

An Evaluation of Mud Crab Exports

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Abstract

Export plays a very significant role in the development and growth of any Country. India is endowed with vast and varied resources for aquaculture and capture fisheries. India, bestowed with fishery resources of three oceans, provides tremendous potential for growth of the fishery industry. Mud crab is an economically important crab species found in estuaries, coastal lagoons and near shore waters of India. This paper focuses on the Evaluation of item wise Mud Crab Exports and in turn determines the export potential of Mud Crab from India. The study is descriptive and analytical in nature by using Secondary Data obtained from the Statistical department of MPEDA. The export of live Crabs is increasing every year. The ability of mud crab to grow fast and its suitability for culture in brackish water and estuarine areas make it attractive to develop mud crab culture/fattening programmes in India to meet the increasing global demand of the Species.

Key words

Aquaculture, Capture Fisheries, Export Potential, Mud Crab, Seafood Industry.

Introduction¹

Mud crab is an economically important crab species found in estuaries, coastal lagoons and near shore waters of India. India has about 8,103 km of coastline with shallow coastal waters, brackish water lakes, estuaries and intertidal swampy areas along the east and west coasts. It has been estimated that the potential resources of crabs particularly from the 7,770 km of estuaries and backwaters is 13,209 tonnes out of the total potential resource of 43,816 tonnes from Indian coastal waters. The southern part of the coast is potentially richer than the northern part. Estimated brackish water area in India is about 1,190,900 ha, out of which 167,193 ha developed for shrimp farming may become suitable for crab farming. Estimated mud crab culture area in Andhra Pradesh is more than 2,833 ha covering nearly 50 villages. Crab shells, Frozen cut swimming crab, Frozen mud crab, Frozen crab claws, Frozen whole crab, Frozen soft shell crab, Frozen stuffed crab, Frozen pasteurized crab, Frozen crab meat, Frozen cut crab with claws are exported from India. 2011 (2,963 mt). Frozen and other forms of crab

exports declined in 2011-2012 (2,848 mt) compared to 2010-2011 (3,251 mt). Apart from shrimp culture, mud crab farming, fattening and soft-shell crab production are now emerging as feasible business ventures in India. About 11 types of crab products are being exported from India with an average unit value realization of US\$ 3.73 kg, highlighting its importance in the foreign exchange earnings.

Review of Literature

Chandrasekaran and Natarajan's (1994)¹ work on Seasonal abundance and distribution of mud Crabs in mangroves, in South east India, identified that the time of greatest catch of juvenile recruits was during the post monsoon period, with nil evident during the monsoon.

Kathirvel and Srinivassagam (1992)² identified area availability in India for juveniles. They found that Serrata appear to be continual breeders with peak catches of juveniles prevalent in the backwaters during May to October and in the mangroves during January to February.

Significance of the study

There has been a noticeable decline in the mud crab populations in the natural habitat throughout Indian coastal waters due to over exploitation and

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indiscriminate fishing of juvenile crabs by artisanal fishermen. Wild seeds are collected throughout the year in backwater zones of Sundarbans, Kakdwip and Namkhana of West Bengal; Chilika Lake of Odisha; coastal waters of Kakinada, Visakhapatnam and Rajahmundry of Andhra Pradesh; Pulicat Lake, Killai backwaters, Muthupet saline swamps, Punnakayal estuarine complex and Colachel coastal waters of Tamil Nadu; Neendakara, Cochin and Kozhikode backwaters of Kerala to meet the demand of culture operations.

Objectives of the Study

To evaluate the export potential of Mud Crab from India.

To examine the item wise export of Crabs from India.

Research Methodology

The study is descriptive and analytical in nature. Secondary Data was only used in the study. The data was obtained from the Statistical department of MPEDA.

Statistical Tools for Analysis

Regression and Correlation is used with the help of SPSS.

