

Shift in market channels for short neck clam of Ashtamudi and Kayamkulam Lakes

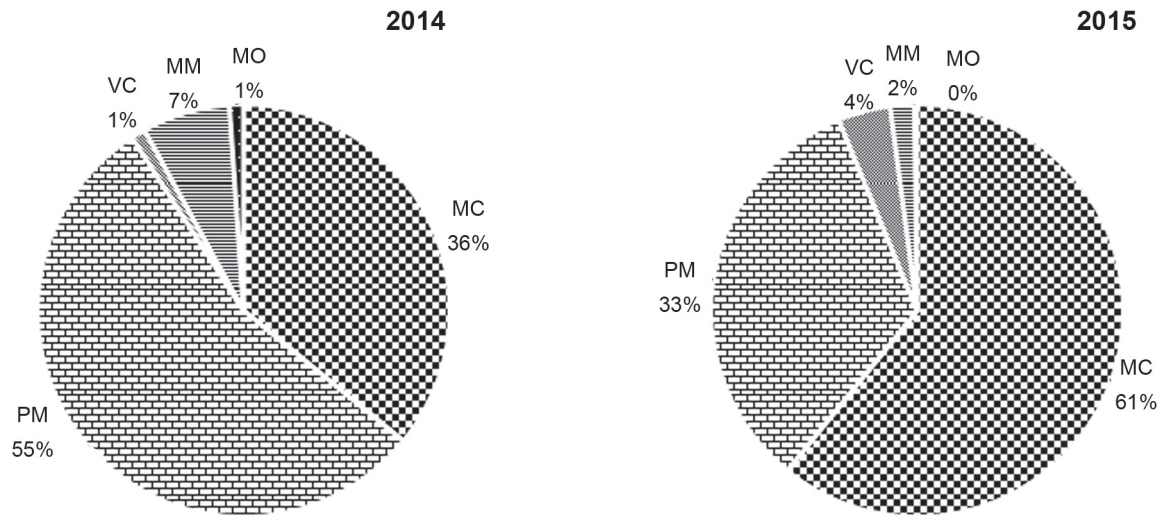
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Fishery for the short neck clam *Paphia malabarica* sustains the livelihoods of around a thousand fishers in Ashtamudi Lake. Commercial fishing for *P. malabarica* in this area began 30 years ago and because of sustainable management practices adopted by the stakeholders, it became India's first Marine Stewardship Council (MSC) certified fisheries in 2014. The Kayamkulam Lake situated nearby supports a seasonal fishery of *P. malabarica* during June to September. Clam fishers have been supplying the clam meat to the nearby processing plants for exporting to Asian countries such as Vietnam, Thailand and Malaysia. For exports, fishers currently get ₹ 80-90 per kilogram (kg) of boiled, shucked meat. For getting 1 kg of such shucked meat, 10-13 kg of live clam is required.

Incidentally, during the same period, harvest of *P. malabarica* from Karnataka's estuaries decreased drastically from 4199 t (2012) to 263 t (2015) which resulted in a huge demand-supply gap for this clam in the local fish markets of Karnataka, Goa and Maharashtra. Other commercially important clams like *Meretrix casta*, *Meretrix meretrix*, *Villorita cyprinoides* and *Marcia opima* etc. in Karnataka also showed drastic decline from 5420 t (2012) to 537 t (2015). Species composition of the clams also changed between 2014 and 2015 (Fig. 1), due to which the demand for whole, short neck clams increased manifold in these states. This demand was met by the short neck clams harvested from Ashtamudi and Kayamkulam Lakes, changing their market chain from an export oriented one to a domestic oriented one.



MC - *Meretrix casta*, PM - *Paphia malabarica*, VC - *Villorita cyprinoides*, MM - *Meretrix meretrix*, MO - *Marcia opima*

Fig. 1. Species composition of clam landings in Karnataka during 2014 and 2015

The inter-state transportation of clams to Karnataka and adjacent states by road and by rail from estuaries of Kerala has a long history. Transportation in large quantities started in 2015 and the clams were sold in markets extending from Kasaragod (north Kerala) bordering Karnataka to Goa. Clam fishers sold to these places get about ₹ 200-260 per kg of whole clam which is around 2.5-3 times more than local prices and entire catches are now marketed to these states. Drastic reduction of about 57% in clam production from estuaries such as Kalinadi, Gangavalli, Aghanashini, Sharavathi, Venkatapur, Coondapur, Uppunda, Swarna-Sita, Udyavara, Mulki, Gurupur and Nethravathi in Karnataka during 2015 was mainly due to poor spat settlement during the post-monsoon months of 2014. Biomass surveys conducted during March-May and November 2015 in the shallow water clam beds in Aghanashini, Coondapur, Swarna-Sita, Udyavara, Mulki, Gurupur and Nethravathi estuaries also revealed natural mortalities of all clam species.

