



## A Study on Women Entrepreneurship in Non-Descript Rural Fish Markets

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### ABSTRACT

*Women have proved to be competent in adopting and executing various aquaculture operations successfully but their role remains often ignored or under rewarded. Current study on role of women in nondescript rural fish markets revealed that 56% of retail fish trade and 100% of fish processing is undertaken by fisherwoman demarking their vocation nearly equal between trading and processing. Average sales of 4 MT of fish per day was recorded in nondescript rural fish markets with each fisherwoman selling 450 kg fish per day who was further assisted by two women in cleaning and processing before handing over the fish to the consumer. Most of the fisher women rural fish markets were illiterate. Fisherwomen in the productive age group of 26-45 have taken fish marketing as vocation in order to augment family income. Unity of women for generating communal enterprise is a significant marketing strategy to avoid infiltration and exploitation by middlemen. Incentivizing market networks, advisory services and cold chains not only reduce drudgery but also enhance trading potentials of fisherwomen in rural markets.*

**KEYWORDS : Fisherwomen, Nondescript Rural Market, Secondary Employment, Communal Enterprise**

### INTRODUCTION

The contribution of women to agricultural and food production is significant but it is impossible to verify empirically the share produced by women particularly in rural labour which varies considerably across regions (Raney *et al.*, 2011). Although role of women in aquaculture is confined to activities like fish seed segregation, packing and netting but their involvement in post harvest activities like fish sales and processing are cannot be undermined in comparison to their counterparts thus creating secondary employment for themselves and contributing to supplementary income to the family (Shaleesha and Stanley, 2000) and hence, economic role of women in fishing communities is significant and timely (Stella, 1996). Although women participate actively in aquaculture supply chains with great commitment but gender disaggregated information hampers accurate understanding of their contribution (Williams *et al.*, 2012). Krishna district in Andhra Pradesh is well-known for fishing and fish culture. Kolleru Lake is major natural source for fishing for fisherman community in Andhra Pradesh and also a faithful region for commercial fish culture and hence fish culture and marketing is an entrepreneurship for many people in Andhra Pradesh (Krishna *et al.*, 2013; Reddy, 2014). Fish is known to be the most important food commodity handled by rural women which is available in the market in live and frozen forms (FAO, 2012). Choice for non-descript rural markets is increasing in recent times probably indicating the consumer preference to buy live fish and locational advantage of the rural markets in order to increase the availability of fish the rural consumers. Present study was an attempt to understand the level of women participation in non-descript rural fish markets who are either wholly involved or seen to play complementary roles to men in sustenance of their household needs and manage harsh economic conditions.

### MATERIALS AND METHODS

Present paper is based on a study carried out in five non-descript rural fish markets viz., Tadigadapa, Penamaluru, Ganguru, Gosala and Kankipadu located in Krishna District so as to establish the nature and level of women participation in fish marketing through personal interviews using structured questionnaire developed specifically for the purpose. The data was collected during field research using interviews and participant observation for obtaining primary information. The sample included seventy fishers comprising 51 fisherwomen and 19 fishermen. Data generated from the respondents was computed

and analyzed statistically using statistical package for social sciences (ver 16.0). Variance analysis between means was tested using CRD based on the following model:  $Y_{ijk} = \mu + \alpha_i + \beta_j + e_{ijk}$

Where,  $Y_{ijk}$  observation for which  $\mu$  was population mean,  $\alpha_i$  was rural market effect (5 levels),  $\beta_j$  was variety catch (5 fish varieties and 1 prawn) and  $e_{ijk}$  was random error component (Das and Giri, 1990; Das *et al.*, 1991). Pairwise comparison between means was tested by DMRT and significance was denoted by different superscripts when  $p < 0.01$  to 0.05. Similarly, fisher women age groups ( $\beta_j$ ) were considered as replicates and variance was tested for rural markets. Difference in gender participation in catch processing and trading as well as processing + trading was tested using student t-test with confidence interval of 0.95.

