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Utilization of mangrove species in brushpark construction and their effects on Negombo Estuary fishery (Sri Lanka)

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Summary

Experimental brushparks were constructed in the Negombo Estuary using branches and twigs of six mangrove and two non-mangrove species to investigate whether these materials had any effect on fish yields. It was observed that amongst the mangroves, highest yields were obtained with *Avicennia marina*; lowest yields were with *Excoecaria agallocha* and *Sonneratia caseolaris*. The yields from non-mangrove *Syzygium corymbosa* brushparks were similar to those of the mangrove species *A. marina*. It is suggested that utilization of mangrove species such as *A. marina*, rather than *E. agallocha*, and non-mangrove species such as *S. cumini*, could not only maximize yields but also prevent the denudation of mangrove forests.

Introduction

Brushparks constructed of branches and twigs from mangroves and other plants are being used in many countries to attract and capture fish, shrimps and crabs in shallow areas of lagoons, estuaries, lakes and rivers.

Brushpark fisheries appear to offer a number of biological and economical advantages over other fishing strategies in coastal waters of the tropics. Among these are the relatively high yield per unit area, the low level of technology required, the high intensity of labour employed, a potential for increase in the biological productivity of the waterbody as a whole though nutrient input from the wood, and a positive effect on adjacent-capture fishery yields (KAPETSKY 1981).

At the same time, brushparks can create a number of biological and economical problems. The greatest disadvantage is the large quantity of branches and twigs required to establish and maintain these parks and which could contribute to local deforestation, especially of mangrove plants.

Studies have been carried out on brushpark fisheries in Benin (WELCOMME and KAPETSKY 1981), Dahomy (WELCOMME 1972) and Sri Lanka (SENANAYAKE 1981; WIJEYARATNE and COSTA 1986, 1987).

In Sri Lanka, brushpark fishery is practised on an extensive scale in the Negombo Estuary. An estimate of more than 3000 brushparks (SENANAYAKE 1981) are constructed from mangrove poles and branches placed vertically or slightly inclined in depths of less than 1.5m. Fishing is carried out at about 30-days intervals and contributes to about 36% of the total estuary fish catch (WIJEYARATNE and COSTA 1987). Recent studies indicate that this fishery can be enhanced without damaging the total fishery to obtain further yields by increasing the number of brushparks (WIJEYARATNE and COSTA 1986). However, since the wood required for their construction and maintenance is obtained solely from the mangrove forests adjoining the shore of the estuary, forest destruction could adversely affect the fauna associated with these plants. Recent studies show that the denudation of mangrove forests could significantly lower the fish and shellfish populations in lagoon environments (KAPETSKY 1981). The use of a restricted number of abundant mangrove species could

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