Recent Trends of Small Meshed Gillnet Fishery in the West Coast of Sri Lanka

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Introduction

Marine fish is the main animal protein source of Sri Lankan nation. With the increasing of the population, the demand for marine fish has been increased. The coastal subsector is the major contributor to the total marine fish production in Sri Lanka and small pelagic fish resources contributes in the coastal catch in a higher proportion. At present, coastal fishery resources of Sri Lanka have to be properly managed as in the case for most other marine fisheries in tropical developing countries. The fishing pressure on the coastal fish has increased and small pelagic fish in the coastal waters are subjected to high fishing pressure (Haputhantri, 2004). The increased fishing pressure on small pelagic resources has adversely impacted on the sustainable utilization of the resources. Therefore, for the sustainability of small pelagic precautionary measures should be addressed. The small pelagic are mostly harvested by small mesh gillnets. The present study aims to investigate the west coast small mesh gillnet fishery by using commercial gillnet fishery data in order to provide a platform for sustainable utilization of the resources.

Methodology

Catch and Effort data and information with regard to small mesh gillnet fishery operations such as spatial data (fishery districts, ports etc.), temporal data (year, month etc.) and operational data (fishing depth, true fishing time etc.) which were collected by NARA Marine Biological Resources Division from the west coast (Chilaw, Negombo and Kalutara fisheries districts) for the period 2000 – 2011 was used for present study. Also, information was obtained by interviewing the enumerators of small pelagic fishery data collection programme of NARA. The data used for this audit was confined to the Fibre Reinforced Plastic (FRP) boats since small pelagic fish are mostly captured in the west coast by FRP boats. Data were analyzed using Microsoft Office Excel and Minitab 14 Statistical Software.

Results and Discussion

Three types of coastal vessels (i.e. non mechanized traditional crafts, mechanized traditional crafts and Fibre Reinforced Plastic boats referred as FRP boats) are operated in the west coast gillnet fishery. Traditional non-mechanized crafts are usually operating in shallow coastal waters within the 5 m to 25 m depth range whereas FRP boats are frequently operating within 15 to 60m depth range. The engine power of a FRP boat may vary between 10 to 30 hp, but most frequently used range is 15 and 25 hp. The total number of FRP boats in the west coast has considerably increased replacing traditional boats which possessing better facilities (high holding capacity, ability to access in the deeper waters etc.) when compared with traditional crafts.

According to the study, around 60% of total fishing effort on coastal pelagic resources in the study area in terms of number of boat days is provided by small meshed gillnets along. In addition, around 28% of total fishing effort is provided by small meshed gillnet and hand line gear combination. A wide range of mesh sizes are being used in the commercial gillnet fishery

but, small meshed gillnets with mesh sizes between 1″ (25.4 mm) to 2″ (50.8 mm) are widely used by FRP boats in the west coast targeting small pelagic. Gillnets with mesh sizes ranging from 9/10″ (22.86 mm) to 1½″ (38.1 mm) are frequently used for catching clupeids including *Ambligaster sirm, Sardinella longiseps, Sardinella albella*, etc. Smaller mesh sizes bellow 9/10″ (22.86 mm) are normally used in the west coast for catching *Stolephorus spp.*

One fishing trip per day normally takes place in the west coast. The duration of one fishing trip varies between 3 to 8 hours and the duration for which gillnet in operation is normally 0.5 to 3 hours. There is a slight increment in the true fishing time (the time which gillnets are actually operated) for the period considered under this study. Accordingly, it seems that fishermen tend to stay more time at the sea for searching and capturing fish.

In the west coast, FRP boats are operated in a wide depth range, where it may vary between 5 to 90m. Depth of fishing has been varied between 14 to 32m during the period of 1983 to 1984 (Karunasinghe and Fonseka, 1985). Further, the depth of fishing has been varied between 6 to 70m during the period of 1995 to 1997 (Karunasinghe et al., 2000). According to the present study, the fishing depth range has become much wider and boats trend to go and fish in deeper waters. Moreover, an increasing trend in the average depth of fishing in the west coast was observed for 2000-2011 period.

Number of gillnet pieces used per gillnet operation was 9 to 24 during the period 1995-1997(Karunasinghe et al., 2000). However, this has considerably increased now upto3 to 42 gillnet pieces of gillnets per fishing operation per FRP boat. A clear increasing trend in the gillnet usage was observed for 2000-2011 period. In general the best fishing season in the west coast is at the latter part of the south west monsoon and higher catches are obtained in August and September &The period of January to March is considered as the lean fishing season according to the fishery data collected by NARA.

The major target fish group in small pelagic fishery in the west coast is clupeids. In general, this group includes *Ambligaster sirm* and *Sardinella spp. Ambligaster sirm* is the dominant species in the catch over the considered period of time and it provides around 46% of the total catch in the west coast. The contribution of each sardine species individually is relatively lower (*i.e.Sardinellagibbosa*-11%, *Sardinella longiseps*- 9%, *Sardinella albella* - 6% and *Sardinella sindensis*- 0.0008%) However, as a group these species are very important since they contribute around 26%in the total catch.

Since there is a considerable variation in the number of net pieces used in the study area CPUE was computed in two ways: CPUE in terms of catch in kilogram per boat per day basis and CPUE in terms of catch in kilogram per net piece per day basis. The annual CPUE in terms of kilogram per net piece per day has varied on a range of 2 to 3.5 kg/net piece/day and a clear declining trend in the CPUE in terms of kilogram per net piece per day was observed. CPUE in terms of kilogram per boat per day seemed to have fluctuated from 2000 to 2011 in arrange of 40-70 kg/boat/day. Since there is a reduction in the CPUE in terms of kilogram per net piece per day, fishermen tend to use more net pieces to increase their catch per boat.

Relationships between length-length parameters (Standard Length –SL, Fork Length –FL and Total Length –TL) were also obtained for the key target species (*A. sirm*): TL = 0.938SL, TL = 0.981FL and SL = 0.940FL. All L-L relationships were significant. The relationship between length and weight was also obtained ($W = 0.0119L^{2.9}$). Again, this relationship was significant.

Conclusions

An increasing trend in the CPUE in terms of catch in kilogram per boat per day was observed in the small mesh gillnet fishery of the study area. The reasons may be due to increased usage of

gillnet pieces, use of high engine powered boats, long fishing time and increased depth of fishing. The higher catch may not imply that fish are in abundance in the study area. However careful consideration and analysis of the said fishery is needed.

References

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