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Participatory Approach of Fisherwomen in Crab Fattening for Alternate Income Generation in Tuticorin, Southeast Coast of India

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Abstract

A community-based crab-fattening project was adopted by the womenfolk of Vellapatti fishing village in Tuticorin coast, Gulf of Mannar for proper utilization of their available resources and their leisure time for income generation. The mud crab, *Scylla serrata* and blue swimming crab, *Portunus pelagicus* were chosen for crab fattening which is 'First of its kind' in India and the women are successful in fattening and creating alternate income through this project. Between these two crabs, fattening of *P. pelagicus* is more attractive due to the short fattening span and the low price quoted on molted crabs at the auction sheds. The participation of women and the effectiveness of this project are discussed in this paper.

Introduction

The Gulf of Mannar (GOM) is one of the four major coral reef areas of India, covering an area of about 10,500 sq.km from Tuticorin to

Rameswaram and consists of a chain of 21 uninhabited islands surrounded by fringing and patchy reefs (Fig. 1). Along this coast, the crustacean forms an important fishery, mainly comprised of shrimps, crabs and lobsters. The crab fishery is dominated by five commercially important species namely *Portunus pelagicus, P. sanguinolentus, Charybdis feriata, C. natator* and *S. serrata*. The major portion of the catch is comprised of *P. pelagicus* followed by *P. sanguinolentus* and *S. serrata*. These crabs play a major role in the socioeconomics of the fisher folk and export market. *P. pelagicus* are being exported mostly in frozen and canned forms while the demand for *S. serrata* throughout Southeast Asia is for their export under live conditions. Because of their delicacy and larger size, the live mud crabs are always in greater demand and fetch a higher price (Kathirvel 1993).

There exists no exclusive traditional crab farming method in India in order to meet the growing demand in the international market, which is entirely dependent on the capture fishery. For each unit of fishing effort, molted or water crabs are also caught which have no or very low market value. These crabs can be used for fattening as the carapace of these crabs can be hardened in a short duration thereby inviting the buyers to quote attractive prices. Crab fattening is widely practiced in Thailand, Taiwan, Malaysia and Indonesia (Marichamy 1996).

Selection criteria of the community and site

For the community-based crab-fattening project, the fisherwomen of a crab fishing village, Vellapatti near Tuticorin, the southern part of India

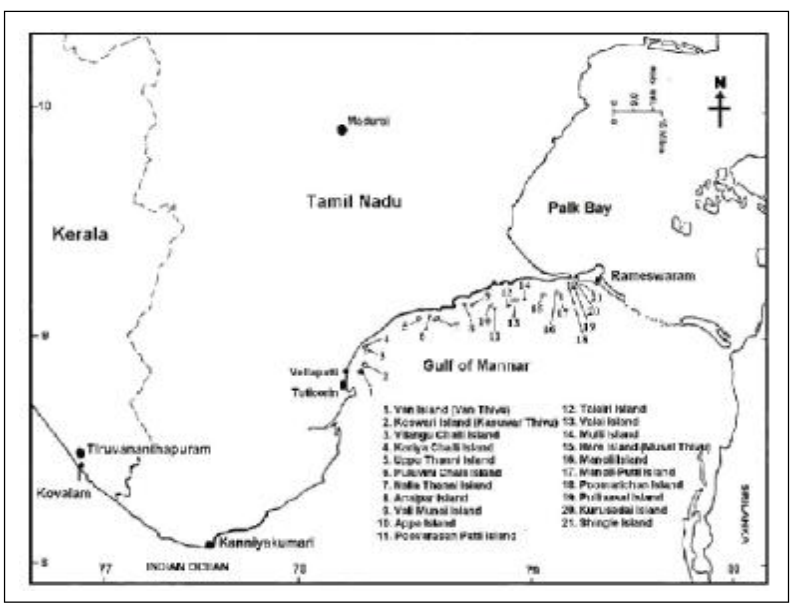

Fig 1. Map showing Gulf of Mannar, Southeast coast of India

were selected. The salient feature of the village is that the entire village is solely dependent on crab fishery for their livelihood and the potential species are *Portunus pelagicus* (Pelagic or Blue crab) and *Scylla serrata*.(Mud crab) Second important and abundant species are *Charybdis feriata* (Crucifix crab) and *Portunus Sanguinolentus* (Three spot crab). This village is able to supply crabs throughout the year and at seasons landings exceed 700 kgs·day. In the total catch about 7-10% are molted. If the carapace is too soft in molted crabs they are simply discarded. Therefore, this crab fattening activity has been initiated in this village in order to use the available resources wisely and to assist the villagers, particularly fisher women to earn additional income.

