Agricultural Economics Research Review
Vol. 25(No.1) January-June 2012 pp 107-114

Labour Deployment and Wage Distribution in Ring Seine Fishery of Central Kerala

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Abstract

The study is focused on the traditional ring seine fishery of Chellanam village in the Ernakulam district of Kerala. This fishery has a unique traditional system of managing the labour as well as fishing activities, an important tradition being the *karanila* system which regulates the work and wage sharing pattern of the fishery. Though the ring seine unit (craft and gear) is owned by more than one fishermen (shareholders), every fisherman who is capable of fishing has a right to work as well as a share in the wages. The crew: owner ratio of sharing the benefits is 60:40, with the returns to labour being proportional to the revenue generated. The impact of the work and wage share system has been that every healthy fisherman gets assured employment and a wage, even if he is not actually part of the fishing crew. Though it is a form of disguised unemployment, it has aided in reduction of abject poverty in the community in this area.

Key words: Ring seine, fishery, labour, work share, wage share, *karanila*

JEL Classification: J21, J31

Introduction

The coastline of Kerala accounts for only about 10 per cent of the country's coastline, but the state contributes about 20 per cent to the total marine fish production of India and about 40 per cent of its seafood exports. The state is blessed with a continental shelf of about 40,000 km^2 which is considered to be one of the most productive waters. The state has 223 fishing villages and an estimated 11.43 lakh persons depend on the marine resources for their livelihood, in which the number of active fishermen is about 2.63 lakh and the others are employed in allied fisheries activities like marketing, transportation, processing, etc. (DES, 2010).

The fishers of Kerala depend on various types fishing systems for their livelihood. These include the mechanized fishing fleet with trawlers, gill netters, long liners, hand liners and large mesh purse seiners and motorized traditional fleet with IBM (in board motor) ring seines, OBM (out board motor) ring seines, mini trawlers, gill netters, hooks and liners, encircling nets, boat seiners and shore seiners. Non-motorized traditional fishing vessels also play a major role in ensuring livelihood of the fisher folk of Kerala (GoK, 2010).

The labour requirements are comparatively higher in the ring seine sector than other classes of fishing vessels in the traditional sector. But, the special feature of the ring seine fishery in Kerala is that these units are operated entirely by the local fishermen. The state has a unique traditional system of managing the fishing activity, which regulates the work and wage sharing, and this has been discussed in this paper.

Materials and Methods

The study was carried out in Chellanam village in the Ernakulam district of Kerala. The ring seine fishing is believed to have been introduced first in this stretch

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of the coast (Panicker *et al.,* 1985). Even today, the fishers of this area mainly depend on ring seine fishery for their livelihood. In Chellanam, there are 455 fishing crafts of which only 33 are ring seiners and the rest are gillnetters. Out of 3000 fishermen in Chellanam fishing village, 62.5 per cent work on board ring seiners as the labour requirement for each ring seine ranges between 55 and 65 compared to gillnetters where only 2-4 fishermen are engaged in operation. For the present study, detailed information was collected from 27 ring seiners operating in this region, during the period January 2010-March 2011. The data were validated through focussed group discussions and interactions with group leaders of the fishing craft and experienced fishermen. For clarity in discussion, the work and wage share calculations have been presented and discussed. The disguised unemployment rate was calculated using the formula (Nayak and Chatterjee, 1986) given below, which is based on the time criteria where the number of days of employment is also a factor:

$$DU = [(L–L^*)/L] \times 100$$

where,

DU = Disguised unemployment,

L = Full employment days of work (in this case taken as 180 days as this is the maximum number of days of fishing possible for a ring seine unit on an average annually), and

L* = Number of days worked by a fisherman.