Analysis

Importance of Crabs in India's foreign exchange front

The contribution of crabs in India's total marine exports was analyzed for the period 1996 to 2000 using MPEDA Statistics. It is inferred that in 1996 there were only 4 types of crab products exported from India. In 2000 the total number of crab products in India's export basket rose to 11, indicating there an increasing demand for diversified crab products in India's export market. Total crab exports were 1.1 % of total marine exports in terms of quantity in 1996 increased to 1.47 % in 2000. In terms of value it was 0.99 % of total marine exports in 1996, which increased to 1.46% in 2000. The crab exports stood 6197 tonnes in 2000 and the value realized was US\$ 19.44 million. Contribution by live and frozen mud crabs together was US\$ 5.5 million in 2000, indicating their enormous scope in the export market.

Table 1: Crabs in the Export front of India

Items	1996		1997		1998		1999		2000	
	Q	V	Q	V	Q	V	Q	V	Q	V
Crab Shells	9.52	25.94	0.00	0.00	2.75	18.81	3.75	17.73	80.29	91.85
Frozen Cut Swimming Crab	0.00	0.00	0.00	0.00	1302.17	1381.54	2282.10	2389.60	8522.15	12051.31
Frozen mud crab	0.00	0.00	26.63	16.13	1.38	2.90	84.46	73.63	48.10	65.25
Frozen Crab Claws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.94	36.88
Frozen whole crab	0.00	0.00	0.00	0.00	0.00	0.00	101.52	84.88	291.96	317.63
Frozen soft shell crab	0.00	0.00	0.00	0.00	0.00	0.00	12.21	50.44	23.21	97.21
Frozen stuffed crab	20.04	87.44	30.00	266.46	467.00	571.77	381.25	406.19	40.42	28.23
Frozen pastuarised crab	0.00	0.00	0.00	0.00	0.00	0.00	19.19	91.15	122.98	457.60
Frozen crab meat	3827.19	3109.00	2761.50	3509.52	1558.52	2061.71	289.56	782.25	419.46	823.38
Frozen cut crab with claws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.33	34.94
Live crab	4225.90	5014.44	3088.88	3994.00	3702.50	6383.90	3132.19	5437.67	3291.04	5435.90
Total crab exports	8082.67	8236.79	5907.00	7786.13	7034.29	10420.65	6306.25	9333.50	12910.88	19440.19
Total marine exports	736822.92	829168.75	831202.08	971162.50	653131.25	981156.25	681677.08	991122.92	877239.58	1332618.8
% share of crab exports in total marine exports	1.1	0.99	0.71	0.8	1.08	1.06	0.93	0.94	1.47	1.46

Table 2: Export of Live Crab and Crab Products from India

Products	2007-2008			2008-2009			2009-2010			2010-2011			2011-2012		
	Quantity (mt)	Rate (Rs. / Kg)	Total Value (Rs. Lakhs)	Quantity (mt)	Rate (Rs. / Kg)	Total Value (Rs. Lakhs)	Quantity (mt)	Rate (Rs. / Kg)	Total Value (Rs. Lakhs)	Quantity (mt)	Rate (Rs. / Kg)	Total Value (Rs. Lakhs)	Quantity (mt)	Rate (Rs. / Kg)	Total Value (Rs. Lakhs)
Whole crab	2445.89	209	5103.34	3500.33	221	7730.05	4317.51	242	10468.25	3547.08	273	9694.58	3373.95	362.00	12198.77
Cut Crab	2213.41	123	2718.95	1502.28	225	3387.18	1354.34	187	2538.86	982.22	150	1475.73	707.75	158.00	-1119.43
Crab meat	1250.36	626	7831.77	1790.61	536	9597.76	1600.37	614	9826.34	1409.95	749	10557.84	1506.13	897.00	13516.25
Crab shell	30.19	59	17.77	144.76	19	27.31	87.69	17	14.80	270.63	21	55.92	272.29	18.00	49.12
Soft-shell Crab	43.63	616	268.78	29.63	601	178.00	8.56	383	32.79	4.51	462	20.81	40.37	158.00	63.96
Crab Cutlet	0.00	0	0	20.64	331	68.30	0.00	0	0.00	0.00	0	0.00	0.96	129.00	1.24
Total	5983.48	266.00	15940.60	6988.26	300.00	20988.60	7368.48	311	22881.03	6214.39	351	21804.87	5901.45	457.00	26948.76

