

Impact of thermal power plant's fly ash on the mangrove fauna and flora of Tuticorin bay, southeast coast of India

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The Tuticorin bay (southeast coast of India) with its fringing mangroves is known for pearl and chank fisheries. In recent years, the mangrove fauna and flora of this bay is influenced largely by the fly ash and heated waters released from a coal - fired thermal power plant of this coast. An intensive investigation was made for 6 months at two localities (Station 1 and 2) in the vicinity of the thermal power plant to understand the impact of the latter on the mangrove vegetation, benthic communities and physico-chemical and planktonic characteristics. The mangrove vegetation was composed of species of *Avicennia officinalis*, *A. marina* and *Ceriops tagal* in the intertidal zone and *Suaeda monoica*, *Salicornia brachiata* and *Sesuvium portulacastrum* in the supratidal zone in both the stations. Station 1 unlike station 2 showed poor and stunted growth of intertidal mangrove vegetation due to the blanketing effect of the fly ash. The macrobenthos was dominated by crustaceans, *Uca annulipes*, *Sesarma quadrata* and *Balanus amphitrite* var. *communis* in Station 1 and by molluscs *Crassostrea madrasensis*, *Cerithidea fluviatilis* and *Littorina littorea* in Station 2. The biomass of macrobenthos assessed by quadrat method showed a mean density of 12 individuals /m² and 18 crab holes/m² in Station 1 and 32 individuals/m² and 48 crab holes/m² in Station 2. The hydrobiological characteristics of Station 1 were affected by the heated waters of thermal power plant. The average values of net primary production of these Stations were 78 mg C/m³/hr and 313 mg C/m³/hr. The mean densities of phyto and zooplankton components were 5125 cells/m³ and 124 organisms/m³ and 12645 cells/m³ and 648 organisms/m³. This investigation reveals that the Station 1 is under the threat of the fly ash and heated waters of the nearby thermal power plant. The long term impacts of this power plant on the hydrography and fisheries of this bay have been discussed. As the Tuticorin bay with its contiguous islands is being developed into a National Marine Park by the Government of India, several conservation measures have been suggested in this regard.