Results and Discussion

Ring Seine Fishery

The traditional ring seine fishery is seen along in the entire coast of Kerala, except for the southern tip (D'Cruz, 1998), with regional variations in the fishing gear and method followed at different places (Edwin and Hridayanathan, 1996; D'Cruz, 1998; SIFFS, 1999; Vijayan *et al.,* 2000). The fishing craft is called the *thanguvallam* and the fishing gear is known as *thanguvala*. Since its introduction, the ring seine has played a significant role in the marine landings in Kerala, contributing 51.6 per cent to it (CMFRI, 2011). The pelagic resources contribute 71 per cent to the total state marine production (CMFRI, 2011) with oil sardine (54%), mackerel (13%), carangids (9%), anchovies (6%), tunas (5%), ribbonfish (4%), and seer fishes and lesser sardines (2% each). Out of this, 98.8 per cent of oil sardine, 71 per cent of lesser sardine, 56.0 per cent of mackerel and 42.6 per cent of white baits landings are contributed from ring seiners (CMFRI, 2010).

The ring seine is an encircling net used to capture pelagic fishes. A number of modifications have been introduced in the design of the gear as innovations by the traditional fishermen (Edwin and Hridayanathan, 1996; D'Cruz, 1998; SIFFS, 1999). In the study area Chellanam, ring seines with a mesh size of 20 mm with a length and depth of 600-1000 m and 83-100 m, respectively and having a weight of 1500 to 2500 kg was targeted to catch the pelagic shoaling fishes like the sardines and mackerel (Edwin *et al.,* 2010). The net is operated from steel / wooden fishing vessels of 65-80 ft in length propelled by an inboard motor and smaller (skiff) vessels of 40-55 ft are used for assistance in fishing operation and transportation of the catch.

The average investment for craft and gear in a steel IBM ring seiner was between ₹ 50 lakh and ₹ 80 lakh; the vessel, including engine, costing upto ₹ 60 lakh and the gear ₹ 15- 20 lakh. Kurup and Radhika (2003) have observed that the cost of production of one IBM wooden ring seiner unit was about ₹ 11.40 lakh. A sudden increase in the capital investment of ring seine units had occurred after 2003. The uncontrolled growth in size of craft and gear size are the main reasons for the huge investment (Edwin *et al.,* 2010). The new engines and change of wooden craft to steel craft have also increased the capital investment. The carrier skiffs are, however, even now made of wood.

The main fishing season for the ring seiners in Chellanam is from June to November. From November onwards the catch declines and some craft are withdrawn. During 2010, the number of craft that operated ranged from 8 to 24 during various months, the least being in January and maximum during July (Figure 1) The number of ring seine fishing days in a month varied from 6 to 20. The fishing trips are carried out during the day, if the conditions are favourable.

Ownership Pattern

In the ring seine fisheries sector, there are two types of ownership of the fishing units, individual and collective. The concept of individual ownership is restricted to smaller crafts of up to 40 feet LOA which are generally non-motorized or craft fitted with outboard motors (OBM). The ownership of a unit by

