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Trading in the Volta clam, *Galatea paradoxa* in the Lower Volta Basin of Ghana

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ABSTRACT

The study was conducted in Denu, Keta and Sogakope towns all in the Southern part of the Volta Region of Ghana to elicit information on the socio-economic status and constrains of fisherwomen involved in the Volta Clam, fishery. Majority of the respondents aged between 30 to 35 years. 26% had Junior School and 2% have had Tertiary education. Majority of the women in the clam business do not have access to credit facilities. Women had difficulty in harvesting and processing because they use crude methods. Extension services should target women to help equip them with new knowledge and technologies in Clam trade.

Introduction

Fisheries is an important sub-sector of the Ghanaian economy attracting various participants and contributors to the economic development of the nation. Fishing is the main occupation of the people of Keta, Sogakope and Denu all in the Volta region of Ghana; a result of the several networks of streams, rivers and lake found in the region.

The *Galatea paradoxa*, Volta clam, (Born, 1778) is a food fish that grows naturally along the stretch of the Volta Lake. The Volta clam, a filter-feeding fish has been reported also to occur in a few large rivers in West Africa such as; Cross and Nun rivers in Nigeria, and Sanaga river in Cameroon [4]

Young men and women in the Atimpoku, Sogakope, Denu and Keta communities find the fish very useful as it is harvested, processed and sold to generate income. The flesh is eaten as fish and the shells sold to animal feed manufacturers as a cheap source of calcium. Shells are also sold for other uses including the production of agriculture lime, manufacturing of paints, used as stone chippings in concrete works and as pavement material such as terrazzo floors [1].

Women in our society and all over culture have always been considered inferior to men. In most developing countries, men hold the sovereign power, control household and the society as a whole while women are ascribed to a lower hierarchy compared to men. Women play a major role in aquaculture production around the world as labourers and managers of the production process [9]. The role of women in food production, processing and marketing has become more relevant as a way of fighting poverty and ensuring food security [5].

Women are active participants in the traditional fisheries sub-sector in Ghana. They are either entirely involved or complement the men in sustenance of their households. In the Volta Region, large numbers of women are engaged in fish trade of which Volta Clam is a main fishery they depend on as a means of livelihood. Interacting with some of the women in Keta, Sogakope and Denu towns, it became known that most depend on the proceeds from the sale of the Volta clam as a means of livelihood. Clam fishery is an important poverty alleviation economic activity in the area conducted by women. This fishing industry is an income generating business in Ghana providing the third most important occupation of the inhabitants [11]. Although some studies have been carried out on the concentration of elements, habitat, concentration of heavy metals and age description of the Volta Clam [11, 1, 3]. There is no detailed documented information on nature of the business (i.e. the trade in the Volta clam) as carried out by women. The need to investigate and document the contribution of the Volta clam as a means of livelihood for women therefore is imperative.

Materials and Mathods

Study area

The study was conducted in Denu, Keta, and Sogakope towns all in the Volta Region of Ghana. The Region is located at latitude 3^0 45' N and longitude 8^0 45' N and covers a total land area of 20572km^2. It stretches from coast of the gulf of guinea running through all the vegetation zones found in the country.

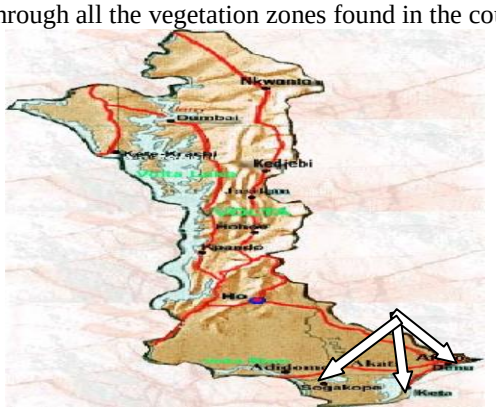

Figure 1. Map of the Volta region with arrows showing study towns

Data collected

Primary data was sort for from women trading in the Volta clam on their socio economic status encompassing ages, educational levels, marital status, religion, and the number of

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dependents. Also, sort for were a catalog of the constrains/challenges in the trade of the fish. Secondary data was sort for to review literature on published data on the Volta clam.

Study population

The study targeted fisherwomen involved in the Clam trade in the Volta Region of Ghana. Denu, Keta, and Sogakope towns were chosen because they are the major places in the Volta Region with intense trade in the Volta clam.