The estimated average annual production of short neck clam from Ashtamudi Lake is around 10,000 tonnes. Fishing is carried out for 9 months

in a year with an average 24 fishing days per month, while during December-February, it is the closed fishing season. Nearly 230 kg of live-clams are harvested by two persons working in a boat per day. Around 200 fishing boats are operating in the lake, and brings approximately 46 tonnes (t) of live clam to shore every fishing day. The economics of marketing the clam was estimated as follows (Table 1). Fishers get nearly 2-3 times more profit by selling whole clam meat than shucked meat.

In Kayamkulam Lake *P. malabarica* fishery is carried out for about 9 months in a year (average 22 days per month) with estimated average monthly production of about 27 t. On an average 74 kg (range 30-120 kg) of live clams are harvested by two persons per boat per day. Number of canoes operating in this estuary daily varied from 7-20. Because of larger size of clam, fishers from Kayamkulam lake got higher prices (₹ 23-34 per kg) than fishers operating in Ashtamudi who sold whole clam (₹ 20 per kg) to the traders from neighbouring states. Every evening, entire catches are transported by 5-6 lorries to these states. Each lorry carries 150 gunny bags of 50 kg each containing live clams. By selling live shell on clams to the

Table 1. Comparison of economics of selling whole clam and shucked clam meat.

Item	Quantity / unit	Average rate (₹)	Whole clam processing	Clam meat processing
I. Fixed cost				
Cost of canoe (with outboard engine)	1	75000	A	A
Cost of canoe (without outboard engine)	1	45000	A	A
Gear(<i>Kuthuvala/Kolli</i>)	1	6000	A	A
II. Operational cost for 100 kg clam				
Fuel charge for heat shucking of clam	100 kg	75	NA	A
Fuel cost for outboard engine	100 kg	100	A	A
Sorting charge	100 kg	50	A	A
Meat shucking charge	100 kg	100	NA	A
Miscellaneous expenses		50	A	NA
Total expense for 100 kg clam (₹)			200	325
III. Gross revenue from 100 kg clam				
Selling shells left after shucking	60-70 kg	50	NA	A
Selling clam meat	8-10 kg	810	NA	A
Selling whole clam	100 kg	1300	A	NA
Total revenue for selling 100 kg clam (₹)			1300	860

Net profit (Gross revenue - Operational cost) for selling whole clam and clam meat were estimated as ₹ 1100 and ₹ 535 respectively.

A - applicable, NA-Not applicable

neighbouring states, fishers have benefitted by getting more profit (₹ 1110 versus ₹ 535 per 100 kg), savings in fuel cost and time otherwise required in boiling and shucking the live clams. Women have also escaped the drudgery of boiling and shucking clam meat.

The clams which are transported to Karnataka are relayed in estuaries at Coondapura. Relaying is done for minimum period of 2 days which may get extended depending on the demand. Healthy clams get buried while the stressed ones remain on top of the relayed substratum. The stressed clams are sorted, packed in small cement bags (10 kg bags) and transported immediately to Goa for marketing. The estimated survival rate of the stressed clams collected from the top layer of the estuary is 38-48%. Rest of the clams are also packed similarly and sold in Goa and more distant markets in Ratnagiri and Mumbai at ₹ 900-1000 per 10 kg bag (42- 47 clams per kg). Fishers at Ashtamudi

Lake get ₹ 20 per kg of whole clam which is sold at whole sale price of about ₹ 95 kg to the traders from Goa, Ratnagiri and Mumbai after it reaches Karnataka.

In conclusion, the present supply-chain of *P. malabarica* in bulk quantities from Kerala to Karnataka, Goa and Maharashtra by lorries and trains is likely to last only until the clam population in estuaries in Karnataka revive. An earlier study reported that clam beds took about 4 years for revival after mass mortalities in Tuticorin Bay through transplanting clams from other locations (Kripa *et al.*, 2012, *Mar. Fish. Infor. Ser. T&E Ser.*, 211:3-4). In the present study drastic reduction in clam landings in Karnataka was due to poor settlement of spat and natural mortalities of clams, probably due to environmental stress. If the production from Karnataka revives in future, the old export oriented marketing channel is likely to come back.