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Analysis of Snail (Molluscan, Gastropod) Picker's Responses in Yenegoa Local Government Area of Bayelsa State, Nigeria

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Abstract:

The study assessed the analysis of snail picker's responses in Yenegoa Local Government Area of Bayelsa State. Multi-stage sampling technique was used to select 80 respondents. Data for the study were obtained with the aid of structured questionnaire and analyzed using descriptive statistics and bivariate probit regression model. Results revealed that, 62.5% of snail pickers were women, with an average age of 36 years. More than half (56.3%) were married and 51.3% had primary school education. The average years spent by many (52.5%) of the respondents on snail harvesting was 17 years. It was affirmed that 72.5% had household size of 4-6persons while 68.7% had income status ranging from ₦200,000-₦600,000.00 per annum. Many (56.3%) were engaged in fishing activities as alternative income sources. The bivariate probit model results revealed that, the probability of respondents' responding to snail picking, level of schooling (-0.006202), household size (-0.051024) and income status (-5.92E-06) were all statistically negative at 5%p-value. But the probability of the pickers responding to snail picking considering their age (0.051231), farming experience (0.018654) and quantity picked (0.005715) were all statistically positive at 5%p-value.Only 35.6% of the respondents employed reduction in price as their major marketing strategy, 25.4% revealed that excess flooding due to heavy rains were the major constraints encountered in the study area. It was recommended that pickers should form cooperatives society to easily access loans and government should assist them establish snail farms.

1. Introduction

With the recent awareness of the danger of red meat consumption by the ageing elites and lack of   protein sources among rural dwellers, snail meat consumption has been on an increase. This is because snail meat contains protein, fat (mainly

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polyunsaturated fatty acid), iron, calcium, magnesium, phosphorus, copper, zinc, vitamins A, B6, B12, K and folate. It also contains the amino acids arginine and lysine at higher levels than in whole egg. With healthy essential fatty acids such as linoleic and linolenic acids. The high-protein, low-fat content of snail meat makes it a healthy alternative to red meat. [8]. In many rural areas in yenegoa, snails are commonly picked by going into the forest or bush and gardens after a heavy down pour especially at night to hunt for them. This activity has been going on in many rural communities in bayelsa state. [7]. But the problems of availability of this non-timber forest products, rest on the nature of the forest and bushes around the communities where they are picked. It is an established fact that most of the forests in the Niger delta region have been depleted as results of the activities of oil companies like oil spillage, gas flaring and effluents discharges into rivers and forests [5]. These activities have led to scarcity of these non-timber forest resources and increases time of picking from the forest, bushes and compound gardens. With this sad development, it becomes imperatives for government and non-governmental organizations to encourage the establishment of snail farms among rural populace. This is because snails are rich in nutritive values, which results to their high rate of demand and income generation. Other uses, according to Gudahl, D. [4] are as follows: They are very important in traditional medicine; various parts of these NTFPs resources are utilized in preparing medicine for curing numerous ailments. When mixed with other ingredients, the fluid cured headache, malaria and improved blood clotting on a fresh wound. The shells of land snails when smoked/burnt to a colorless condition are grounded and mixed with other ingredients in preparing medicines for pregnant women during labor and also as fertility drug for women experiencing difficulty with conception. The importance of these NTFPs resources also reflected in cultural values. Snails are one of the ingredients used in making a sacrifice to Ogun (the god of iron) in Ondo State, one of the states in the Niger Delta region of Nigeria. Finally these NTFPs resources, their shells are regarded as the trophy of the animal, which are used as decorative objects, especially when painted with different colors. [4]. Some rural dwellers also store traditional medicine in giant land snail shells and some make use of the shells as an abrasive for washing utensils and brushing teeth. Snails also provide employment for some people in the rural area. Owing to a high demand for this animal, some of the rural dwellers are now full-time or part-time gatherers of snails. These results revealed that the snails were important not only as a source of animal protein to the rural population but also an important ingredient in their traditional medicine.

At this point it becomes useful to ask the following research questions: a. what are the picker's socioeconomic characteristics? b. How has picker's socioeconomics characteristic affects their responses on the quantity of snail picked? c. What are the marketing strategies employed by pickers? d. What are the constraints encountered by snail pickers in the study area? This article will provide answers to these research questions.

2. Materials and Methods

The study will be carried out in Yenagoa local government of Bayelsa state. The state is geographically located within latitude 4A°15' North and latitude 5A°23' south. It is also within longitudes 5A°22' West and 6A°45' east. The state is bounded by Delta State on the north, Rivers State on the east and the Atlantic Ocean on the western and southern parts.

