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Decadal changes of biodiversity of macrobenthic fauna of mangrove ecosystem of West Bengal, India: Threats and conservation

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The intertidal belt of mangrove estuarine complex of Sundarbans supports abundant benthic fauna which are represented by polychaetes (53 species), mollusks (38 species), brachyuran crabs (26 species), cnidaria (5 species), globiid fishes (2 species) and one species each of echiurida, sipunculida, hemichordate and brachyopoda. However, this 'World Heritage Site' along with its biodiversities is under tremendous environmental threats mainly because of global warming and other anthropological activities. The present paper has attempted to highlight the functional contribution of the intertidal macrobenthic fauna in sustaining the eco-dynamics of one of the world's very productive ecosystem, analyzing the trend of changes in the populations, communities and succession of this faunal group in relation to the prevailing ecological parameters through decadal analysis. Cluster analysis of the faunal components has showed three set of clusters which exhibited significant correlation with sediment and water quality parameters. Different bioturbatory activities (biological reworking of soil and sediments through animal activities like burrowing, feeding, locomotion, respiration and excretional activities) of macro benthic fauna alongside role of microarthropods in the litter detritus nutrient cycling have been taken into consideration. Reviewing the bioturbatory potential of each faunal group has shown the maximum bioturbatory activities by brachyuran crabs belonging to the family ocypodidae followed by the species under the family grapsidae. Polychaetes represent the second dominant benthic fauna followed by gastropods and brachyopoda in respect of their biogenic alteration abilities. Different groups of microarthropods (collembola, coleoptera, diptera, hymenoptera etc) displayed their roles in different phases of litter decomposition in ensuring better nutrient cycling in the mangrove estuarine interphase leading to higher biological productivity. The information generated from such studies from selected study sites viz. ecodegraded and ecorestored eco-zones is a pre requisite study which can also be used as a tool for the ecorestoration of any estuarine delta-mangrove environment.

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