### RESULTS AND DISCUSSION

Deliverables of fisher women in Rural Fish Markets could be categorized into (i) Live fish selling and (ii) Fish processing while activity of men was restricted to netting out fish from live transport tanks and their handling. It was recorded in the present study that nearly,  $\frac{3}{4}$  of the fishers (72.86%) were involved in live fish marketing as well as fish processing as against 27.14% men. Number of fisher women who were involved in fish processing were higher than those who were engaged in fish sales in almost all the markets. Fish processors constituted to 52.94% among women fishers when compared to fish sellers (47.06%). Ratio between women who were involved in fish sales and fish processing was established to be 8:9 indicating that 1.12 women were involved in processing for every unit sales of fish in the rural markets. Felsing *et al.* (2000) found that fish processing was a gender dominant activity as 80% of women fishers in Peninsular Malaysia preferred fish processing. Siasonet *et al.* (2002) also reported that women in Indonesia were predominantly involved in fish processing and marketing. However, Bhaumiket *et al.* (1993) found that net mending was most preferred job among fisher women in West Bengal. Participation of women in rural fish markets was never less than 70% as in Tadigadapa to 75% as in Penamaluru restricting the role of male members in marketing activities from 25 to 30%. Presence of fisher women was remarkably high in two rural fish markets viz., Penamaluru and Kankipadu together representing 2/3 of the total fisher women vendors present in all fish markets together. Participation of women in rural fish markets was significantly higher ( $r = -1$ ,  $p < 0.01$ ) than

male members in all the fish markets establishing a ratio of 18:7. Such comparison could not be derived in fish processing which is exclusively women possessed activity (Table 1).

Despite various limitations, available information indicates that aquaculture labour, roles and responsibilities are not gender-determined except in some countries like Mexico and Sub-Saharan Africa (Williamset. al., 2012). Women constitute an important workforce in fisheries and contribute to the sustainable use and management of fishery resources and play dominant role in fish farming with their involvement as high as 80% in all phases of work performed on fish farms (Barman, 2001; FAO, 2012; De and Pandey, 2014). Participation of women in aquaculture was able to create an opportunity for (i) self employment, (ii) betterment of socio-economic conditions of their family, (iii) increasing the fish availability to unreached populations, (iv) augmenting family income and (v) elimination of social and cultural taboos by their involvement in fishery activities (Luomba, 2013). Although, women were found to involve actively in various farm operations (Barman, 2001; Nandeesh, 2004), women could also prove their ability in marketing of fish which was solely gender dominated activity in countries like Thailand (Suntornaratana, 2001). However, Felsinget. al. (2000) reported that marketing of fish was usually done by women belonging to lower socio-economic group as observed in Peninsular Malaysia. Siasonet. al. (2002) found that women from the lower class participate in activities related to freshwater aquaculture and fish trading if forced by necessity in countries like Iran while in countries like India, Sri Lanka and Bangladesh their role is mostly related to fish processing and fresh fish marketing at a small scale.

**Table -1. Frequency of Female and Male Traders in Rural Fish Markets**

Fish Market	Traders				Processing*		Total	Gender participation F:M ratio (r= -1.0, p<0.01)
	Female (No)	Frequency (%)	Male (No)	Frequency (%)	Female (No)	Frequency (%)		
Tadigadapa	03	30.00	03	30.00	04	40.00	10	30:70
Penamaluru	08	33.33	06	25.00	10	41.67	24	20:80
Ganguru	02	28.57	02	28.57	03	42.86	07	29:71
Gosala	03	42.86	02	28.57	02	28.57	07	43:57
Kankipadu	08	36.36	06	27.28	08	36.36	22	24:76
Total	24		19		27		70	
Mean±SE of sex	3.6±0.6 <sup>b</sup>		5.2±1.8 <sup>a</sup>		5.2±1.4			72 <sup>b</sup> : 28 <sup>a</sup> : ±4

