

Functional role of microarthropods in nutrient cycling of mangrove-estuarine ecosystem of Midnapore coast of West Bengal, India

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Abstract: *Purpose.* The present study is aimed at investigating the diversity and ecology of mangrove litter inhabiting microarthropods with a view to assess their functional role in the nutrient cycling by way of decomposition of mangrove litters.

Design/methodology/approach. Samplings were made at monthly intervals for the estimation of ecological parameters, recording fluctuation of population and community structure from the selected study site of Midnapore coast of West Bengal, India. Experimental laboratory studies were also undertaken for assessing the rate of *in situ* decomposition of selected mangrove plant, *Avicennia officinalis* (L.) and phase wise occurrence of microarthropods in decomposing litter.

Findings. A total of 44 species of microarthropods belonging to seven major taxonomic groups viz. Acarina (36.3%), Collembola (27.2%), Coleoptera (10%), Diptera (5.7%), Isopoda (5.1%), Hymenoptera (5%) and other associated litter inhabiting microarthropod fauna (10.6%), displayed distinct seasonal fluctuation with regard to their population density and community structure in relation to fluctuating major physico-chemical parameters. Maximum decomposition was found on twelve months (70%) and that of minimum (34%) was observed on three months. Maximum diversity and density of fauna were recorded during six months to nine months of decomposition.

Originality/value. Litter inhabiting soil microarthropods play significant role in the energy flow and nutrient cycling in mangrove ecosystem by breaking leaves for the consumption thereby promote leaching and subsequently enhance biochemical alteration along with associated microbial population.