Source : MPEDA

Table 3: Model Summary and Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.658(a)	0.433	0.244	1.782

a Predictors: (Constant), 2011-2012, 2007-2008, 2008-2009, 2009-2010, 2010-2011

ANOVA(b)

Model	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.357	5	7.271	2.289	.098(a)
	Residual	47.643	15			
	Total	84	20			

a Predictors: (Constant), 2011-2012, 2007-2008, 2008-2009, 2009-2010, 2010-2011

Coefficients(a)
Standardized Coefficients

Model		Unstandardized Coefficients		Beta	t	Sig.
		B	Std. Error			
1	(Constant)	4.057	0.475		8.55	0
	2007-2008	2.27E-04	0	0.669	1.986	0.066
	2008-2009	2.71E-03	0.001	6.681	2.302	0.036
	2009-2010	7.12E-04	0.002	1.949	0.466	0.648
	2010-2011	-7.23E-03	0.004	-18.958	-2.021	0.062
	2011-2012	3.08E-03	0.001	10.09	2.436	0.028

a Dependent Variable: YR

Source: Compiled from Secondary data.

Table 4: Model Summary and Analysis

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.658(a)	0.433	0.244	1.782		
a Predictors: (Constant), 2011-2012, 2007-2008, 2008-2009, 2009-2010, 2010-2011						
ANOVA(b)						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.357	5	7.271	2.289	.098(a)
	Residual	47.643	15	3.176		
	Total	84	20			
a Predictors: (Constant), 2011-2012, 2007-2008, 2008-2009, 2009-2010, 2010-2011						
b Dependent Variable: YR						
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	2011-2012	3.08E-03	0.001	10.09	2.436	0.028
a Dependent Variable: YR						

Source: Compiled from Secondary data.

Table 5: Item Wise Export Details of Crab

Q : Quantity in tons, V : Value ` in Rs. Lakhs, \$: US\$ Million							
		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
LIVE CRAB	Q:	2,230	1,461	75	52	159	152
	V:	6,414.34	4105.63	201.82	352.37	1565.74	1326.83
	\$:	14.1	8.51	0.45	0.74	2.89	2.32
LIVE MUD CRAB	Q:	0	1,403	2,888	3,002	3,119	3,535
	V:	0	4,436.28	8,755.63	11,352.70	14,088.84	20,032.30
	\$:	0	9.62	19.42	23.76	26.24	33.11

Source: Compiled from Secondary data.

Table 6: Analysis-II Inter Correlations matrix

		Correlations						
		Materials	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Materials	r	1	-0.191	-0.327	-0.188	-0.15	-0.132	-0.104
	Sig.	.	0.717	0.526	0.721	0.776	0.803	0.845
2008-09	r	-0.191	1	0.52	-0.347	-0.324	-0.238	-0.268
	Sig.	0.717	.	0.29	0.5	0.531	0.649	0.608
2009-10	r	-0.327	0.52	1	0.62	0.638	0.701	0.675
	Sig.	0.526	0.29	.	0.189	0.173	0.12	0.141
2010-11	r	-0.188	-0.347	0.62	1	.998(**)	.988(**)	.985(**)
	Sig.	0.721	0.5	0.189	.	0	0	0
2011-12	r	-0.15	-0.324	0.638	.998(**)	1	.995(**)	.995(**)
	Sig.	0.776	0.531	0.173	0	.	0	0
2012-13	r	-0.132	-0.238	0.701	.988(**)	.995(**)	1	.998(**)
	Sig.	0.803	0.649	0.12	0	0	.	0
2013-14	r	-0.104	-0.268	0.675	.985(**)	.995(**)	.998(**)	1
	Sig.	0.845	0.608	0.141	0	0	0	.