**\* no participation of male in fish processing**

Women were found to work along with men in fish markets for 5-6 hours a day or even more during peak marketing days. Women in rural markets were engaged in fish sales as well as processing from morning to noon. Subsequently, any unsold fish would be taken to villages on head load for completing the task of fish sales. This was inevitable to avoid fish spoilage due to absence of cold chain system in the rural markets. Lentisco and Thao (2013) reported that such greater involvement of women in livelihood activities would further increase their workload because they still must attend to household works. Although women participate actively in aquaculture supply chains with great commitment but gender disaggregated information hampers accurate understanding of their contribution as noted by Williams et. al. (2012).

Age was considered as a social functionary in the present study which revealed that more than half accounting to 52.94% of the women fishers were in the age group of 26-35 followed by 29.41% of fisher women whose age ranged between 36 and 45. Fisher women whose age group was ranging from 15-25 were recorded to be low in number (4 only) representing 7.84% as against 9.81% of women whose age was more than 45 years. Fisher women whose age group was less than 20 years were helping their parents occasionally in fish processing. Women falling within the age group of 36-45 years have the responsibility of extending helping hand to their husbands whereas fisher women who were within the age group of 26-35 years have

taken up the vocation to augment family income. Remaining 9.81% of fisher women whose age was above 45 were present in the profession for past 20-25 years. It is interesting to record from the present study that women who were in the productive age group of 26-45 years have preferred to take up fish marketing as their vocation as well as to continue family tradition (Table 2). Tietzeet. al. (2000) reported that most of fisherwomen in Philippines who are in productive age group adopt fish marketing as vocation. Otherwise also, participation of women of age group 36-45 in fish marketing could be an attempt to share their family responsibilities (Khaderet. al., 2005; Yisaet. al., 2011). It is alarming to record in the present study that fisher women who were falling in the younger age group of 20-25 years were present in lowest numbers representing to 7.84% only in all the rural fish markets together. Less participation of younger generations in fishing operations could be due to either lack of interest by themselves or absence of motivation from parents. Reasons for such low presence were found to be (i) younger groups were pursuing higher education (60%), (ii) not interested due to physical labour involved in the vocation (20%) and (iii) traditionally they will be encouraged to take up the vocation after marriage (20%).

**Table -2. Age group of Fisher women involved fish marketing in Rural Fish Markets**

Fish Market	Age Group						Total	Frequency (%)		
	20-25	Frequency (%)	26-35	Frequency (%)	36-45	Frequency (%)			45 and above	Frequency (%)
Tadigadapa	01		04		02		00	07 <sup>ab</sup>	13.73	
Penamaluru	02		09		06		01	18 <sup>c</sup>	35.29	
Ganguru	00		03		01		01	05 <sup>a</sup>	9.80	
Gosala	00		03		01		01	05 <sup>a</sup>	9.80	
Kankipadu	01		08		05		02	16 <sup>bc</sup>	31.38	
Total*	04 <sup>a</sup>	7.84	27 <sup>bc</sup>	52.94	15 <sup>cb</sup>	29.41	05 <sup>a</sup>	9.81	51	100.00

values bearing different superscripts for total in row 'a,b' indicate significance difference between age groups of fisher women (p<0.05\*) while in a column 'a,b,c' indicate significance difference between fish markets (p<0.01\*)

Lentisco and Thao (2013) has observed generational change in the attitude of fishers and reported that fishing no longer appeared to be the choice of many young people in countries like Vietnam while Tietzeet. al. (2000) recorded that 43% of fishers in Philippines did not want that their children to take up fishery profession. Heruwati- et. al. (1998) also found that involvement young female workforce was declining in countries like Indonesia. Disinterest among younger generations in the vocation may result in creation of generation gap (Lentisco and Thao, 2013) resulting in weaning away from the family tradition in future. It was expressed by most of the respondents that only (i) incentivizing market networks, (ii) sophisticated fish markets and (iii) remunerative returns in fish marketing can attract the younger generations into fish marketing. Statistical relation between markets with regard to age group of fisher women revealed that women in age group of 26-35 differed significantly (p<0.01) than other age groups except for women representing age group 36-45 (p<0.05).