Sample frame

Fisherwomen comprised harvesters of the fish from the wild, processers of the clams thus separating the shells from the meat, frying the meat into edible food and sellers of the fried Clams to consumers.

Sampling method and sample size

The snowball sampling method was use to select and elicit information from Fisherwomen who harvested the fish from the riverbed, and those who processed and/or traded in fish product ("fry stacked Clams"). This is because, not all women who traded in the fish were directly involved in its harvesting. However, most of those who harvested the fish from the river processed and sold it at the same time. In all 120 fisherwomen, 40 each from the respective towns were sampled to comprise harvesters/processors/sellers of the Clams.

Semi structured questionnaires

Questionnaires were designed to contain both open and closed types of questions to solicit detailed information from women in the Volta Clam business. Information sort for centred on their demographic, socio economic constrains, state of the fishery and others.

Data analysis

Data collected was subjected to simple descriptive statistics such as frequencies and percentages using Statistical Package for Social Sciences (SPSS).

Results

Age distribution

In Table 1, the age distribution shows that there are no teenagers and not very old women engaged in the Volta clam trade. Among the age groups encountered, majority were within 30 – 35 years and the minority 36 years and above.

Educational levels

Illustrated in figure 2, women in the trade of the Volta clam are school dropouts from all educational levels. Two (2%) percent of the respondent were dropouts from the Tertiary level, whiles a majority had reach the Junior High School (26 %)level.

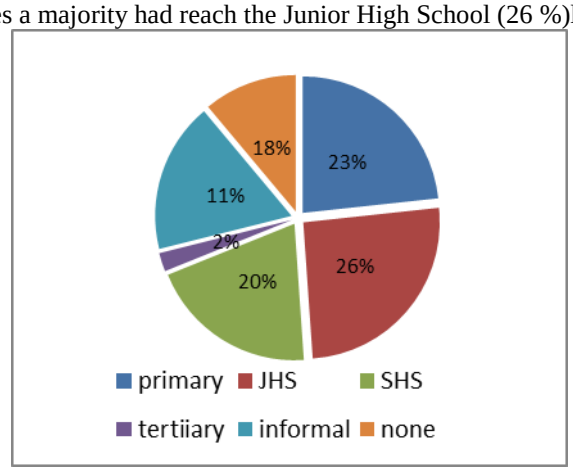

Figure 2. Education Status of Respondents

Marital status

Women who have never been married to those who are married or ever been married are involved in the trade of the Volta clam in the districts under studies. There are more married women (51.1 %), followed by those who never married (single 37.8 %) than those who were once married (divorced 6.7 %, widows 3.3 % and separated 1.1 %).

Dependents on women

In fig. 4, the results indicates that women with more dependents, 7-9 were fewer (4 %). Out of the total respondents of One Hundred and Twenty (120), 44% of the total respondents had dependents ranging from 4 to 6 whiles, 31% had dependents between 1 to 3. Those with dependents between 7-9 recorded 4% and those with no dependents recorded 21%.