** Correlation is significant at the 0.01 level

Statistical test: Karl Pearson's Coefficient of Correlation

Source: Compiled from Secondary data.

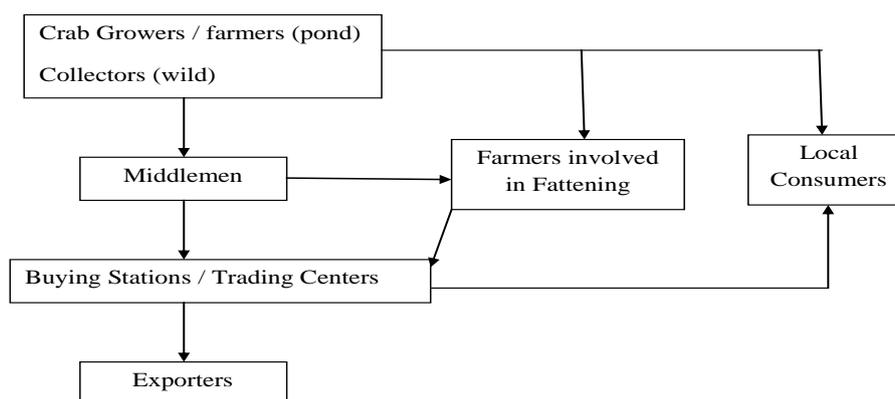


Figure 1: Marketing Channels of Markets – Size Mud Crabs

The marketing channel for mud crab involves a series of intermediaries from crab collectors to exporters or local consumers. They involve crab catchers, local collectors, large suppliers, agents and exporters. Live and big mud crabs with complete limbs are the preference of buyers. Crabs from the ponds or wild are sold to buying stations or traders through middlemen, or directly to the consumers including seafood restaurants or exporters. From the buying stations or traders, the bulk of the crab stocks are sold to exporters. Crabs are maintained in moist condition during transport. Crabs are air shipped to wholesalers to ensure their good condition on arrival. Price depends on the season. Crabs with missing claws and lean crabs are not exported. These are marketed locally at a lower price. Live mud crabs are exported to China, Hong Kong, Singapore, Taiwan and Korea. The export of live Crabs is increasing every year and contributed around 3054 mt in 2011-2012. The total export of crabs peaked in 2009- 2010 and reduced to considerable extent in 2011-2012. The average volume of live crab export increased by 26.9% than 2011-2012. Live crabs have higher market value than other crab products. Small crabs are not exported but are used for domestic consumption or sold to farmers. There is a significant relationship between item wise exports of crab & live crab and their durations of study (2011-12 to 2012 to 13). There is negative Correlation between the year wise exports of crab & live crab items. It is suggested that more Mud Crab Hatcheries need to be established to meet the demand of India's mud Crab Farming Industry and for meeting the global demand and continuous refinement urhis required to improve the economic viability of producing Crab lets and adult mud crabs. Further, harvesting techniques to be Improved and certification of hatcheries need to be done.

Conclusion

The ability of mud crab to grow fast and its suitability for culture in brackish water and

estuarine areas make it attractive to develop mud crab culture/fattening programmes in India to meet the increasing demand. The major constraint faced by the crab farmers in India is the non-availability of stocking materials in sufficient quantity at the appropriate time. Seeds are mainly obtained from backwater fishing. Owing to increased export demand, targeted fishing for mud crab have been intensified in brackish water and marine sector using specific gears. This eventually leads to over exploitation and depletion of natural stock. Vast area can be brought under aquaculture without disturbing the environmental equilibrium of the ecosystem for enhancing foreign exchange earnings of the country. If mud crab hatcheries develop, they could provide a stimulus to commercialize crab farming and take pressure off the wild stocks. There is an urgent need to produce good quality hatchery seed to meet the demand of farmers and establish state-of-the-art mud crab hatchery for commercial scale production of seed stock to promote the adoption of the technology by the private entrepreneurs in the country. There should be greater institutional support for sustainable development of mud crab farming in India.

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