Majority of fisherwomen (94.12%) in the present study were illiterate. None of the fisher women, who were engaged in live fish marketing, possessed educational qualifications higher than secondary level. There seems to be no improvement in the literacy levels of rural women ever since FAO made an observation that 90% of rural women in Bangladesh and India are functionally illiterate (FAO, 1998). Educational standards of two fisher women in Penamaluru constituting to 3.92% was found to be Primary Education while only 1 (1.96%) woman in the same market was educated up to High School. Illiterate fisher women were significantly higher (p<0.001) in all the fish markets when compared to fisher women who possessed either primary or secondary education and did not differ significantly (Table 3). Educational level is a potent determinant factor regarding the contri-

bution made by an individual. Chandrasekharan (1979) found that participation of women in developmental activities is constrained by lack of education, low literacy rate and training. De Silva and Yamo (2006) found that women with schooling tend to be more active in small scale operations and even can dominated post harvest processing and marketing when compared to illiterate fisher women. At the same time, although education can give women access to a greater range of aquaculture activities, their control over resources and decision making may not be linked to their knowledge (Jackson, 1996). Ahmed *et. al.* (2012) also reported that illiteracy among fisher women was found to common phenomenon in Bangladesh which was leading to denial of market access to them and continues to remain as dependent on male within the family. Tietze (2004) has found low literacy levels among fisherwomen was a world phenomenon except in countries like Philippines. Pandey (2014) spreading education among women is of paramount interest in countries like India. However, present study revealed that illiteracy of fisher women did not deter them either for carrying financial transaction and or in handling market operations.

**Table -3. Literacy level of Fisher women involved fish marketing in Rural Fish Markets**

Fish Market	Level of Education							Total	Frequency (%)
	Illiterate	Frequency (%)	Primary	Frequency (%)	Secondary	Frequency (%)	Senior Secondary and above		
Tadigadapa	07		--		--		--	07 <sup>a</sup>	13.73
Penamaluru	15		02		01		--	18 <sup>bc</sup>	35.29
Ganguru	05		--		--		--	05 <sup>a</sup>	9.80
Gosala	05		--		--		--	05 <sup>a</sup>	9.80
Kankipadu	16		--		--		--	16 <sup>cb</sup>	31.38
Total	48 <sup>a</sup>	94.12	02 <sup>b</sup>	3.92	01 <sup>b</sup>	1.96	--	51	100.00

values bearing different superscripts for total in row 'a,b' indicate significance difference between literacy levels of fisher women ( $p < 0.05^*$ ) while in a column 'a,b,c' indicate significance difference between fish markets ( $p < 0.001^*$ )

Present study recorded a quantum sales of 4000 kg live fish/day in different non-descript rural fish markets (Table 4). Penamaluru Rural Fish Market registered highest market activity with more than  $\frac{1}{4}$  of total fish sales (1140 kg) contributing to 28.50% followed by 970 kg in Kankipadu (24.25%), 930 kg in Tadigadapa (23.25%), 590 kg in Ganguru (14.75%) and 370 kg in Gosala (9.25%). Rohu and Catla were found to be equally preferred species by the consumer as observed in the present study. Nearly,  $\frac{3}{4}$  of the live fish sales (73.50%) in rural fish markets were contributed by Rohu (*Labeorhohita*) and Catla (*Catla catla*) amounting to 2940 kg/day. Remaining fishes such as Mrigal (*Cirrhinamrigala*), Grass Carp (*Ctenopharyngodonidella*) and Murrel (*Channa striata*) together contributed to 12.75% (510 kg) while White Shrimp (*Litopenaeus vannamei*) recorded 13.75% (550 kg) sales per day in rural fish markets. Rohu was most preferred fish species by the rural consumers in comparison to other carps, murrel and prawns. Rohu contributed to 39.75% of live fish sales followed by Catla (33.75%), White Shrimp (13.75%), Murrel (6.50%), Mrigal (3.00%) and Grass Carp (3.25%). Ajayi and Talabi (1984) has recorded preference of consumer towards fresh and large size fish in Nigeria. Mugaonkar *et. al.* (2011) found that consumers were highly species specific in Maharashtra wherein 57.9% of consumers had preference for Catla (*Catla catla*) and Sardines (*Sardinapilchardus*) in comparison other species. However, Wesselset *et. al.* (1999) found that higher income groups were giving importance to freshness of the fish than either variety or size while Reczkova *et. al.* (2013) have recorded consumer preference towards certified food in Malaysia irrespective of fish species.