This village has a population of about 1,900 and their main occupation is fishing. There are about 54 country boats (Vallam – an indigenous country craft with inboard engine) engaged in the crab fishery and they mainly fish around the reef areas of Vaan and Koswari islands, 5 km away from their village. The main gear in use is a modified bottom set gill net and the fishery is dominated by the crabs, *P. pelagicus. S*mall numbers of fishes and molluscs are also landed as by-catch. In the day-to-day fishing activity, the fishermen get undersized and molted crabs that have poor market value.

More than 95% of the fisherwomen of Vellapatti village are actively involved in fishery related activities such as sorting the catches, net cleaning, mending broken nets and net making, thus playing a significant role in enhancing family incomes. Each day fisherwomen devote most of their time in the shore for all these activities. There are 12 women Self Help Groups (SHG's) in the village and each group is comprised of a leader and 19 members. The SHGs were started with an aim to generate additional income to their family other than the main fishing occupation by the men. All the SHGs are under the control of TMSSS (Tuticorin Multipurpose Social Service Society) of Roman Catholic Diocese that works exclusively for the benefit of the downtrodden and the needy. So far the SHG's have played a lead role in small savings and have also empowered in social and economical domains like active participation in the decision making and planning process, linking them with micro enterprises and banking institutions. Based on the resource availability and knowledge about the crabs, five active Self Help Groups (SHGs) were identified for the crab-fattening project.

Training

The training programme was planned and executed by Suganthi Devadason Marine Research Institute (SDMRI), a nonprofit marine research and higher education organization at Tuticorin. SDMRI's priority

areas include conservation and management of marine and coastal resources (particularly coral and associated fisheries, biotechnology, aquaculture, socioeconomics etc.) and executing innovative alternative livelihood schemes for coastal fisher folk. The staff of SDMRI conducted crab-fattening training to selected SHGs for a week during. The SHGs were taught water quality management, selection of suitable water crabs, feed management and tank maintenance both theoretically and practically.

The training was divided in batches to the selected SHG women (20 trainees per batch) scheduled at different timetable, throughout the first crop. Fieldwork was carried out for the selection of molted crabs from the landing center. Though 20 fisher women attended in a batch, an average of 10-15 actively participated in the training programme. Women showed keen interest in learning the maintenance of the crabs, collecting live feed of the bivalve *Donax faba* from the tidal area of the seashore and feeding the crabs. Feeding rate for the crabs was one tenth of the body weight per feeding time. Removal of the remains and fecal matter was carried out via the outlet pipes and cleaning the entire tank was prescribed to the fisher women on a daily basis. Handling of the crabs without detaching the chelate legs especially for *S. serrata* was emphasized because if a chelate leg is lost, the buyers quote only 50% of the price. The total number of fattening days varies between 21 and 30 days for *S. serrata* and five to eight days for *P. pe*lagicus based on the condition of the molted crabs.

Infrastructure facility

After the training programme, a project proposal was submitted to the Tuticorin District Administration requesting infrastructure facilities. The selected five SHGs were provided with all infrastructure facilities such as a fattening shed with twelve tanks of two-ton capacity, a settlement tank with seawater pumping system. An air compressor with accessories like air tubes, joints, regulators and cable were sponsored by TMSSS. Technical consultancy was provided by SDMRI at free of cost as service. It is also noteworthy that the location is pollution free and is an ideal spot for crab fattening. The fisherwomen easily engage themselves both in their routine work and in monitoring the crab fattening because the fattening shed is located in the vicinity of their landing area.

Implementation and technical backup

The Tuticorin District Collector inaugurated the project on 16 July 2002. Molted crabs were purchased from the landing center located close to the crab-fattening unit. Molted mud crabs, *S. serrata* weighing more

than 300 gm were chosen as an ideal size for fattening. In the case of swimming crabs, *P. pelagicus*, the prescribed size for molted crabs were more than 150 gm. To avoid cannibalism the species were maintained separately. The staff of SDMRI monitored the activities daily for the initial crop and later on, active participation of the women was followed up.

