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INFLUENCE OF MANGROVE ECOSYSTEM ON THE BIOLOGICAL RESOURCES AND FISHERY OF KAKINADA*

Since there are no records of detailed investigation on the ecology of the mangrove ecosystem around Kakinada and keeping in view of the vastness, fertility and biological resources of the Kakinada Bay and the adjacent sea, the Institute took initiative to conduct a study on the ecology of mangrove areas around Kakinada during 1982-'85 to understand the various ecological aspects connected to the water, soil/ sediment and mangrove-associated fauna and their influence on fisheries.

Extensive seasonal surveys were conducted along the mangrove canals and creeks of the Gautami-Godavari estuarine system discharging into the Kakinada Bay. Apart from these, regular observations were made at nine selected stations (Fig. 1) covering the estuarine canals of Chollangi, Matlapalem, Ramannapalem, B.V.Palem, Gadimoga and Bhairavapalem on the ecological parameters of water and sediments and qualitative and quantitative aspects of the fauna of the mangrove zone. The gist of the results with special reference to the prawn resources of the Kakinada region is given below.

The results indicate that the hydrographic condition and sediment fertility are quite suitable to serve this environment as a nursery ground for several species of fish, prawn, crab and molluscan resources. Among these, prawn juveniles constituted 82% of the bottom epifauna composed of *Metapenaeus dobsoni* (50%), *M. monoceros* (35%), *Penaeus indicus* (14.5%) and *P. monodon* (0.5%) in the order of abundance along the creeks and canals of the mangrove areas.

Among these economically important species, seeds and juveniles of *P. indicus* are relatively more in Chollangi and Coringa estuaries with their peak during May-August, *M. dobsoni* in B. V. Palem and Ramannapalem (Coringa) estuarine systems throughout the year with the peak in September-December and *M. monoceros* in Chollangi and Coringa with the peak during February-April. *P. monodon* seeds were available in considerable number in the tidal inundated shallow grass fields and creeks along the banks of Gaderu canal between Gadimoga and Bhairavapalem (stns 8-9) with their seasonal abundance during August-October. *P. monodon* seeds are collected from here and supplied to local prawn farms. Among the non-penaeids, seeds and juveniles of *Macrobrachium malcomsoni* and *M. rude* were plenty in the Matlapalem canal towards upstream followed by Coringa estuary where they occurred throughout the year, while *M. rosenbergii* was found to be less in number in these estuarine canals.

Studies on the prawn fishery of the inshore waters of the sea at Uppada (6 nautical miles north of Kakinada Bay) between 10-45 m depth, conducted by the Institute during 1979-'83 (*Mar. Fish. Infor. Serv., T&E Ser.*, No **62**: 6-11) revealed that on average 500 tonnes of prawns were landed annually from this area (Lat. 17°06'N Long. 82°23'E), of which penaeid prawn catch constituted 82.4% . Among the penaeid prawns, the annual average landings of *P. indicus*, *M. dobsoni* and *M. monoceros* are estimated as 38.09, 267.83 and 15.08 tonnes respectively, their size range in the fishery being 50-216 mm, 50-119 mm and 60-169 mm respectivety. 8 t *P. monodon* contributed forming 2% of the penaeid prawn landing while *M. dobsoni* catch constituted about 65% which forms the major

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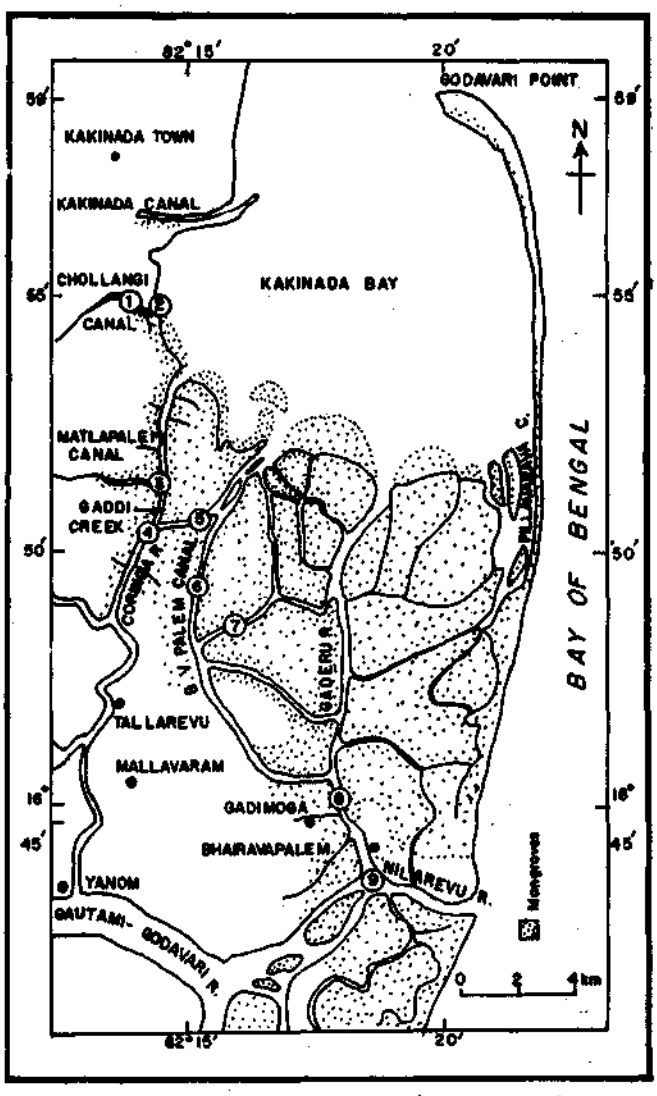

Fig. 1. Map of Kakinada mangroves showing stations.

component of the penaeid prawn seed resource of the Kakinada mangrove ecosystem, whereas the non-penaeid fishery of the open sea differs from that of the mangrove areas in their species composition.

Among the crab resources, seeds and adults of *Scylla serrata* were plenty at Chollangi, B. V. Palem and Gadimoga with peak fishery exploitation of adults during October-December, especially from the Gaderu estuary at Gadimoga.

Sea-shell collection of gastropods and bivalves is also going on in a larger scale from the Kakinada Bay (*Mar. Fish. Infor. Serv., T&E Ser.*, **59**: 1-16) and are landed at Chollangi for road transport.

Apart from the natural destruction going on along the perifery of larger estuarine canals by unusual floods during northeast monsoon season, indiscriminate cutting and destruction of mangrove forest is going on along the banks of Coringa estuary by the villagers at Ramannapalem and B. V. Palem as evidenced by the raw materials used in the construction and periodic maintenance of hundreds of huts of fishermen, apart from their use as fodder for cattle and fuel for domestic purposes.

From the fisheries point of view, human interferences, either by fishing the juvenile prawns and crabs in the mangrove canals or indirectly by the destruction of mangrove vegetation, have great impact on the biological resources, particularly on the recruitment of the juvenile prawns of *P. Indicus*, *P. monodon*, *M. dobsoni* and *M. monoceros* and the crab, *Scylla serrata* in the fishery of the Kakinada Bay and the neighbouring open sea.