Transfer of Set-net fishing technology from Japan to Sri Lanka

N.B.P. Punyadeva*

National Aquatic Resources Research and Development Agency (NARA), Crow Island, Colombo – 15, Sri Lanka

Abstract

The Japanese type of small scale Set-net, was introduced to Urawatta , Ambalangoda in 2011 with the aim of transferring technology and assessing its feasibility as a sustainable coastal new fishing techniques. In Japan, the Set-net fishing has been traditionally controlled under community-based management system; so that, this "community-based set-net" is expected to be effective on the economical empowerment of fishing community and the environmental conservation of coastal fishing ground. Installing the Set-net in the coastal area in Ambalangoda were carried out by Urawatta fishing society, with technical and funding support from JICA, NARAand Japanesefishing technicians. The small scale Set net was introduced to suit the conditions of the fishing ground and target species. Data on the fish catch and sales were collected for 3 months.Fish caught using Set net indicated that the highest total catch of 725 kg per day was diominated by*Amblygaster sirm, Sardinella gibbosa*,Sphyraena sp., *Decapturus russeli*, *Selar crumenophthalamus*, tuna species and some rock fishes. Other species included; Carangids, Flying fish, Tiera bat fish,Belanidae sp.,and Chirocentrus sp. In the study, the average catch by Set net was 346.3 kg per day which was comparatively higher than the daily expected production (300kg) from the Set net by the project and it was higher than the daily production obtained by other gear types operated in the area. The results show that the required average daily catch needed to cover the total cost (based on average unit price and operational cost) was 300 kg. However, Set net fishing is an efficient technique, which should be investigated further.

Keywords: Set-net, Community, Economic return point, Technology transfer

---

Corresponding author: nbprasada@gmail.com

Introduction

In the coastal areas around Sri Lanka, local fishermen use various traditional fishing techniques, in an unregulated fisheries. In order to stabilize the fisheries production level and to improve the fishingactivities for coastal communities, it is important to formulate a development model of fishing communitiesfor the sustainable resource management through the introduction of appropriate fishing technologies andthe organization of local fishers. In Japan, set-net fishing has been traditionally controlled by community-based management systems (SEAFDEC/TD, 2005). Set-Net method does not catch all fish unlike net drawing method. The set net waits for fish to come into the net that means the amount of catch is smaller than for other net drawing

method (Manajit, N. 2008). Also, the size and kind of fish desired can be controlled by the size of net meshInoue (Yoshihiro, I. 2008). World fishing has been decreasedand the supply of sea food has been shrinking due to over catch of fish. This is why this Set-Net method attracts people's interest(Himi City. 2003).This project aims to introduce the Japanese-type of set-net fishing system, which effectively maintains the fisheries resources under the local fishers' consensus in coastal areas, to promote the cooperative worksamong individual fishers to reduce the total fishing effort and to develop the optimal fishing ground use incoastal communities. This project was carried outat the designated fishing communities in Urawatta , Ambalangoda.The project was also expected toformulate an effective development model forcoastal community for sustainable fisheries and to disseminatesuch a "community-based set-net fishing" into other coastal communities around Sri Lanka.

Materials and Methods

Set net was installed about 2 km away from the coast and the opening was oriented towards the land. The depth of the established area was approximately 30 m and the net was placed 5 m above the sea floor (Fig 1). Two boats (36/38 feet and 30/50 hp engines) together with a 18 feetboat are required to operate this gear. The total crew was 8 in the large boats and 2 in the small boat. Fishing activities were carried out during both day and night time. The caught fish were brought to the harbor and loaded into the plastic baskets using a scoop net before they send to market. At the market, the fish were sorted into groups and the catches are recorded by the responsible fishermen. The catch and effort data of the fishing were recorded every day. Sampling of the fish species was carried out every day and recorded.

All the fish species were identified using standard identification keys and the species composition of catches was analysed. Total catch and the catch by species were recorded seperately. Random sample of about 30 fish from some of the dominant catches were brought to the laboratory for further analysis.The total lengths of sample were mearseured to the nearest milimeter (mm) using a fishing board. Biological analysis was done inorder to evaluate their gender and the matuarity stages.The necessary information such as socio economic interactions with other fishing activivities were recorded using community based discussions.

Results

Fish caught using the set net indicated that the highest total daily catch was 725 kg, diominated by*Amblygaster sirm*, *Sardinella gibbosa*,*Sphyraena sp.*, *Decapturus russeli*, *Selar crumenophthalamus* and rock fishes. Other species included Carangids,

Flying fish, Tiera bat fish,*Belanidae sp*.and *Chirocentrus* sp. Non fin fishes such as squids were also recorded as bycatch.The length frequency distribution of the *Amblygaster sirm, Sphyraena jello* and *Decapturus russeli*, identified as the some of the dominant catches were given in following figures. The size range of *Amblygaster sirm*(Hurulla) was from16.0 to 24.5 cm total length, whlile respective values for *Sphyraena jello*(Jeelawa) were from 30 to 50.5 cm and*Decapturusrusseli*(Linna) were from 17 to 28.5 cm. Underwater observations indicated that seaweed andcarm were attached to the set net and around the net many species of small fish gathered. Squid eggs were also observed on the net.

Discussion and Conclusion

The average catch by the Set net was 346.3 kg per day was higher than the expected 300kgand higher than the daily catch obtained by other gear types operated in the area. The results show the required average daily catch required to cover the total cost was 300 kg.This estimate wasbased on a unit price of 150 Rs/kg with ten fishermen and a average daily operational cost is 6200 Rs.

