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SEASONALITY AND THE UTILIZATION OF MANGROVES AND ADJOINING SEAGRASSES BY JUVENILE FISH AND CRUSTACEANS IN THE NEGOMBO ESTUARY

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ABSTRACT

Sampling was conducted for two years in seagrass and mangrove habitats of the Negombo Estuary, to study the seasonality in the utilization of mangroves and seagrasses by juvenile fish and crustaceans. During this study, in the day time sampling sixty two fish species, ten prawn species and eight crab species were identified.

The ten abundant fish species were Oryzias melastigma, Ambassis dayi, Etroplus suratensis, Bathygobius fuscus, Arothron immaculatus, Etroplus maculatus, Gerres oyena, Eleotris fusca, Lates calcarifer and Glossogobius biocellatus. The abundant prawn species were Metapenaeus dobsoni, Penaeus indicus, Penaeus semisulcatus, Metapenaeus elegans and Metapenaeus moyebi and the abundant crab species were Scylla serrata, Portunus pelagicus, Thalamita crenata and Thalamitoides quadridens.

Six fish species comprised 80% of the total fish catch while four species of prawns comprised 82% of the total prawn catch and four species of crabs comprised 97% of the total crab catch. The number of species of prawns and crabs was higher in the seagrasses than that of mangroves. The number of species of fish was higher in mangroves than seagrasses but considering the species composition, the species consider to be predominant was more associated with seagrasses.

The number of fish species and their density were high at the beginning of the N.E. monsoon. Population density of prawns

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was high in the S.W. monsoon. Among the crabs Portunus pelagicus occurred in the 1st intermonsoonal period and the population was clearly dominated by the males. Scylla serrata was abundant in the early part of the S.W. monsoon.

Oryzias melastigma was the most dominant fish species in the mangroves while Etroplus suratensis was the most dominant fish species in seagrasses. Both in seagrass and mangroves most dominant prawn species was Metapenaeus dobsoni and most dominant crab species was Scylla serrata.

Among the fish, sixteen species occurred in mangroves, six only in seagrasses and forty species common to both habitats. Among the crustaceans, two species of prawns occurred only in seagrasses and eight species in both habitats, while three crab species occurred only in seagrasses and and five species in both seagrasses and mangroves.

The general diversity value for fish community was 2.895 and prawn community was 1.947 in the Negombo Estuary. The species diversity of fish and prawns in the seagrasses was higher than that of mangroves.

Seagrasses yielded higher biomass of fish and crustaceans than mangroves. The fish production in the mangrove and seagrass areas of the estuary ranged from 1.53 to 14.77 kg ha^{-1} hr^{-1}. Five fish species comprised 70% of the total fish biomass and Etroplus suratensis was the main contributor to the biomass of the catch in seagrasses and mangroves of the estuary. The prawn production in the mangrove and seagrass

areas of the estuary ranged from 0.23 to 2.79 kg ha^{-1} $hr.^{-1}$. Four species comprised 76% of the total prawn biomass. Penaeus indicus (23%) was the main contributor to the prawn biomass of the catch. The crab production ranged from 0.01 to 1.309 kg ha^{-1} hr^{-1}.

From the gut analysis of fishes it was found that the ratio of herbivore:carnivore:omnivore was 4:9:21. According to the diets of fish from seagrass and mangroves it is clear that they do not depend directly on the vegetation as a source of food. The most common food item of fishes in mangroves and seagrasses was found to be animal matter, mainly crustaceans. The next important food items were algae, seagrasses and mangroves respectively.

Destruction of mangroves was taking place while this study was in progress. The detritus accumulated as a result of felling of mangroves, attracted more fish and crustaceans. But thereafter their numbers dropped below the previously maintained density.