

Investigation of the influence of lunar pattern on the resource sharing procedure in stake-net fishery of Negombo estuary, Sri Lanka

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The stake-net ("kattu-del") fishery in Negombo estuary is a traditional fishery dating back at least to early 18th century, with a strong community-based fisheries management (CBFM) system. An equitable sharing procedure of fishery resources has evolved by sharing fishing days among three community groups and fishing sites among members of each community group, using a lottery system.

Fixing of stake-nets in designated locations for catching shrimps and fish is dependent on the tidal pattern. It was hypothesized therefore that the equity sharing procedure of the fishery resources has been evolved on the basis of indigenous knowledge on the effect of lunar cycle on catch efficiencies of stake-nets. In the present study, daily data on catch per unit effort (CPUE) expressed as kg per stake-net operation for shrimps, anchovies and other fish species were collected from August 2007 to May 2008 at five stake-net sites namely, Kongala, Mankuliya, Kuttiduwa, Kandalkatte and Orappaduwa. The CPUE of shrimps, anchovies and others were $\ln(\text{CPUE} + 1)$ transferred before analysis.

The shrimp grounds produced significantly high catches during full moon phases in all months. Higher shrimp catches were also reported during new moon phases and there was variation among sites. Anchovies and other species also showed significant differences in catches with lunar phases. There was no significant influence of rainfall on shrimp and finfish catches. Shrimp yield and income derived from the stake net fishery among three stake-net societies were not significantly different.

This evidence suggests that the equitable sharing procedure of resources that has been evolved over a long period through indigenous knowledge in the stake-net fishery is scientifically sound. The present case study therefore highlights that CBFM systems in artisanal fisheries which have been evolved through indigenous knowledge of resources users are powerful mechanisms for maintaining fairly acceptable socioeconomic standards of fishing communities.