

Socio Economic Status of Crab Fishers and Marketers in Navanthurai Fishing Village in Jaffna Estuary, Sri Lanka

A. Tharmin*, K. Sivashanthini and U. Edrisinghe¹

Department of Fisheries
Faculty of Science
University of Jaffna
Sri Lanka

ABSTRACT: *The present study was carried out in Navanthurai fishing village with the objective of identifying socio economic problems related to livelihood of crab fishers and marketers. Primary data were gathered using a pre-tested questionnaire from 48 families and personal interviews. Mean age of crab fishers, retailers, auctioneers and wholesalers were 43.3, 47.5, 33 and 35.6 years, respectively. Among them, 20% of crab fishers and 12.5% of retailers have received only primary education (Grade 1 to 5) and all the wholesalers and auctioneers have completed above junior secondary education. Only 20.8% of crab fishers had their own crafts. Ownership of craft and the level of education were found to be significantly related to the income of crab fishers ($P < 0.01$). Annual income of a fisher ranged between Rs.180,000.00 and Rs. 600,000.00. However, their monthly average crab harvest was 212.8 kg/person. Alcoholism, poor financial management and improper waste management were the major problems faced by the fishing community in the Navanthurai fishing village.*

Keywords: *Crab, crab fishers, fishery, marketer, socio-economic*

INTRODUCTION

Crabs have a higher consumer demand and fetch higher prices both locally and abroad. *Portunus pelagicus* and *Scylla serrata* are economically important species caught in Jaffna and abundantly found in the coastal regions and particularly in the Jaffna estuary and lagoons. Crabs play a vital role in the ecological balance and are an essential component in the coastal food-webs.

Crab fisheries in Jaffna is ancient, while this industry is extremely popular among the small-scale fishers due to simple technology, low investment and high profit margins. Crab fisheries in Jaffna region is mainly the capturing crabs from saline resources and selling alive or as a frozen product both in the local and export markets, thus becoming an important foreign exchange earner. A significant number of fishers, traders and transporters in Jaffna are directly or indirectly involved in crab fisheries.

The objectives of the study were to find out general background and socio-economic status of crab fishers and marketers; to determine harvesting and processing details and to identify

¹ Department of Animal Science, Faculty of Agriculture, University of Peradeniya, Sri Lanka

* Corresponding author: tharmin29@gmail.com

issues related to livelihood, in order to propose appropriate suggestions to overcome the recognized issues. Results of this study will provide policy makers to evolve appropriate livelihood development approaches in order to enhance the wellbeing of this community.

MATERIALS AND METHODS

A survey was carried out from March 2012 to February 2014, in Navanthurai Fishing Village situated in the southern border of Jaffna District, Northern Province, Sri Lanka, which lies between 80° 00' E longitude and 9°40' N latitude. The Navanthurai area is bordered by Jaffna estuary (Plate 1).



Plate 1. Geographical location of Navanthurai coastal area

Source: www.googlemap.com

In order to ensure representativeness, different categories of people from the fishing community were selected by using a stratified random sampling technique. For the survey, 30 families of full-time crab fishermen, 8 families of retailers, 5 families of wholesalers and 5 families of auctioneers were selected.

Primary and secondary data were collected. Primary data were gathered using a pre-tested questionnaire and personal interviews with resource users as well as through group discussions with fishermen, traders, retailers, wholesalers, auctioneers and residents of the village. Additional information was collected through systematic field observations. The questionnaire incorporated personal information (age, education, religion, sanitation and family size), fishing information (type of craft, ownership, type of gear, and amount of harvest) economic information (occupation, sources of income, daily expenditure, credit facilities), marketing channels (source of collection, transportation and selling system) as well as the present issues.

Secondary data were collected from the Ministry of Fisheries and Aquatic Resources (MOFAR), Department of Fisheries and Aquatic Resources District Office, Jaffna, District Secretariat, relevant Grama Niladari Offices and from related web sites. Collected data from the questionnaire were analyzed by using SPSS (Statistical Package for Social Science) computer package to perform descriptive statistical analysis of data.