Bayelsa State is located within the lower delta plain believed to have been formed during the Holocene of the quaternary period by the accumulation of sedimentary deposits. The major geological characteristic of the state is sedimentary alluvium. The entire state is formed of abandoned beach ridges and due to many tributaries of the River Niger in this plain, considerable geological changes still abound.

The major soil types in the state are young, shallow, poorly drained soils (inceptisol Aquepts) and acid sulphate soils (Sulphaquepts). There are variations in the soils of Bayelsa State; some soil types occupy extensive areas whereas others are limited extent.Yenagoa local government area is located in Bayelsa state in the Southern part of Nigeria which forms part of the Niger Delta region. It comprises 45 villages excluding the capital, Yenagoa is predominantly populated by Izons; Epie, Atissa, Gbarain, Ekpetiama, Okordia, Zarama and Biseni clans respectively. Yenagoa local government area is one of 8 local government areas (LGAs) that make up Bayelsa State. It occupies a total land area of 821, 88 sq km with an estimated population of 123,243 people [2], with 70,645 males 67,152 females. Agriculture, commerce and industry are the major economic sectors in the LGA.

Model Specification:

The model used is explicitly stated as: $Y_1 = \beta_0 + \beta_{x1} + \beta_{x2} + \beta_{x3} + \beta_{x4} + \beta_{x5} + \beta_{x6} + \epsilon_i$

Where:

Y_i = is the dichotomous dependent variable represented by dummy variable: 1 for farmers, who responded that quantity of snail sourced from the forest has drastically reduced due to over-exploitation and 0, is for otherwise.

β_0 = constant term

$X1$ = years spent in formal schooling (in years)

$X2$ = Age of farmers (in years)

$X3$ = Farming /sourcing experience (in years)

$X4$ = Household size (in numbers)

$X5$ = income Status in naira (on and off-income)

$X6$ = Quantity of snail sourced from the forest in kilogram.

ϵ_i = error term

A positive regression coefficient means that the independent variable increases the probability of the outcome, while a negative regression coefficient means that the variable decreases the probability of that outcome; a large regression coefficient means that the independent variable strongly influences the probability of that outcome, while a near-zero regression coefficient means that the variable (independent) had little influence on the probability of that outcome. [6].

3. Results and Discussions

Table 1, shows that majority(50%) of the respondents who are involved in snail picking are mostly female, while most (60%)falls between age range of 25-54 years .This age range has shown that most at times children are not allowed to pick as a result of dangers due to the terrain of the study area. Majority (56.3%) are married. It was also observed that majority (51.3%) had primary school education depicting

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that respondents are literate enough to embrace an innovation in snail production. Respondents average years of picking were 17 years, with majority (72.5%) having 4-6 household size. Majority (68.7%) had a farm income of ₦200000-₦600000 annually due to scarcity of snail during dry season. Majority (56.3%) are involved in fishing activities as an alternative income sources.

Table 1. Showing the distributions of respondents according to their socio –economics characteristics in the study area.

VARIABLES	FREQUENCY	MEAN	PERCENTAGE
Gender			
Male	30		37.5
Female	50		62.5
Age			
0-14	4		5.0
15-24	18		22.5
25-54	48	**36 Years**	60.0
55-64	10		12.5
65 and above	0		0
Marital Status			
Single	10		12.5
Married	45		56.3
Separated	4		5.0
Divorced	8		10.0
Widowed	13		16.3
Widower	0		0
Level Of Education			
No formal education	3		3.8
Primary	41		51.3
Secondary	30		37.5
Tertiary	6		2.5
Years of Picking Experience			
1-10	10		12.5
11-20	21	**17years**	26.3
21-30	42		52.5
31-40	7		8.8
Household Size			
0-3	6		15.0
4-6	51		72.5
7-10	7		8.7
11-13	2		2.5
AbOVE14	1		1.3
Income	**Status**	**(₦)**		
Less	than	100,000	20	25.0
200,000-600,000	55	68.7		
500,000-700,000	3	3.8		
Above1000,	000	2	2.5	
Other Sources of Income			
Trading	20		25.0
Hunting	11		13.7
Fishing	45		56.3
Artisan	3		3.8
Others	1		1.2
TOTAL	**80**		**100**

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Source: Field Survey Data, 2020.