**Table-4. Live Fish Sales in different Non-descript Rural Fish Markets in Krishna District**

Fish Market	Rohu	Catla	Mrigal	Grass Carp	Murrel	Prawn (kg)	Total (kg)	Market Value (Lakh)	Mean $\pm$ SE of each Market
Tadigadapa	450	330	--	--	--	150	930	1.239 (22.04)	155 $\pm$ 80 <sup>bc</sup>
Penamaluru	330	400	30	50	130	200	1140	1.678 (29.85)	190 $\pm$ 61 <sup>c</sup>
Ganguru	250	200	--	40	50	50	590	0.837 (14.89)	98 $\pm$ 41 <sup>ab</sup>
Gosala	160	100	20	--	40	50	370	0.539 (9.58)	62 $\pm$ 24 <sup>a</sup>
Kankipadu	400	320	70	40	40	100	970	1.329 (23.64)	162 $\pm$ 64 <sup>bc</sup>
Total	1590	1350	120	130	260	550	4000		800 $\pm$ 140 <sup>a</sup>
Frequency %	39.75	33.75	3.00	3.25	6.50	13.75			
Sale Proceed (Lakh Rs)	2.067 (36.77)	1.7 (31.22)	0.156 (2.77)	0.169 (3.01)	0.65 (11.56)	0.825 (14.67)			
Mean $\pm$ SE of each variety	318 $\pm$ 52 <sup>b</sup>	270 $\pm$ 53 <sup>b</sup>	24 $\pm$ 13 <sup>a</sup>	26 $\pm$ 11 <sup>a</sup>	52 $\pm$ 21 <sup>a</sup>	110 $\pm$ 29 <sup>a</sup>	667 $\pm$ 264 <sup>**</sup>	5.622 $\pm$ 0.80 <sup>1</sup>	

Values in parentheses indicate percent representation of sale proceeds by each species in row and that of market share in column. Values bearing different superscripts for Mean  $\pm$  SE in a row 'a,b' indicate significance difference between different fish varieties ( $p < 0.01^{**}$ ) while in a column 'a,b,c' indicate significance difference between fish markets ( $p < 0.05^*$ ).<sup>1</sup> cumulative revenue earning by women exclusively from processing fee of 4000kg fish.

Observations recorded as regards sale of different fish varieties revealed significant difference between rohu, catla and mrigal, grass carp, murrel and white shrimp ( $p < 0.01$ ). Quantum of rohu and catla

that were sold in different rural markets was within the comparable range revealing equal consumer preference as reflected in terms of statistical insignificance. Similarly, variation among sale of other groups of fishes also did not differ significantly. Fish sale trend in different rural markets indicated that Penamaluru recorded highest quantity of fish sales which is statistically different from other markets except for Kankipadu. Similar relation could be established between Kankipadu and Tadigadapa wherein quantity of fish sales remained within comparable levels. Other two small rural markets viz., Ganguru and Gosala exhibited proportionate characters with regard to fish sale quantities. In India, retail fish markets are miniatures of whole-