RESULTS AND DISCUSSION

Socio-economic characteristics of crab-fishers

In Navanthurai fishing village, there were 425 fishing families, which comprised of 2,152 members (males and females). All of them were Tamils and of them 52.1% were Christians and rest were Hindus. The only form of religious inhibition was that Hindus refrained from fishing on Fridays and Christians on Sundays.

Healthcare facilities were poorly developed. In this area well water was not used for drinking because of the intrusion of saline water. The drinking water supply is from Jaffna Municipal Council.

Age

The mean age of crab fishers, retailers, auctioneers and wholesalers were 43.3, 47.5, 33.0 and 35.6 years respectively. Most of the auctioneers and wholesalers were young people, because young people who are educated were mostly interested in trading and wholesale activities and majority of the retailers (62.5%) were elders. Of the crab fishers, nearly two-thirds were above 45 years old. This indicated the poor interest shown by young and educated for crab fishing. Fisher's fishing ability highly depended on their physical fitness (Mwakuboet *al.*, 2007), which depend on their age. Sandika and Hirimuthugoda (2011) reported that the mean age of crab fishers as 43.9 years in Koggala Lagoon, Sri Lanka.

Family size

Mean family sizes of crab fishers, retailers, auctioneers and wholesalers were 5, 5, 4 and 4 respectively. Among them, family sizes of crab fishers and retailers were relatively higher than wholesalers and auctioneers, because wholesalers and auctioneers were younger than others. Similar observations were reported in reservoir fisheries, where average family size was five in Hambantota (Chandrasiri, 1986) and in Victoria reservoir (Nathanael and Silva, 1998).

Education level

Generally education level of fishermen is lower than average literacy rate of the country (Bryan, 2007). The majority of children did not proceed beyond the O/L. However, girls were educated up to A/L and worked in various organizations such as processing centers, Divisional Secretariats and Samurdi Offices. Among crab fishing families, 20% of crab fishers and 12.5% of retailers received only primary education (Grade 1 to 5) and all the wholesalers and auctioneers had above junior secondary education (Table 1). When educational level is considered, wholesalers had higher education than auctioneers, crab fishers and retailers inferring the importance of education in social upliftment.

Table 1. Education level of fishing community in Navanthurai area

Education level	Percentage of fishers (N=30)	Percentage of retailers (N=8)	Percentage of wholesalers (N=5)	Percentage of auctioneers (N=5)
Primary	20	12.5	0	0
Junior secondary	66.7	62.5	60	58.3
Senior secondary	13.3	25	40	27.1

Even though they were from fishing communities, most of the parents encouraged their children's education and did not like their children involve in fishing. Most of the people followed their education up to G.C.E.O/L. There were five Community Centers in this area and their main objective was education. All the village students studied at the Community Centers till night (9.00 p.m.) and students were encouraged by giving prizes for the best students. These Community Centers also encouraged cultural programs and competitions.

Status of the family

Wealth of the family was one of the socio-economic indicators to evaluate the living condition. Family wealth was measured by the house type, toilet facilities, family vehicles, savings, electricity and other equipment. Total family status score was computed by assigning values to the above. The distribution of fishers by the total family status score is given in Table 2.

Table 2. Distribution of crab fishers by the total family status score

Family status score	Frequency of crab fishers	Percentage of crab fishers
≤13	7	15
14	11	23
15	12	25
16	9	19
≥17	9	19

There was a significant positive association between the family status score and the level of income (Chi - Square Value =39.42; $P < 0.003$)

An important feature of this family status was that they had permanent houses with a cement floor (95.8%), brick and cemented walls (93.7%), tiles or asbestos sheets (95.8%), radio (91.7%), television (70.9%), telephone (mobile or land) (83.3%), basic furniture (62.5%) for their house and at least a bicycle (64.6%) or motor cycle (29.2 %) as the family vehicle. These results prove that their economic and wealth condition was satisfactory, because their earnings were relatively high. However, in this fishing village, they had built four houses within 8 perches and most of them were living as joint families. Four to five families were living together in a house resulting high population density. Even though people earned comparatively high amount of money, a significant portion was spent for bad habits like consuming liquor (93.8%), smoking (68.8%) and chewing betel (60.4%), for which they spent an average Rs.500.00 per day.