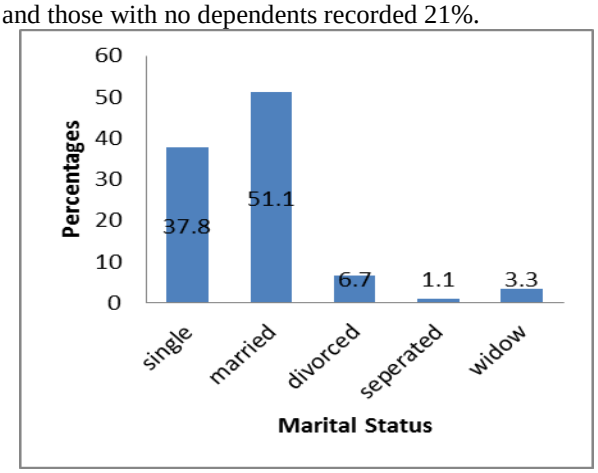

Figure 3. Marital status of respondents

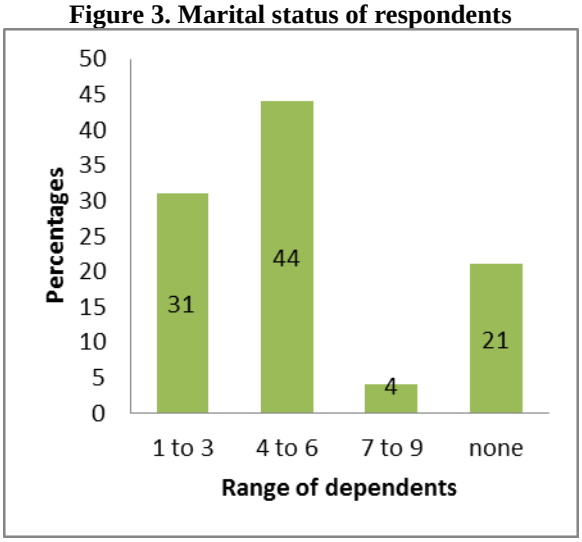

Figure 4. Dependents status of respondents

Religion

Women in the trade of the Volta clam were found to belong to two religions. These are the Christian religion (64.4 %) and the Traditional religion (35.6 %).

Livelihood

The study revealed that most of the respondents apart from those engaged in the Volta Clam business, do engage in other businesses to support their family. 98.9% of the total respondent did other jobs with the remaining 1.1% depended solely on the trade in the Clam.

Experience of respondents

Respondents that have been in the *Galatea paradoxa* trade for more than a year represented 82%, whiles those less than a year represented 18 %.

Quantities and income from the sale of Volta Clam

Quantities of the raw Clams sold were in bowls of different sizes. On the average, a bowl (20 kg) full of raw (i.e. Clams meat in shells) could be valued at GH ¢ 15.

Table 1. Age distribution of women in Galatea *paradoxa* business

Age range	Frequency	Percentage (%)
18 – 23	30	25
24 – 29	22	18
30 – 35	57	48
36+	11	9
Total	120	100

Table 2. Categories of respondents

Category	% of total respondents
Harvesters of Clams from river bed	80
Buyers of Clams from harvesters	20
Processors and sellers of Clam meat	80
Sellers of processed Clam meat Only	20

Raw Clams purchased in bowls at about GH ¢ 15 when processed could sell for GH ¢ 20 – 25. About 65% of the women could sell 2 bowls full of processed Clams in a day, whiles 19 % could sell 3 - 4 bowls full of processed (i.e. fried Clam meat) Clams in a day. Sixteen percent (16 %) of the respondents indicated they could sell 1 – 2 bowls full of the processed Clams. From the study, it was realized that 62% of the women could make between GH ¢ 10 - 20 whiles 38 % could make GH¢ 30 - 40 as daily sales.

Sources of finance for Volta Clam trade

Respondents in the Clam trade financed their activities from their savings, and financial support from friends and relations. None of the respondents had ever accessed credit from credit facilities to support their business and had no knowledge of the existence of credit facilities. They as well indicated they did not have knowledge as to how to access credit from financial institutions elsewhere.

Tax

From the proceeds of the business, the respondents indicated to have been paying levies to the Ghana government. Although not all responded in the affirmative, majority about 75.6% were tax contributors whiles 24.4% did not pay tax.

Distance travelled to harvest Volta Clam

About 77.8 % of women in the trade of the Volta clam travelled 1-2 miles from their homes to fish from the riverbed, have it processed and sent to the market centres where they could sell the products. About 22.2 % had to travel further about 3 - 4 miles to harvest, process and to the have it ready in the market for trade to take place.

Availability of Volta Clam

Indication from the survey results show that, about 90% of women interacted with claim the fishery resource is not available all year round and also the quantities harvested are dwindling from year to year. The Volta clam is obtained from lagoons (56.7%) and from the riverbed (43.3%) of the Volta Lake.

Discussion

The large proportion of the women between the ages of 24 to 35 years (Table 1) is indicative that many of the traders are matured. It suggest that the business has a bright future because most of the age groups encountered are within the working class. In a study conducted by [6] reported that respondents between 21-40 years are in their productive age. Respondents within 18-40 years in a trade implies that the trade is managed by very active individuals who have both strength and reasonable level of maturity [10]. This paper demonstrates that women in the Clam trade are matured; nevertheless, despite the large proportion of matured traders in the Clam trade, respondents within the ages of 18-23 years (12.2 %) expresses the level of recruitment. It may mean also that not many early maturing teenagers are attracted to trade in Clams.