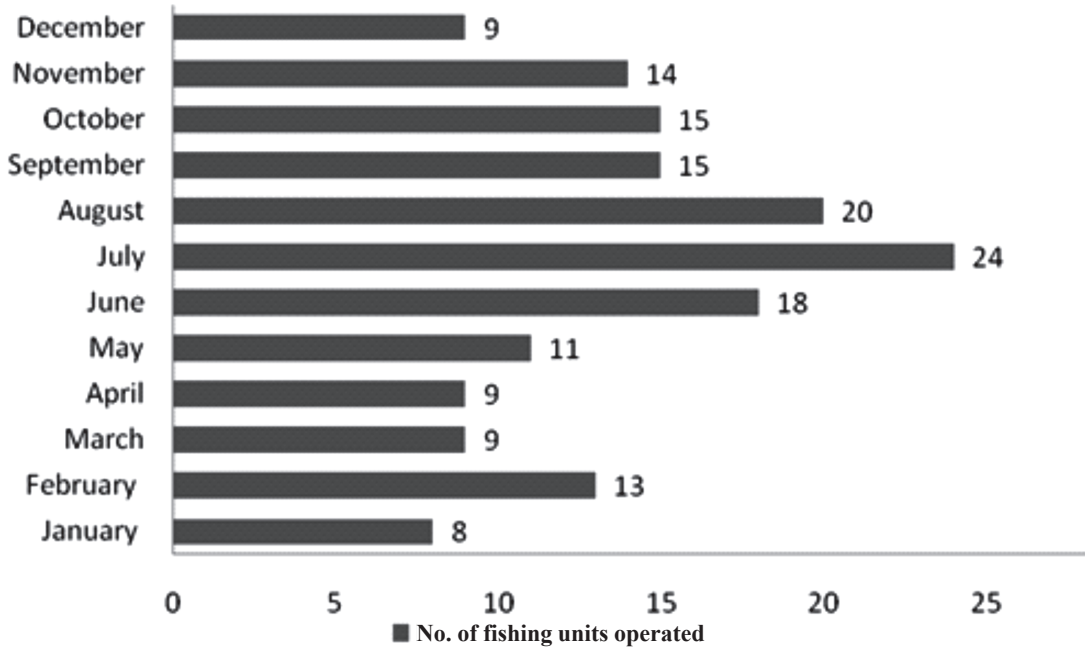

Figure 1. Monthly variation of ring seine fleet operations in study area

family may also be treated as individual ownership. In individual-owned craft, the crew members are usually, though not exclusively, the kith and kin of the owner. In larger units, where the size of craft and gear are bigger, the ownership is collective, with the unit being owned by a group of fishermen (share holders). The investment by individual members of the group to the unit needs not be equal. In both the types of ownership, the distribution of earnings to the owner (returns to capital) from the catch is in the form of 'share' of the production, and owner gets 30-40 per cent of the net income, beside a percentage for the craft, gear and engine. The owner(s) are also generally active fishermen and go onboard.

The shift from single ownership to collective ownership occurred mainly because of requirement of huge capital investment on the ring seine unit (Antonyto, 2002). The risk was thus shared by a group of fishermen. Antonyto (2002) has also reported that the fishermen co-operative societies finance the ring seine units on the basis of share system of ownership. In the present study area, apart from institutional lenders like the Fishermen Cooperative Society which provided credit to fishermen groups, private financers were also common. Private moneylenders are generally auctioneers and they collect the interest on capital as a percentage of the day's catch during the auction itself. The ease of credit availability and absence of formal procedural difficulties are the reasons behind the dominance of informal sources of credit in the fisheries sector.

Work Sharing Pattern

The ring seine unit has a well-structured labour distribution pattern. Each ring seine unit is controlled by a group leader, locally known as *aryakaaran*, who decides about the number of crew on a particular day and is assisted by two or more helpers. Owner(s) always offer huge amounts to hire an experienced *aryakaaran* for their craft. Usually, the crew also gives more value to a good *aryakaaran's* experience and skill rather than the reputation of the boat owner(s).

Fishing area and fish shoal detection is the most challenging task of an *aryakaaran* in the ring seine operation. After sighting the shoal, the other crew members wait for the instructions of *aryakaaran* to shoot the net. He divides and allots the onboard work based on the experience and efficiency of the crew members. The other crew members include skipper, engine mechanic, cook (usually a fisherman) and *chattakaaran* who jumps into the sea for scaring the fish and preventing the escape of fish. The other crew members number around 50-55, and they carry out all

the activities as per instructions of the *aryakaaran*. The crew strength depends on the size of craft as well as gear because the main effort is for hauling the net after the fish shoal is caught.

The fishermen forming the crew fall in two categories in the ring seine fisheries sector. The first category actually goes on-board the craft for fishing and the second category that stays ashore but is considered crew for all practical purposes. The actual labour requirement for the operation of ring seine units of Chellanam was around 1500. However, the number of active fishermen in the region was higher. Traditionally, every healthy fisherman in a village can join a fishing unit, irrespective of the actual or maximum number of crew a fishing craft can accommodate. The surplus labour that cannot find a place in the craft that goes for fishing on a particular day is called the *karanila* fishermen (Kurien and Vijayan, 1995). *Karanila* literally means 'status on shore'. As all the fishermen, going onboard or staying ashore, are physically capable of taking up the fishing activity, the work is rotated and fishermen going for one fishing trip may be replaced by others on the next trip. This way there is an almost equal sharing of work among the available labour in the community. The number of *karanila* fishermen was not uniform every day; it depended on the fishing season and was more during June to September (south-west monsoon season), which incidentally is also the peak season for ring seine fishing (Figure 2).