In the the present study, *Amblygaster sirm*contributedalmost 26% of the total catch. In addition *Sardinella gibbosa*, *Sphyraena jello, Decapturus russeli*and some rock fishes were also consistently important part of the catch. However, the contribution by other species seems to vary from day to day. Catches of the demersal fish species such as *Platax tiera*(Kottadoruwa) and accidental catches of young squids reflect the modifications to be need to be made on this technique.

Catches of some of the dominant species (*Amblygaster sirm,Sphyraena jello, Decapturus russeli*) were examined for their maturity stages. The analysed species consisted of both males and femaless in approximately equal ratios. The large area utilized by the Set net will disturb other fishing activities specially gill netting.It should be evaluated whether this technique is cost effective for a country like Sri Lanka.

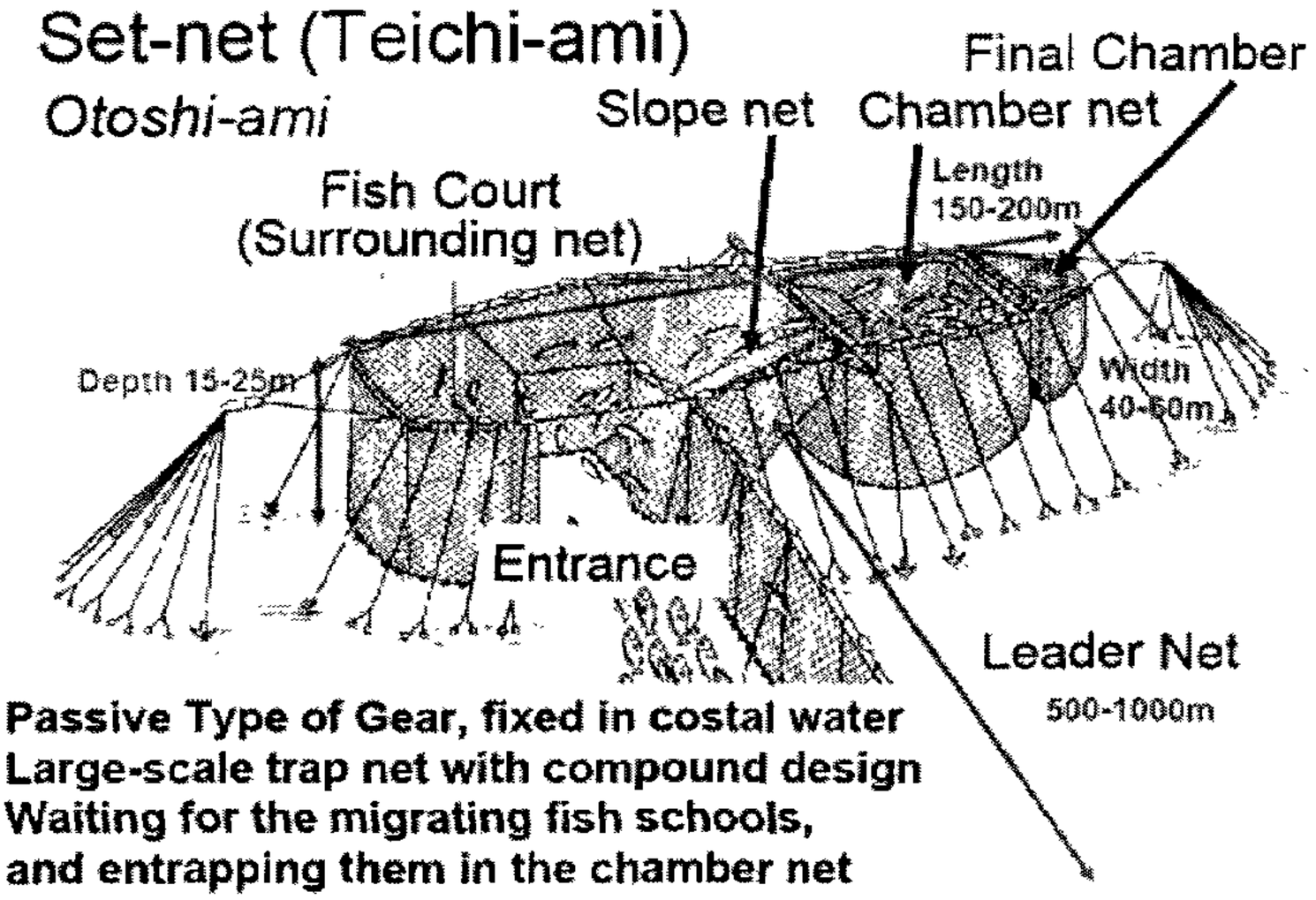

Figure 1: set net arrangement

References

- Himi City. (2003). Report on Set Net Training Program in Himi. *International Set Net Fishing Summit in Himi City, Japan.*
- Inoue Yoshihiro. (2008). Commercial Set-Net in Japan and New Training Set-Net "KagoNet".*TD/RES/107 (2008):123-127.*
- Manajit, N. (2008). Analysis of daily catch data in Rayong set net.*TD/RES/107 (2008): 199-207*
- SEAFDEC/TD. (2005). Final Report of Set-Net Project/Japanese Trust Fund I. *TD/R 74, SamutPrakan, Thailand.*