Women with low education are low adopters to new technologies and are not very prominent innovators [8]. This is because they are unable to read, write or speak fluently when it comes to communication. This hampers development as new technologies/innovations are communicated and understood better by well-educated people. In a paper by [6] fish trade is dominated by either illiterate or people with only basic education. This may to a large extent limit their potential for upgrading. Most of the women encountered in this study cannot be said to be well educated since about 2% of the respondents had indicated to reach the tertiary level. With a majority to have had Primary and Junior high school education and even many with no form of formal education; this can have effect on their willingness to accept innovation or become innovators. We believe that if those involved were better educated they could improve trading, production and processing methods as well as selling skills that could earn them much income. The educational levels of the women as recorded in this study are similar to the findings of [7]. In their article, studies carried out on women in aquaculture business revealed that most women in those businesses are under educated (to mean not highly educated) with most of them to have ended their school at the primary level. This has resulted largely to them being unskilled.

Marital status has implication on the choice of enterprises and the extent to which women participate in entrepreneurship. There is a widespread belief that women who are divorced, widowed or single dominate in the fish trade. This is informed by the perception that they have limited options to support their livelihoods and have relatively more independence compared to women who are married [6]. Contrary, in this study, there are more married women into the Clam trade than there are unmarried women. The reason is that, Clam trade is a business that women in the study sites find it easily to start as a livelihood venture. This is because, it requires low capital; thus obtaining the resources from the wild is at a little or no cost. Because it is identified as an easy livelihood venture, married women engage themselves in it as an easy means of generating income to help support their husbands in catering for their children. Support for this can be found in [10] who mentioned that married persons are usually expected to have more responsibilities as they no longer care for themselves alone. The above authors found out that unmarried women would be engaged in any livelihood venture if the financial gains were attractive. We believe that the trade in Clams is a promising livelihood security venture that attracts most women whether married or unmarried. This explains the reasonable number of unmarried women recorded.

In general, whether married or not, women in the Clam trade have dependents who they cater for from the proceeds of the Clam business. The large number of dependents (4-6 dependents) affects their business positively. For instance the dependents can serve as source of labour; this can lead to increase production of finished Clam products. Also if the dependents are large, it can negatively affect their business if they are unproductive. For example, if the dependents are engaged more in doing household chores and/or schooling.

The respondents were dominated by Christians (65%) followed by Traditionalist (35%) with no records of Muslims and other religions. It is our believe that, religion has nothing to do with the Clam trade; however, religious inclinations depends on the location of the fish resource. The findings are the way they are because, a majority of the people in the areas of study are Christians and Traditionalist.

Women in the Volta region do not solely depend on the proceeds of the Volta Clam business as 98.9% did indicate that they do engage in other business to support their families. Though a lucrative business, this could be an indication that the income generated from the sale of Volta Clam is not sufficient to cater for the needs of those involved.

Several reasons could account for this. For instance, the resource may not be available in sufficient quantities owing to inadequate raw materials coupled with the larger number of women involved. Also seasonal availability of clam as well as low prices of processed clams could contribute to the low-income generation. The damming of the Volta River could have negatively impacted on the growth of the fish as a result of the modified habitat [2]. We believed that this could affect the population of Clams. In addition, an increase in the exploration of the Clam as food fish with no intense management measures to ensure recruitment or active culture could advance reasons for dwindling catches.

We believe that the length of time in a trade is an indication of how much time has been invested in establishing and improving relationships. The longer the length of time invested the better build relationships. A majority of the women have been in Clam trade for a long time. This may mean that most of the respondents might have taken time to know one another and their customers, thus have built a strong solid relationship. This is good base for social capital. These relationships, makes it easier for the women to trust one another and this can help them to develop micro credit schemes. The long experience in the fish trading business also improves their entrepreneurial skills making them more prudent. This is a good indication that these women would have the capacity to payback money lend to them. It therefore creates an opportunity for credit finance schemes to come to the aid of these Clam traders.

Women mainly harvest the Clams in shallow areas whiles men dive into deeper areas. Clams sourced from shallow areas are smaller than those sourced from deeper areas [1]. It may mean that the effort put in place to obtain clams can be a determinant of price. Since diving to obtain Clams is more risky, expensive and practiced only by a few experienced men; it would mean that Clams harvested by men might be higher in terms of price. We believe that this may be the reason accounting for about 80% of the respondents indicating to have sourced Clams on their own from shallow areas in the river bed and lagoon. Hunting for Clams in shallow areas by women predisposes them to dangers such as being pricked by sharp objects and maimed by booby-traps used as fish baits. These hazards possess challenges to women thereby limiting their productivity.