Usually, during the south-west monsoon season, a unique fish aggregation phenomenon occurs in the near-shore area of Kerala, known as *chakara* (mud bank formation) (Mathew and Gopinathan, 2000). During the *chakara* period, there are more number of fishing operations per day. These monsoon fishing operations are highly labour-intensive and hauling the gear is tedious due to the strong currents and heavy winds. Each fishing trip takes more than sixteen hours. In such situations, there is a need for rotation of fishermen employed onboard for fishing operation. This *karanila* system ensures work rotation optimizing the maximum catch. This system also provides an alternative livelihood option for the trawl boat fishermen rendered jobless during the 45-day monsoon trawl ban period, when trawlers are not operated (Srinath, 2003). The general fishermen cannot become *karnaila* fishermen unconditionally. He should be a regular crew member. The only exception being the trawl boat workers during the trawl ban period even though trawlers pose stiff competition to ring seines during marketing of the catch. The second condition they need to fulfill is that they should be willing to go onboard for fishing. Only in case of genuine reasons like illness, funeral, marriage, etc. labourers are allowed to stay on shore as *karanila*.

In some regions, the *karanila* group is required to be present to help in the departure of boat in the morning and also when the craft lands on the shore (Berg and Lensing, 2006). However, it was practical

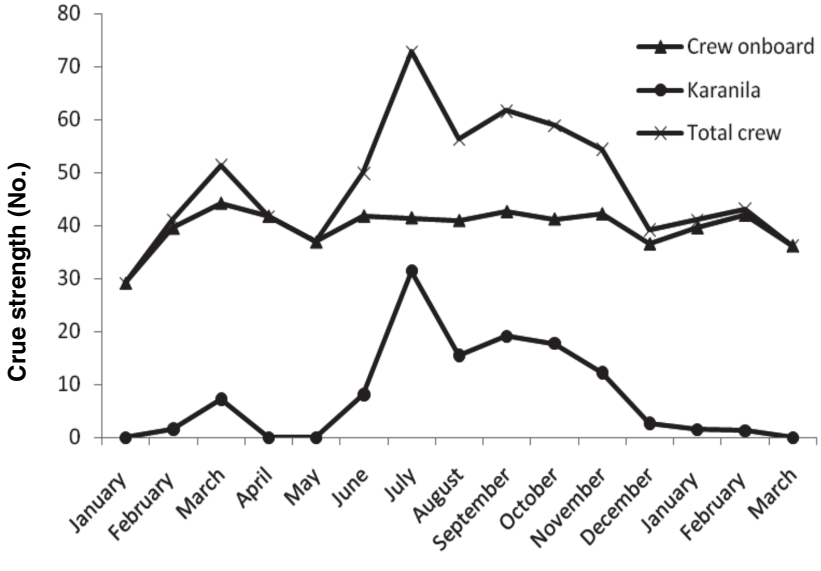

Figure 2. Changing pattern of *karanila* strength in ring seine fishery: 2010-11

only when the craft operated from beach landing centres. Nowadays, ring seiners also operate from fishing harbours and *karanila* fishermen are no longer needed for pushing the craft into the sea or pulling it towards the shore on returns. Besides, the crew have to be transported from the village to the harbour for which the cost has to be borne by the owner. The *karanila* system in ring seine fisheries sector works as a buffer against unemployment in the traditional fisheries sector.

Wage Sharing Pattern

The crew (including *karanila* fishermen) of a fishing unit have the traditional rights on the landed fish. They take enough fish to meet their household requirements. A share for household consumption is also given to persons such as widows, physically and mentally challenged, those temporarily or permanently maimed from accidents at sea etc. who cannot go out for active fishing. The rest of the catch is put up for auctioning at the landing centre which is the first point of sale. The catch once landed is taken over by auctioneer (*tharakan)* for auction. After auction, the catch is transported to market or processors by the wholesalers or large traders.