Looking at Table 2 below, the probit model results asserts that, the probability of respondents level of schooling in responding to snail harvesting were statistically negative (-0.006202) in influencing respondents responses towards snail picking in the study area at 5% p-value. It shows that, the more respondent's level of education increases the less they respond to snail picking in the study area. Respondents age is statistically positive (0.051231) at 5% p-value, in inducing how pickers responds to snail gathering at 5% p-value. The result has shown that as respondent's age increases the more they have the likelihood of responding to snail picking. Also the probability of respondents, responding to snail picking considering their years of picking experience was found to be statistically positive at 5% p-value, while their household size was statistically negative (-0.051024) 5% p-value .The negative response was due to the fact that snail picking depends on the nature of the forest, not on the number of persons who are engaged in the exercise and income status (-5.92E-06) were found to be negative at 5% p-value. The probability of pickers responding to snail picking based on the quantity picked were found to be statistically positive (0.005715) in influencing their responses of snail harvesting in the study area. The model specification is a good fit looking at the lowness of the akaike info criterion of (0.901471).

Table 2. *Convergence achieved after 4 iterations.*

Coefficient covariance computed using observed Hessian				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.954164	1.139490	-0.837360	0.4024
SCH	-0.006202	0.063894	-0.097060	0.9227
AGE	0.051231	0.023473	2.182529	0.0291
FAEXP	0.018654	0.015901	1.173108	0.2408
HHS	-0.051024	0.085729	-0.595179	0.5517
INCME	-5.92E-06	8.23E-06	-0.719116	0.4721
QUANTITY	0.005715	0.012581	0.454220	0.6497
McFadden R-squared	0.140697	Mean dependent var		0.850000
S.D. dependent var	0.359324	S.E. of regression		0.356810
Akaike info criterion	0.901471	Sum squared resid		9.293884
Schwarz criterion	1.109898	Log likelihood		-29.05882
Hannan-Quinn criter.	0.985035	Deviance		58.11765
Restr. Deviance	67.63345	Restr. log likelihood		-33.81673
LR statistic	9.515805	Avg. log likelihood		-0.363235
Prob(LR statistic)	0.146580			
Obs with Dep=0	12	Total obs		80
Obs with Dep=1	68			

Source: Field Survey, 2020.

3.1. Marketing Strategies Employed by Pickers in the Study Area

From Table 3 below, majority of the respondents (35.6%) employed reduction in price as a marketing strategy to market the excess of snail picked. It was only (5.3%) who emphasized, that they engaged home delivery to their customers. Farotimi (2020) noted that, the prices of snail range from one location to another and snails are more expensive during the dry seasons. On the average, the price of matured snails goes for ₦500 - ₦1000 depending on the size and location. At Yenegoa matured snails goes for ₦600-₦800 during rainy season.

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Table 3. *The frequency distribution of respondents according to the marketing strategies employed.*

Number	Marketing strategies employed.	Frequency	Percentage
1	Reduction in price	80	35.6
2	Helps in process(removing *scales and washing*)	32	14.2
3	Selection of big sizes and good quality.	45	20.0
4	The more the quantity the less the price.	56	24.9
5	Home delivery	12	5.3
	Total	225	100

Source: Field survey, 2020, Multiple responses recorded.

3.2. Constraints Encountered by Snail Pickers

Table 4 below asserts that majority (25.4%) stated that excess flooding were their major constraints. This was because this study was conducted in rainy season. It has been deduced by many researchers for example, Akintoye et al [1] that excess flooding has always been a major environmental problems ravaging the socio economic life of the people in the area.

Table 4. *Frequency distribution of pickers according to the constraints encountered in the study area.*

	Constraints	Frequency	Percentage
1	Difficult terrain(swampy mangrove forest)	56	17.8
2	Dangerous reptiles	48	15.2
3	Insecurity	50	15.9
4	Pollution (oil spillage and gas flaring etc.)	47	14.9
5	Scarcity of snail	34	10.8
6	Flood(excess rain)	80	25.4
	Total	315	100

Source: Field survey, 2020 multiple responses recorded.

4. Conclusions and Recommendations

Snail meat is a good source of animal protein and rich in essential vitamins and minerals. It is good for human well-being and growth. But pickers of this non -timber forest products are exposed to lots of dangers. It is therefore recommended that pickers should form co-operatives societies so that it will be easy for them to assess loan from financial institutions and the government. Also government should endeavor to establish snail farms for them in order to avert series of dangers associated with snail harvesting in the study area.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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