sale markets except for the variations being in terms of size, quality of fish, number of traders, facilities and proximity to the consumers. Most of the retail markets are established by roadside abutting village boundaries so as to cater to the needs of local customers (Mugaonkaret. *al.*, 2011). Most of the studies on fish markets in India have been related to unorganized retail markets with reference to gender, age and credit (Tietze, 2004). Growth of non-descript rural markets in recent times indicate (i) consumer preference to buy live fish, (ii) increase in buying power of rural consumers and (iii) locational impact of the rural markets. The retailers expressed that the major constraints in fish market are water supply, transportation cost, market advisory services and inadequate finance. Lack of amenities was found to be the characteristic of many unorganized retail markets in Maharashtra (Mugaonkaret. *al.*, 2011). Ravindranath (2008) also reported high transportation cost and lack of storage space were the major constraints even in unorganized urban fish markets while Narayan (2011) found lack of sufficient space is the biggest limitation in the unorganized markets. Mathew *et. al.* (2008) found that farmers benefit significantly from the option of direct sales to retailers. Similar was the case in non-descript rural fish markets in the present study since the retailer procured fish directly from the farmers.

Economic analysis of the fish sold in different rural markets revealed that rohu (*Labeorohita*) was contributing to 36.77% of the total sale proceeds followed by Catla (*Catlacatla*) constituting to 31.22% market share. White shrimp (*Litopenaeus vannamei*) and Murrel (*Channa striata*) established 14.67% and 11.56% market share in the rural markets in terms of market prices whereas Grass Carp (*Ctenopharyngodon idella*) and Mrigal (*Cirrhinamrigala*) had displayed nominal contribution of 3.01% and 2.77% correspondingly in terms of revenue earnings in the rural markets. Such species are increasing the hard work of fisherwomen when their quantities remain unsold and necessitate them for further retail selling on head loads. Avail-

ability of cold chains for storage of unsold fish will reduce the ordeal of women vendors. Total revenue earnings in the non-descript rural markets was recorded to be Rs. 6.422 lakh/day in which fisher women contributed to 61.37% of the business including fish sales and processing amounting to Rs. 3.94 lakh/day as against 38.63% men who contributed to market revenue of Rs. 2.48 lakh/day through fish sales only. As regards, different rural markets Penamaluru recorded 29.85% of total sale proceeds followed by Kankipadu (23.64%), Tadigadapa (22.04%), Ganguru (14.89%) and Gosala (9.58%). Although, sale quantum of murels (260 kg) was half of the quantity of white shrimp (550 kg), the revenue obtained through the sales of these two varieties was within the comparable levels owing to premium price offered to murels 66.7% higher than white shrimp. Women, in direct or indirect association with menfolk, contribute a great deal to the growth of Indian economy (Gulati, 1984) thus leading to lasting and sustainable development of the society (Shaleesha and Stanley, 2000; Kala and Uma, 2011). Rao (2008) found that women usually use their income to help their family members to procure fishing materials and conducting social functions in the family and hence, economic role of women in fishing communities is significant and timely (Stella, 1996). Although Fish marketing was found to be profitable leading to quality of life of women in the study area, the level of profitability is reduced by constraints discussed elsewhere. If these constraints are overcome, fish marketing by the women would reduce the level of poverty among the rural women. Institutional help by financial organizations or relevant agencies would not only enhance the marketing achievement by women but also increase economic potentials of rural fish markets.