After auction 10 per cent is deducted by the auctioner from the amount fixed for the fish catch, which is locally called *vilikuravu*. This actually benefits the merchants participating in the auction as they have to actually pay 10 per cent less than the auctioned amount. The auctioneer gets a share of 2.5 per cent of the rest of the amount as action charges. The entry of other merchants into the landing centre/ harbour is effectively prevented by a system which excludes them from the benefit of the 10 per cent gain from the auctioned amount. The *vilikuravu* is thus a barrier to trade. Besides the *vilikuravu* and the auction commission, the fishermen also have to pay about 7 per cent as other shares and payments to the cooperative societies, a thrift share and as landing centre owners' rent, etc.

Usually, all ring seine fishermen group(s) borrow from the auctioneers to meet operational expenses or for capital investment running into several lakhs and depending on the borrowed amount, they are charged 4-10 per cent interest, thus reducing the income at the first point of sale by almost 18.55 per cent to 31.15 per cent. The variable costs as well as miscellaneous expenses incurred by the owner(s) (shareholders) are deducted from this revenue. The expenses include the fuel costs, sales commission, food expenses, ferry rent, travelling expenses of the crew members, credit repayments, donation, bata expenses, etc. The net income after deducting all the above is shared by the crew and owner in the ratio of 60:40.

Total crew strength = Number of crew onboard + *Karanila* fishermen

Total revenue = Auction value of fish – [*Vilikuravu* + other commissions and payments at landing centre or first point of sale]

Owner(s) share = Net income × 40/100

Onboard crew share =
{[Net income × 60/100]/ Total crew strength} + onboard bata

Karanila crew share =
[Net income × 60/100]/ Total crew strength

Net income =
Total revenue – Total variable and miscellaneous expenditure, including bata

The wage share is directly proportional to the revenue obtained on a particular day (Figure 3). The crew share is equally distributed among the crew members, including the *karanila* fishermen. Compared to the other crew members, the special category of fishermen onboard, the *aryakaaran*, skipper, engine mechanic and cook get higher share or are paid a fixed wage. They have to be paid the wages even if there is no catch or revenue on a particular day. The other crew members have to do with only the *bata* on such days. The *karanila* fishermen do not get *bata*.

The share of the *karanila* fishermen is called the *karapank* (share of the shore) (Kurien and Vijayan, 1995) and is depicted in Figure 4. It was observed that the bata that the crew got varied from vessel to vessel. However, on average, it was ₹ 50-250, depending on the total revenue for a particular boat (Table 1). If there was no catch for a few trips, the bata amount was increased to a minimum of ₹ 100. Unsuccessful fishing trips result in inadequate earnings to the crew. It also drives the owner(s) into debt as they have to bear operating costs even if there is no catch. It was also

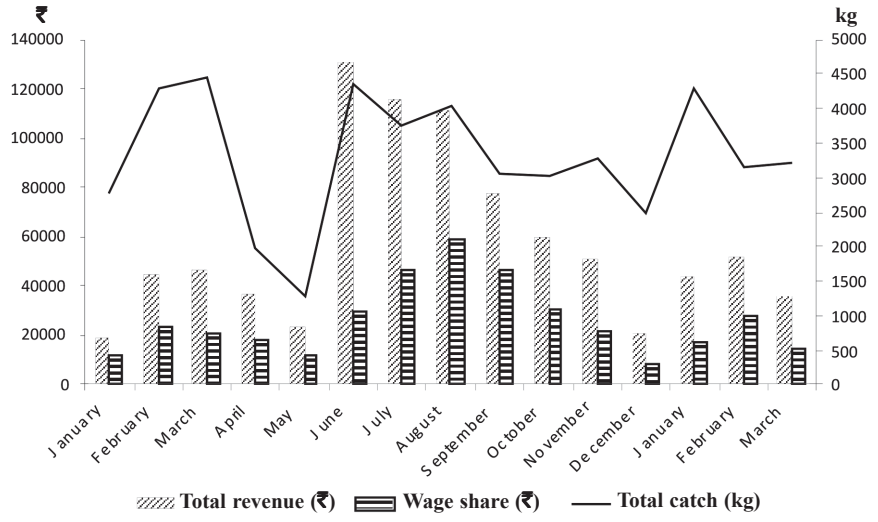

Figure 3. Total catch and revenue and crew wage share in ring seine units

observed that a few unsuccessful trips resulted in loss of labour strength because labour migrated to craft having satisfactory catches.