Economics

Based on the expenditure and income generated so far, the economics was calculated for a six-month period (Table 1). The total profit earned was Rs. 10, 889.00. The economics of *S. serrata* and *P. pelagicus* fattening were explained in detail in tables 2 and 3. If the activity is intensified by increasing the stocking density of crabs per tank (based on the size and the condition of the molted crabs), gross profit per crop will be higher. A comparison on the selling prices of *S. serrata* and *P. pelagicus* are explained in figure 2.

Table 1. Details of expenditure and income generation

S.No.	Particulars	Amount (Rs.)
1.	Purchase of crabs	13,827.00
	Electricity charges (3 Cycles)	5,550.00
	Accessories and repair	1,350.00
	Hideouts for crabs	158.00
	Plumbing / Tank cleaning	640.00
	One labourer (@ Rs. 1200 / month for six months)	7,200.00
	Total	28,675.00
2.	Selling of crabs	39,564.00
3.	otal profit	10,889.00

Table 2. Economics of *S. serrata* fattening for six months

Month	Cost of purchase of moulted crab (Rs.)	Kgs	Selling price (Rs.)	Profit (Rs.)
MAR	1850	8.2	3930	2080
APR	1300	4.7	3600	2300
MAY	2580	12.1	4660	2080
JUN	2540	16	4100	1560
JUL	2090	14.1	3200	1110
AUG	2030	10.9	4035	2005

Table 3. Economics of blue swimming crab, *P. pelagicus* fattening for six months

Month	Cost of purchase of moulted crab (Rs.)	Kgs	Selling price (Rs.)	Profit (Rs.)
MAR	280	36	2160	1880
APR	162	32.4	1944	1782
MAY	249	49.8	2988	2739
JUN	268	53.6	3216	2948
JUL	247	49.4	2964	2717
AUG	231	46.2	2772	2541

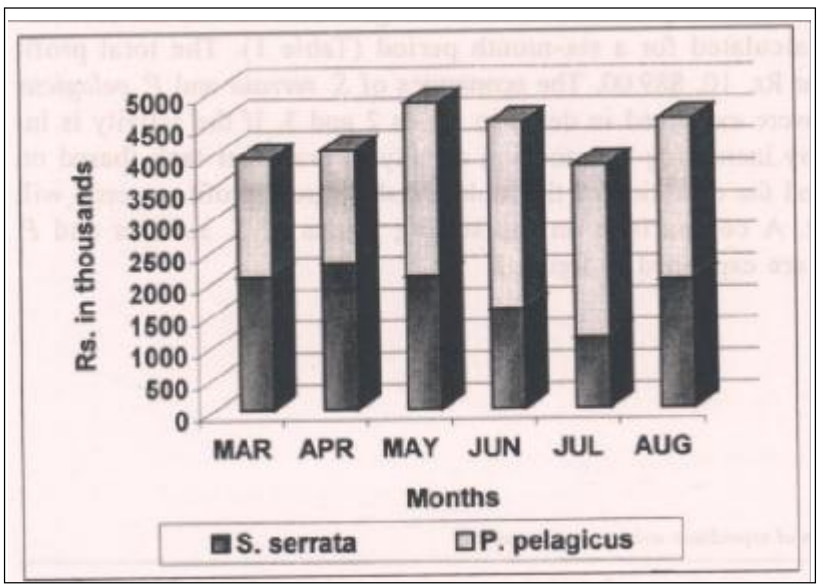

Fig. 2. Comparison of selling prices of fattened *S. serrata* and *P. pelagicus*

Conclusion

This is the first time in the country that a community-based crab fattening project has been implemented for alternative livelihood purposes especially for women fisher folk. This has proved to be a great success not only in terms of generating extra income to the family through the SHGs but also in creating an awareness among fisher folk about the value of marine resources and the need for conservation and sustainable utilization. Active participation, infrastructure, support from the district administration and technical back up from SDMRI have made the project sail successfully. Today the Vellapatti fishing village has become a role model for the establishment of similar projects in the other fishing villages along the Gulf of Mannar Biosphere Reserve of Southeast coast of India.

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