Abstract

The present study conducted to assess the physico-chemical characteristics, heavy metal of soil and water as well as abundance composition and diversity of phytoplankton and zooplankton and variety of fish in the mouth of Haldi river where as the industrial effluents released. It is the last major river to joins the Haldi and Hooghly estuaries before the latter flows into sea. The experimental work has been carried out in the mouth of Haldi river which situated in the district of PurbaMedinipur of West Bengal State [22°0′56″N to 22°04′18″N latitude and 87°00′57″E to 88°08′40″E longitude]. Multifarious industries situated on the mouth of Haldi river namely Indian Oil Corporation, Haldia Petrochemical Pvt. Ltd., Tata Chemicals, Pesticide unit, Vegetable Oil, Exide Industries Ltd., Mitsubishi Chemical Pvt. Ltd. etc. A tolerable quantity of toxic and hazardous substances is released to this important aquatic system through these industrial effluents along with huge organic load flow from agricultural and several non point resource. The water characteristics fully depended on the seasonal changes and tidal fluctuation of water from the Bay of Bengal. The mouth of Haldi river divided into three separate sites based on their released effluents, which included; Site 1 (major industrial effluent out fall at Patikhali in Hooghly river), Site 2 (5 km down stretch from Site 2) and Site 3 (5 km above confluence on river Haldi). The study was conducted for a period of three years from July 2014 to June 2017. During this study period trace metal content in soil (Cd, Zn, Cu,Mn,Pb) and water (Cd, Cr, Cu, Ni, Pb, Zn) the possible impact due to anthropogenic activities in this site were also evaluated. 23 fish species and different plankton, and heavy metal effect on the fish muscle were identified. Therefore, owing to the tidal inflow the experimental site salinity increased which diluted the heavy metal concentration and sustained the various life forms like plankton, fishes.

The dominating plankton found in the site are *Spirogyra sp*, *Volvox sp*, *Anabaena sp*, *Nostoc sp*, *Stigeoclonium sp*, *Brachionus sp*, *Keratella sp*, *Cyclops sp*, *Daphnia sp*, Mysid Shrimps, Nauplius stage etc. Moreover, phytoplankton has been found more in terms of their density and diversity as compared to the zooplankton. Due to the abundance of various types of natural food in water body the fish production moderately. Therefore, the Govt. agencies either central government and state government or any other NGO's should take proper initiative to conserve the fish faunal diversity for a long term benefit of the local people in particular and commercial exploitation in future.

Key words: Mouth of Haldi river, Physico-chemical parameters, Heavy metal, Soil and Water, Plankton, Fish