The income generated by traders (GH¢ 10 – 40 average GH¢ 25) from the Clam trade in these three towns understudy on a daily bases could be sufficient for them as individuals as this is higher than the daily minimum wage of GH¢ 7 for Ghanaians as at January 2015. The challenge however is the large number of dependents. For instance in figure 2, the majority of respondents have between 4-6 dependents. If the average of dependents is 5, plus the fisherwoman (income generator) would mean 6 people would earn a minimum daily wage of GH ¢ 4.17 if they were to share the average daily income of GH ¢ 25. Going by the above analogy gives a big reason to worry because it might account for low standards of living, poor health status and increase school dropouts. This implies that large population size of children per dry fish marketer increases burden and greater level of responsibility on them [10].

Artisanal clam fishing plays an important role in the socio economic life of inhabitants of the Volta estuary and to the government of Ghana as they pay taxes (75.6% in the affirmative). This would mean that Government would have to provide amenities that can help improve the standard of living of women in the fish trade. For instance, revenues generated can be used to create and maintain markets, building schools, roads and special funds set to aid needy dependents of fisherwomen especially in their academic pursuits.

From the survey, 90% of the respondents said the resource is not available throughout the year. This is as a result of seasonality of Volta Clam. Harvesting of clams is between December and March yearly with a traditionally imposed closed season. Aside this period, there is no fishing on Tuesdays and Sundays are optional fishing days [1]. It can be deduced that the traditionally closed season and the taboo days are measures put in place to allow the fish to perpetuate themselves. Additionally, the unavailability of the Clams throughout the year as indicated by the respondents in our study could be an indication of overfishing. In circumspect, habitat destruction resulting from anthropogenic activities may be considered a threatening factor that impacts on the fishery negatively.

Respondents answers to distance of the resources from the market place as shown in table 5 illustrates that the resource is 1-2 miles away from the marketing centers representing 77.8%. Three to four (3 – 4) miles from the market place recorded a percentage of 22.2 %. This results according to the women is a major constraint to marketing in the business. Perhaps the commercial extinction of G. *paradoxa* is imminent in the estuary as a result of habitat alteration and overfishing [2]. A lot more Clams are harvested than allowed to recruit themselves explaining why they women would have to travel a mile or more in other to get the resource. Earlier, some studies reported over exploitation of the Clams attributable to high fishing pressure on the stock [4]. To prevent the extinction of the clam and to ensure that the communities continue to benefit from the fishery for the present and future generation, there may be the need for more in-depth research into its culture as well as more pragmatically controlled measures of the exploitation of the wild stocks.

The impact of large-scale interventions on the aquaculture sector in terms of access to assets and capabilities, such as micro-finance and micro-enterprise training has only been marginally explored in developing countries [3]. This report is a mirror image of the situation of women in the Clam trade in Keta, Sogakope and Denu towns in the Volta Region of Ghana. This is because about 90% of the respondents indicated not to have access to credit facilities. Low level of literacy is one

of the most severe constraints that hinder women's participation in aquaculture. It is believed in this study that the women in the Clam trade are unable access credit to support themselves because they do not know how.

The study revealed that the women engaged in the sale of the clam had difficulty in harvesting and processing the fish into finish product. Shells of other fish species have spines, which prick harvesters, and because the river serves other purposes, traps set by other fishers prick fishers. This, they concerted to the fact that the methods use are crude. It is our believe that this could be attributed to the low level of education of women in the business. Also, it could be attributed to inadequate extension services reaching these women to have access to improve technology. The adoption of new techniques in the trade will be faster because education is known to bring about enlightenment [10].

Conclusion

Women trading in the *Galatea paradoxa* are largely within the ages of 30 to 35 years with a majority having low education. There is a mix of married and unmarried women engaged in the trade but many of them earn below the daily minimum wage due to the large number of dependents. The main constrains is the unavailability of the fish throughout the year, limited expertise in harvesting and processing Clams into finished products and lack of access to credit financing.

Recommendation

Extension services should be targeted at women who trade in fish especially in the *Galatea paradoxa* to help equip them with new technologies on harvesting and processing Clams as well as how to access credits facilities.

The government needs to empower the women in fish trade by encouraging financial institutions to make adequate loans available to practicing and prospective fish traders at low interest rates and with adequate period of moratorium. Women in fish trade should organize themselves or be organized by extension agents to communicate regularly with government and research bodies concerning their needs and problems they are facing and endeavour to pay back loan granted to them as when due, so as to encourage financial institutions to fund fishing activities.

Research bodies should carry out more problem-solving research in order to improve on the traditional fish farming practice, seek for more effective ways of disseminating research findings to farmers. They should liaise with the extension agents for effective feed in and feedback mechanism; use students to interact with them during the students' industrial farm training.

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