

Observations on the artisanal stake net fishery for shrimps in the Negombo Lagoon, Sri Lanka

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Abstract The artisanal, stake net fishery for shrimp in the Negombo lagoon, Sri Lanka, was studied over 2 years. There are around 22 sites, at which 57–63 stake nets can be fixed, at sites close to the sea mouth of the Negombo lagoon. The estimated mean catch rates of the fishery were 23.21 and 26.19 kg per operation in 1998 and 1999, respectively. The estimated annual fish productivity from the fishery reduced from 240 t in 1998 to 215 t in 1999. Subadults of penaeid shrimps formed 82% of the stake net catch. The net monthly income per fishermen varied from Rs. 5000 to 33 200 (mean = 13 667). In the Negombo lagoon stake net fishery, a mechanism for equity sharing was formulated by the fishing community.

KEYWORDS: equity-sharing, Kattudel, lagoon, Negombo, stake net fishery.

Introduction

Prior to introduction of the mechanization of fishing in Sri Lanka in the early 1960s, shrimp resources in estuaries, lagoons and coastal waters were extensively exploited by traditional fishing methods. In the south-western coastal waters of Sri Lanka, one of the frequent capture methods for shrimps is kraals. More recently, this method has become popular in the backwaters of northern and north-western Sri Lanka. In the Negombo and Chilaw lagoons in this region, shrimps are captured by stake nets operating during the night at the mouth of the lagoons (De Bruin 1970).

Negombo lagoon situated north of Colombo has an area of 3164 ha, and is a part of the Muthurajawela Marsh-Negombo lagoon coastal wetland (6232 ha). The lagoon is connected by a single narrow opening to the open sea at Negombo, in the northern part of the system. The lagoon is > 2 m deep (Sanders, Jayawardane & Ediriweera 2000). There are several islands close to the mouth (Fig. 1) of Negombo lagoon so that the northern part of the lagoon is divided into a number of channels. The people living in the surrounding areas operate stake nets in this channel segment of the lagoon. This fishery has been in existence for at least 200 years (Atapattu 1987). Members of the fishing community have developed a mechanism for sharing the shrimp resources among

users (Atapattu 1987). The only studies on the Negombo lagoon stake net fishery were by Atapattu (1987) and Amarasinghe, Chandrasekara & Kithsiri (1997), who investigated community-based fisheries management and some sociological aspects of the fishery. A comprehensive evaluation of the bio-economic aspects of the fishery has not been attempted so far and the present study was undertaken to achieve this objective. The focus was on total production of the fishery, fishing effort, catch rates, catch variability with environmental variables, species composition of the catches and the economics of the fishery. The fishing gear deployed and the operation of community-based management of the fishery were also described.

Material and methods

Description of stake net fishery

A stake net consists of a bag (belly and cod end) and two wings made of nylon nets. The lengths of the bag and the wing are around 11 and 12 m, respectively. Generally the width of the opening of the stake net (distance between the two wings) is around 10 m. The mesh size of the wing is 12 mm and the same of the belly varies from 10 to 14 mm (stretched mesh). In addition, the mesh size of the cod end of the stake net is around 10 mm.

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