Job related characteristics

Fishing activities are traditionally carried out by a particular caste group in Jaffna (Pffaffenberger, 1982). All the crab fishers revealed that their father or grandfather engaged in similar occupation and 60.4% of their families influenced them to continue this activity. However, women participation in fishing related activities was low in this area. Only 12.5% of women helped for fishing in different ways.

Majority of crab fishers engaged in sea fishing as an additional source of income. The experience varied from 1-48 years with a mean of 25.4 (± 8.9) years. A similar observation (1-50 years) was found in Koggala Lagoon (Sandika and Hirimuthugoda, 2011); 58.3% of fishers engaged in full-time fishing activities and for the rest, fishing was a part-time activity.

Job satisfaction

Most important job related variable was job satisfaction, which influences to get a higher performance. Half of crab fishers were neither satisfied nor dissatisfied with their job and 31.3% of crab fishers were satisfied with their work. Low harvest due to low availability of crabs in the estuary, competition among the members to capture crabs, low social recognition for their occupation were the main reasons for their low satisfaction level though their income was high.

Monthly harvest

Monthly crab harvest ranged from 25 to 500 kg/person with a mean of 212.8 kg. About 50% of the crab fishers harvested more than 200 kg/month. Sandika and Hirimuthugoda (2011) stated that monthly harvest in Koggala lagoon ranged from 0-200 kg per person and about 80% of the crab fishers harvested less than 40 kg per month.

Monthly income of fishing community

Almost all the villagers depended on fishing as their main source of income. Some engaged in carpentry, masonry and labour as full-time or part-time jobs. Crab fishers and retailers earned relatively lower monthly income than the wholesalers and auctioneers (Table 3). Usually auctioneers earned high income because the total quantity of the catch was auctioned in Navanthurai Landing Centre. Auctioneers were also involved in other part-time jobs, because they had sufficient free time. Wholesalers mainly dealt with the export market and thus earned the highest income, whereas crab fishers who were actively involved in fishing did not have enough time to engage in other income generating activities. Therefore, they had to depend only on the catch.

Table 3. Monthly income of the fishing community

Selected group	Mean monthly income (Rs)
	Mean (\pm S.D).
Crab fishers	26,100.00 (\pm 9,502.00)
Retailers	33,750.00 (\pm 18,468.00)
Auctioneers	4, 000.00 (\pm 4,472.00)
Wholesalers	53,000.00 (\pm 16,807.00)

Income was the most important factor for the sustainability of any livelihood. Among the crab fishers, 58.3% only depended on fishing as their main source of income, which composed of various activities. Annual income of a crab fisher ranged between Rs. 180,000.00 and Rs. 600,000.00.

Educational level and monthly income

Of those fishers who had completed only junior secondary education, 42.4% earned less than 20,000.00 rupees monthly, whereas of those crab fishers who had higher education (93.3%) earned more than 20,000.00 rupees as monthly income (Table 4).

Table 4. Association between educational level and income of crab fishers

			Income (Rs)		Total
			≤20,000	>20,000	
Education Level	Junior secondary	Number	14	19	33
		% less than junior secondary education level	42.4%	57.6%	100%
	Above Junior secondary	Number	1	14	15
		% above Junior secondary education level	6.7%	93.3%	100%
Total		Number	15	33	48
		% above primary education level	31.3%	68.8%	100%

There was a significant positive association between the level of education and the level of income (Chi-Square Value =6.137; $P < 0.01$).

Expensive items of fishers

Most expensive items of crab fishers were identified as crafts, gear, floats, fuel and baits. The cost was divided into basic capital and variable or operational capital. The cost for crafts, gear, floats was identified as capital costs. Average capital cost was recorded as Rs. 11,000.00 to 95,000.00 per annum. Major operational costs were for fuel and baits.

Membership of the Co-operative Society

There were 3 Fisheries Co-operative Societies operating in this region, while only 70.8% were members of the Co-operative Society.

