversity, Conservation, Ichthyofauna, Geoinformatics, Paschim Medinipur.