

Seasonal change of community structure and size spectra of zooplankton in the mangrove estuary of the coastal River (Kaw River) draining a vast swamp in French Guiana

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Abstract :

The article describes the zooplankton community of the Kaw river estuary in French Guiana and its relationship to its geomorphologic and chemical environment.

During the rainy season, the zooplankton, originating from the highly oligotrophic upstream sectors of the Kaw river, were of a strictly freshwater type. It was highly dispersed within the flooding water and dominated (in terms of density) by highly diversified rotifer taxa and (in terms of biomass) by cladocerans. During the dry season, the estuary, turbid but enriched by exports from adjacent mud flats and mangroves, was colonized by a large and abundant zooplankton community that was dominated by tintinnids, with copepods as their main associated taxa. Exploiting the rich autochthonous phytoplankton and allochthonous phyto-benthos, the microzooplankton components were only constrained when strong hydrodynamic exchanges allowed mixing between the opportunistic estuarine community and coastal mesozooplankton (copepods, chaetognaths, bivalve veligers).

Between 1998 and 2001, these two communities were partially isolated from each other due to the gradual arrival of a mud bank, causing the blockage of the estuary. This isolation resulted in the under-exploitation of the microzooplankton. The intensification of tidal currents (spring tide) that occurred during the subsequent stabilization phase of the mud flat induced a more balanced zooplankton community. Therefore, while the "estuarine" zooplankton of the Kaw river estuary relies on the relative confinement of its water mass, its contribution to the coastal ecosystem also implies the existence of strong tidal currents that temporarily break this confinement.