Table 1. Average on-board crew bata

Catch per day (₹)	Average onboard crew bata (₹)
0-10000	50
10000-25000	100
25000-50000	150
50000-75000	200
75000-100000	250

In the ring seine units, attendance is maintained for proper management of *karanila* and *karapank* and to regulate the shifts system of work sharing. However, there are no strict rules about work rotation; the system is basically voluntary.

Increased catch, however, did not necessarily mean higher revenue or higher crew share (Figure 5). The maximum revenue accrued was in the month of June when the catch was high, ₹ 130963 for 4.4 Mt of oil sardine. The catch of oil sardine was equally high during March, with 4.5 Mt of landing, but the revenue during that period was only ₹ 46790. It was because during June, there was no oil sardine from mechanized trawlers and the unit value realization was high. It was also reflected in the unit value of the landed fish, with higher unit value recorded during the months June to September (Figure 6). During this period, the wage share of the crew was also high.

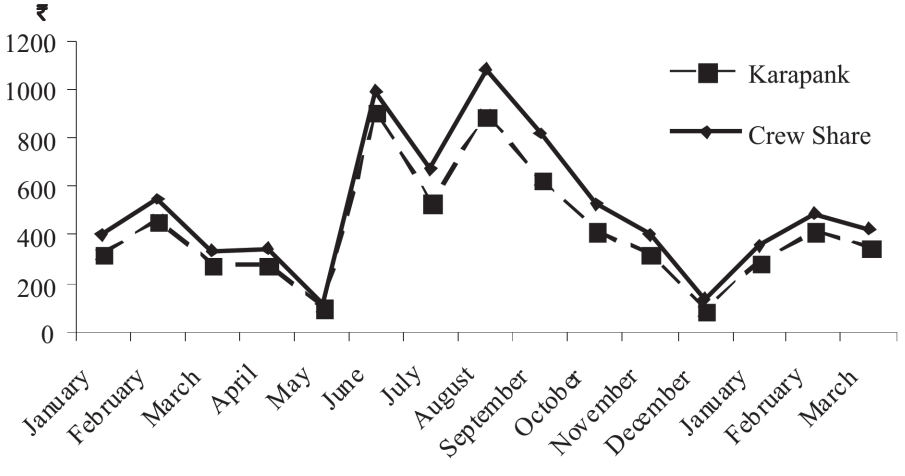

Figure 4. Wage share of onboard crew and *karanila* fishermen in ring seine

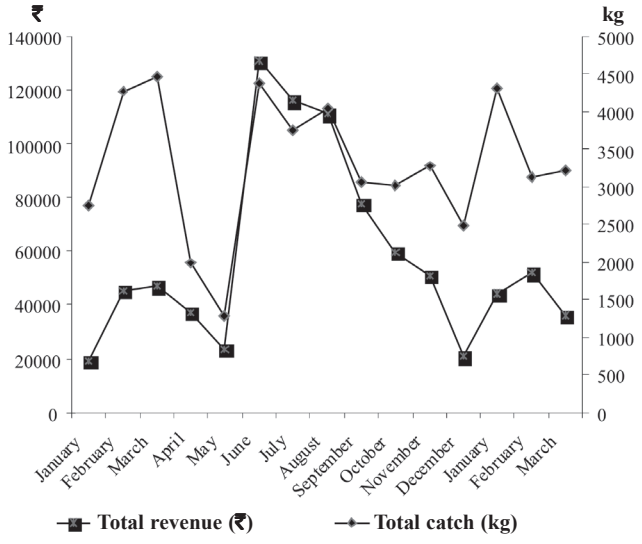

Figure 5. Total catch vs total revenue in ring seine units

Impact of Work and Wage Sharing Arrangement

The fishing communities have been a close-knit unit and the unique system of work and wage sharing in the ring seine fishery has evolved as a result of the necessity of the community to stay together, especially during the times of distress, besides providing adequate labour, especially during peak season, when the requirement of labour would be higher than at other times (Kurien, 1999). The *karanila* system has ensured that every able-bodied fisherman has a right to work, the right to work is now being reflected in the rural employment guarantee schemes propagated by the Government of India as well (Govt of India, NREGA, 2005). With the *karanila* system in place, even if a fisherman does not go out at sea and contribute to production, he is entitled to a share in the wages (which is a fixed percentage of the production or returns).

