

## ABSTRACT

Beach seine fishery and its contribution to the coastal fish production in the north-western and southern provinces of Sri Lanka during the period between December 1992 and April 1997 has been the subject for the present study.

Beach seine fishery is one of the oldest fishing methods carried out along almost all the coastal marine waters round the Island. For this fishery traditional wooden crafts such as beach seine Paru, Vallam, Canoes, and Log-rafts and beach seine nets made out of kuralon netting and coir wings are used. During the recent past beach seines have been subjected to several modifications which includes its structure, material used for the net and the craft type.

Beach seine operations were carried out up to 1-4km from the shore. Setting a single beach seine with a single craft is the most commonly practiced method in the beach seine fishery. However, use of multiple nets with multiple crafts also was reported from the study area. Beach seine setting methods depend on the availability of the resource and the prevailing sea condition.

To avoid monsoonal activities, beach seine fishermen have devised a migrating pattern to the east coast during the south-west monsoonal period. However, due to the communal disturbances in the north-east part of the country, this practice has been affected and only a few instances of migration to the east coast was reported during the study. Some beach seine fishermen also migrate to their home towns, situated within the same coastal region.

In both regions included in the study beach seine fishing season commenced around mid October and lasted till mid May. Average annual effort in the northwestern region for the 1992-94 fishing season was 5252 operations and for the southern region for the 1995-97 season was 4429 operations. Average annual catch rate in the northwestern and southern regions for the corresponding periods were 260.3 and 157.3kg per operation respectively. Average value of a beach seine catch was Rs.8300.00 and Rs.5900.00 per operation in the northwestern and southern regions respectively. Income of an owner of a beach seine varies highly varies, depending on the number of owners and the adopted sharing system.

Unlike in other areas of the west coast, major small pelagic fish production in the northwestern area comes from beach seine fishery. The average annual fish production by the latter in this area during 1992-94 was about 1160MT, which represented 66% of the total small pelagic fish production. Comparatively beach seine production in the southern region was low and average annual production during 1995-1997 was 662MT, which was about 42% of the small pelagic fish production.

A total of 47 fin fish species belonging to 25 families and 5 species of shellfish belonging to two families were identified in the catches. Among them clupeids dominated and contributed 55% to the total beach seine catches in the north-western region. Contribution of *Leiognathus* sp., carangids, *Rastrelliger kanagurta* and *Stolephorus* sp. in the beach seine catches were 7.7,7.2,7.2 and 4.8% respectively. In the southern region highest contribution was made by *Stolephorus* sp. (32%) followed by *Leiognathus* sp. (11.5%), Carangids (9.5%) and *Trichurus* sp. (8.5%). The contribution of clupeids in this region was much lower than that observed in the north western region.

*Amblygaster sirm* is one of the most important fish species found in the small pelagic fishery in the southern coastal waters of Sri Lanka, which alone has annually contributed 70MT and 555MT for the beach seine and gillnet fisheries respectively. Population parameters such as asymptotic length ( $L_{\infty}$ ), growth coefficient (K) and growth performance index ( $\phi$ ) of the *A. sirm* stock in the southern coast of Sri Lanka, were estimated as 25.52cm, 1.15 year<sup>-1</sup> and 2.88 respectively. The instantaneous total mortality (Z) and natural mortality coefficient (M) values were estimated as 7.25 and 2.05 respectively. The recruitment pattern of *A. sirm* stocks in the southern coastal region was with a single peak.

Present study revealed that the beach seine fishing effort have a great impact on the yield of the gillnet fishery, whereas the increase in the gillnet fishing effort has no such effort on the yield of the beach seine fishery. Therefore, it is recommended that the effort of beach seine operations should not be increased beyond the present level.