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Environmental parameters of water and sediments and socio-economics of fishing communities around a tidal inlet in Pulicat Bird Sanctuary along the Coromandal coast of Andhra Pradesh, India

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Abstract

The stability of lagoon ecosystems is dependent on the proper functioning of tidal inlets which allow exchange of water and nutrients between the sea and lagoon. The closure of a tidal inlet along the south-eastern Coromandal coast of India has not only impacted the livelihood of local fisher communities but even the ecological balance of India's second largest brackish water lagoon, the Pulicat Bird Sanctuary in Andhra Pradesh. Owing to these concerns, we assessed the hydrological and nutrient parameters of water and sediment samples and the socio-economics of 252 fishers from 8 village clusters around a tidal inlet, situated at the northern section of Pulicat Bird Sanctuary. We recorded hypersaline conditions, high conductivity, high total dissolved solids and few freshwater indicator species in the lagoon. Fisher communities reported reduced availability of fish stock, increase in prawn culture and an overall dramatic change in fishing practices over the years. Almost 93% of the respondents were of the opinion that the opening of tidal inlet will increase fish stock in the lagoon, thereby reducing their travel time for fishing in the sea. Our findings showed that the opening of Rayadoruvu tidal inlet is necessary for stabilizing the salinity levels, increasing the diversity and abundance of planktons and fish in the lagoon and for long-term maintenance of the brackish water lagoon ecosystem in Pulicat Bird Sanctuary to support globally important migratory bird species and winter visitors of the Central Asian Flyway.

Keywords

Tidal inlet, Brackish water lagoon, Hydrological parameters, Biological nutrients