An analysis of the working crew on ring seine units in the region showed that for a total of 180 fishing days in a year, a total of 11,134 crew members were employed, on an average 62 fishermen per ring seine unit per fishing day. Out of the total fishermen 'employed' as per the existing work arrangement, 83.17 per cent were fishermen, who actually went onboard and 16.83 per cent were *karanila* fishermen, who stayed ashore. While the fishermen who actually went onboard earned a wage of ₹ 560/fishing trip, the *karanila* fisherman earned ₹ 460/fishing trip. Thus, even though not contributing to production directly, they could earn a wage which was assured on all the days fishing actually took place. Considering this as a form of disguised unemployment, the disguised unemployment rate was calculated based on the total working days possible (180 days) and the actual number of days a fisherman was employed (128 days). This did not imply that he was unemployed for the remaining days. He continued to be a *karanila* fisherman and got a share in the wage.

The disguised unemployment rate was calculated as 28.89 per cent. The flow of income into households had ensured that consumption needs of the family were met. Besides the wages, the fisher family also got a share in the catch (traditional share) which often was sufficient to meet the protein requirements of the family (Martone *et al.,* 1980; WHO, 2007).

Conclusions

It has been found that the traditional ring seine fishery in Kerala is still managed through an ingenious method of work and wage sharing in which all the active fishermen of a village or area can participate

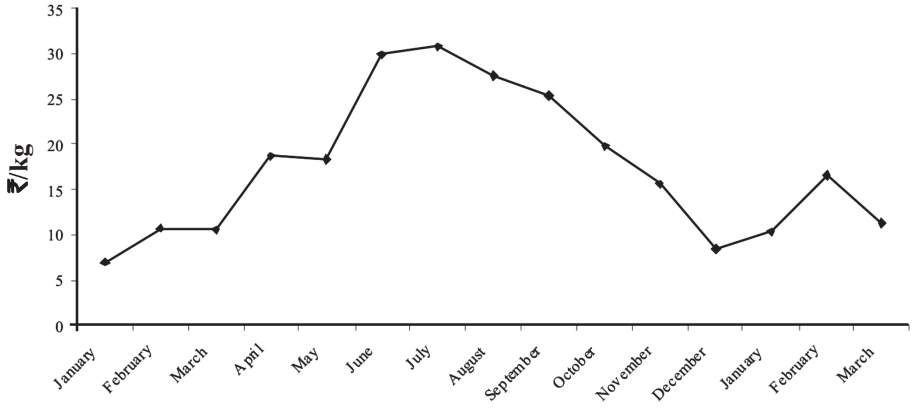

Figure 6. Unit value of landed fish

and earn their living. It has become part of the community tradition and has stood the test of time in spite of changes that have taken place in the fishery. Although the landings from trawl sector decides the unit value realized from ring seine catch, the ring seine fishermen, more than willingly take trawler workers on board during these period of unemployment. This system has ensured the distribution of income from accruing the fishery resources targeted by the ring seine units. Though it is a form of disguised unemployment, it has aided in reduction of abject poverty in the community in the area.

Acknowledgements

The authors are thankful to the Director, CIFT, Cochin, for permission to publish this paper. They are also thankful to the fishermen of Chellanam who helped in collecting and validating the data collected for the study. They are grateful to the anonymous referee for providing constructive suggestions.

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Received: January 2012; Accepted: March 2012