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## REFERENCES

- Ahmed, K., H. Sadeka and S. Sultana, 2012. Participation of women in aquaculture in three coastal districts of Bangladesh: Approaches towards sustainable livelihood. *World J. Ag. Sc.*, 8(3): 253-268. | Ajayi, T.O. and S.O. Talabi, 1984. Potentials of fisheries resources in Nigeria. In: Tobor, J.G. (ed), Fish production and processing in Nigeria. NIOOMR Technical paper No. 22, pp. 6-9. | Barman, B. K. 2001. Women in Small-Scale Aquaculture in North-West Bangladesh. *Gender Tech. and Dev.*, 5(2): 267-287. | Bhaumik, U., Pandit, P.K. and Chatterjee, J.G. 1993. Involvement of women in the development of inland fisheries. *Env. and Ecol.*, 11(3): 641-644. | Das, K., Q. Meneghini and N. Giri, 1991. Improved estimation of variance components in balanced hierarchical mixed models. *Communications in Statistics-Theory and Methods*, 20(5-6): 1653-1664. | Das, K. and N. Giri, 1990. Locally minimax tests of independence with additional observations. *Sankhya*, Ser. B-1, pp. 14-22. | De Silva, D.A.M. and M. Yamao, 2006. The involvement of female labor in seafood processing in Sri Lanka: impact of organizational fairness and supervisor evaluation on employee commitment. In: P.S. Choo, S.J. Hall and M. J. Williams (eds.) *Global Symposium on Gender and Fisheries: Seventh Asian Fisheries Forum*, pp. 1-3-14. | De, H.K. and D. K. Pandey, 2014. Constraints to women's involvement in small scale aquaculture: An exploratory study. *Intl. J. Ag. Extn.*, 2(1): 81-88. | F. A. O. 1998. Asia regional paper on rural women and food security in current situation and prospective. pp. 36-47. | F.A.O. 2012. The State of World Fisheries and Aquaculture. *FAO Tech. Rep. No. 146*: 148pp. | Felsing, M., C. Brugere, K. Kusakabe and G. Kelkar. 2000. Women for aquaculture or aquaculture for women. *Infofish Intl.*, 3: 34-47. | Gulati, L. 1984. Technological change and Women's Work Participation and Demographic behaviour: A Case Study of three Fishing Villages, Economic and Political Weekly, 19(49): 2089-2094. | Heruwati, E.S., A. Wijono and Murniyati. 1998. Peranan wanita dalam kegiatan perikanan. *WPPi IV*, (4): 16-22. | Jackson, C. 1996. Rescuing gender from the poverty trap. *World Development*, 24(3): 498-504. | Kala, S. and H. R. Uma, 2011. Empowerment of women through micro credit programme. *My Society*, 4(1-2): 199-209. | Khader, V., R. S. Das and H. M. Kasim, 2005. Role of women in Fisheries in Coastal Eco-System of Andhra Pradesh, Karnataka, Kerala and Tamilnadu. *J. Res. ANGRAU*, 33(1): 53-59. | Krishna, P.V., R. K. Madhusudhana, K. Sunitha and K. Prabhavathi, 2013. Impact of the habitat destruction and pollution effect of fish faunal diversity of the lake Kolleru, Andhra Pradesh, India. *Bioinfo Env. and Pollution*, 3(1): 29-31. | Lentisco, A. and H. T. P. Thao, 2013. Strengthening livelihoods: A Vietnamese fisheries programme helps improve women's roles and participation in fisheries decision-making. *Intl. Collective News Letter for Support of Fishworkers No. 43*, pp. 45-46. | Luomba, J. O. 2013. Role and Place of Women in Aquaculture: A Case Study of Ukerewe District, Tanzania. *Intl. J. Aqua.*, 3(18): 101-104. | Mathew Joseph, M., N. Sundararajan, M. Gupta and S. Sahu, 2008. Impact of organized retailing on unorganized sector. *Ind. Council for Res. Intl. Economic Relations, Working Paper 222*. 