Type of crafts and gear

There were three types of fishing crafts operating in Navanthurai area. Among them, 45.8% were out-board fibre glass reinforced plastic boats (OFRB), 35.4% were mechanized traditional boats (MTRB) and 18.8% were non-mechanized traditional boats (NTRB). When considering the fishing crafts, 20.8% of crab fishers owned their crafts, 60.4% shared with others and another 18.8% used rented crafts for fishing. In 2012, the highest number of fishing crafts recorded in Jaffna District was OFRB and NTRB. This study confirms that Navanthurai area crab fishers also mainly used OFRB boats similar to the other area fishers. Although, a variety of gear were used by the Navanthurai area crab fishers, gill-net (*Nanduvalai*) (85.4%) and hoop-net (70.8%) were mainly used in mechanized boats. However, other types such as *Sirahuvalai* (33.3%) and baited traps (*Parihoodu*) (10.4%) were also used with these main types of gear; 90% of the crab fishers used 3 to 4 gear types.

There was a significant positive association between the ownership of the craft and the level of income (Chi - Square Value =11.74; $P < 0.001$). Of those crab fishers who owned their crafts, 60% earned more than Rs. 40,000.00, whereas of those who shared or used rented crafts, 89.5% earned less than Rs. 40,000.00 as their monthly income.

Fishing season

About two-thirds of the crab fishers mentioned that June to August period was the off-season due to low availability of crabs, which may have been influenced by the monsoons and water currents around Jaffna Peninsula. It can be supported by the statement of Sivasubramaniam

(2001), i.e., Sri Lankan fisheries were initially influenced by the two monsoon seasons, such as North-west monsoon primarily from November to February and the South-west monsoon primarily from May to August. For nearly one-third of crab fishers seasonal effect did not have an influence on their livelihood

Knowledge on crab spawning

In Navanthurai area, 27.3% of crab fishers had correct knowledge about spawning and spawning season of crabs, while others did not have any idea. Majority (90%) of the crab fishers had caught berried Blue swimming crabs even though they had the knowledge of spawning and spawning season, because of the high price and demand. Only 10% of the fishers released the live berried crabs into the sea. However, in the case of mud crabs no one caught berried crabs, since they were released by the wholesalers, since mud crab population had significantly decreased in this area.

CONCLUSIONS AND RECOMMENDATIONS

Crab fishers did not completely depend on one activity for their income. Since crabs fetch higher prices both locally and abroad, most of the crab fisher families residing in this area have satisfactory economic background. Ownership of boats and the level of education were found to be significantly correlated with the income of the fishers.

Low economic standard fisher families should be identified by the Fisheries Extension Officers and should introduce low interest loan facilities by Government or Non-government Organizations through a Fisheries Co-operative Society functioning in this area and assist in managing their finances. Women should be encouraged to do processing of fish. Culture fishery should be encouraged with the help of National Aquatic Resource Research and Development Agency (NARA), while Ministry of Fisheries and Aquatic Resources should provide alternative employment opportunities to Navanthurai fishing community. This will lead to uplifting the economic standard of fisher families in this area.

REFERENCES

- Chandrasiri, J.K.M.D. (1986). Socio-economic conditions of inland fishermen, Sri Lanka. A pre-project study of five major reservoirs in the Hambantota districts. Agrarian Research and Training Institute, Colombo, Sri Lanka, pp. 95.
- Maddox, B. (2007). Literacy in Fishing Communities. The Sustainable Livelihoods Programme. Overseas Development Institute, Norwich, United Kingdom.
- Mwakubo. S.M., Ikiara, M.M. and Abila, R. (2007). Socio-economic and ecological determinants in Wetland Fisheries in the Yala Swamp. *Wetl. Ecol. Manag.* 15, 521-528.
- Nathanael, S. and Silva, E.I.L. (1998). Socio-economics of the fish marketing system at the Victoria reservoir, Sri Lanka *Journal of Aquatic Sciences*, 3, 51-59.
- Pfaffenberger, B. (1982). Caste in Tamil culture: The religious foundations of Sudra domination in Tamil Sri Lanka. Maxwell School of Citizenship and Public Affairs Syracuse University; Vikas Publishing House, New Delhi.

Sandika, A.L. and Hirimuthugoda, N.Y. (2011). Socio-economic and livelihood related issues of crab collectors in Koggala Lagoon in Galle Sri Lanka. *Tropical Agricultural Research & Extension*, 14 (2), 19-24.

Sivasubramaniam, K. (2001). Search and rescue- hypothetical drifting patterns of Sri Lankan fishing boats. *Bay of Bengal News. The Journal of BOBP*, 3(1), 17-22.