130pp. | Mugaonkar, P.H., P.S. Ananthan, S. S. Samal and B. Debnath, 2011. A Study on Consumer Behaviour at Organized Fish Retail Outlet. *Agricultural Economics Research Review*, 24: 133-140. | Nandeesh, M.C. 2004. Women in aquaculture and their innovative contributions. *Aquaculture Asia*, 9(1): 18-24. | Narayan, B. 2011. Fish Market Management: Vendors status in Mumbai. *Intl. Ref. Res. J.*, 32: 61-63. | Pandey, D. K. 2014. Constraints to Women's involvement in small scale aquaculture: An exploration study. *Intl. J. Ag. Ext.*, 2(1): 81-88. | Raney, T.G., Anriquez, A., Croppenstedt, S., Gerosa, S., Lowder, I., Matuscke, J., Skoet and C. Doss, 2011. The role of women in agriculture. *ESA workin Paper No. 11-02*, 48pp. | Rao, I. S. and I. N. Lakshmi, Implementing Sustainable Development in the Lake Kolleru, India | Rao, N. S. 2008. Role of Aquaculture in poverty reduction and empowerment of women in India through the medium of Self Help Groups. *Proc. Intl. Inst. Fisheries Economics and Trade*, pp. 1-2. | Reczkova, L., J. Sulaiman and Z. Bahari, 2013. Some Issues of Consumer Preferences for Eco-labeled Fish to Promote Sustainable Marine Capture Fisheries in Peninsular Malaysia. *Proc. Social and Behavioral Sciences*, pp. 497-504. | Reddy, P. R. 2014. Freshwater ecosystems and biodiversity-A Case Study of Kolleru Lake, India: A Review. *J. Ind. Geophys. Union*, 18(2): 277-288. | Shaleesha, A. and V. A. Stanley, 2000. Involvement of Rural Women in Aquaculture: An Innovative Approach. *Naga*, 23(3): 13-17. | Siason, I. M., E. Tch, K. I. Matics, P. S. Choo, M. Shariff, E. S. Heruwati, T. Susilowati, N. Miki, A. B. Shelly, K. G. Rajabharshi, R. Ranjit, P. P. G. N. Siriwardena, M. C. Nandeesh and M. Sunderarajan, 2002. Women in Fisheries in Asia. *Proc. Global Symposium on Women in Fisheries*, pp. 21-48. | Stella, W. 1996. Economic Role of Women in Fishing Communities: A Case Study of Koko, Nigeria. *FAO Tech. Rep.*, 94. 53pp. | Suntomararana, U. 2001. Fishing and Aquaculture in Thailand. In: Kusakabae, K. and G. Kelkar (eds). *Gender Concern in Aquaculture in South-East Asia*. Pub. Asian Institute of Technology, Thailand, pp. 57-64. | Tietze, U. (2004) Financing of production and marketing of fish and fish products in Viet Nam. In: *Fish Marketing and Credit in Viet Nam*. FAO Fisheries Technical Paper, 468, Rome, FAO, pp. 1-174. | Tietze, U., G. Groenewold and A. Marcoux, 2000. Socioeconomic and Occupational Characteristics of Coastal Fishing Communities. *FAO Fisheries Tech. Paper*, 403. 151 pp. | Wessells, C. R., R. J. Johnston and H. Donath, 1999. Assessing consumer preference for eco-labeled seafood, the influence of Species, Certifier and Household attributes. *Am. J. Ag. Eco.*, 81(5): 1084-1089. | Williams, M.J., R. Agbayani, R. Bhujel, M. G. Bonadad-Reantaso, C. Brugere, P. S. Choo, J. Dhont, A. G. Tejeda, K. Ghulam, K. Kusakabe, D. Little, M. C. Nandeesh, P. Sorgelooos, N. Weeraratunge, S. Williams, and P. Xu. P. 2012. Sustaining aquaculture by developing human capacity and enhancing opportunities for women. In: R. P. Subasinghe, J. R. Arthur, D. M. Bartley, S. S. De Silva, M. Halwart, N. Hishamunda, C.V. Mohan and P. Sorgelooos (eds) *Farming the Waters for People and Food*. *Proc. Global Conf. on Aqua.*, pp. 785-874. | Yisa, T. A., S. M. Tsadu, S. M. and L. Mohammed, 2011. Socio-Economic evaluation rural women and the estimation of profitability of fish marketing in four markets in Nigeria. *Intl. J. Fisheries and Aqua.*, 3(9): 180-183. |