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Incidences of water turtle (*Pelusios Species*) sold in Benin City, Edo State, Nigeria

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Abstract

This study was conducted to assess the incidences of water turtle (*Pelusios species*) sold in Benin City, Edo state. Data was collected through questionnaire and oral interviews in twelve markets surveyed viz Oliha market, Ogiso/New market, Yanga market, Oba market, New Benin Market, Ogida market, Uwa market, Edaiken/Uselu market, Uwelu market, Oregbeni market, Oka market across Oredo, Egor and Ikpoba Okha Local Government Areas (LGA) of Edo State, Nigeria. These markets were visited with certain determinative parameters in mind, these includes if turtle were sold, intensity of sales, price indices, socio-economic characteristics of the marketers, utilization of turtle and difficulty encountered if any during sales.

The results showed that turtle were sold in all the markets surveyed, turtle marketers were women (100%) and majority of them were married (74%). They had mainly primary school education (42.3%), secondary school education (34.6%) while few had no form of formal education (23.1%).

The major source of water turtle to the sellers was from intermediaries (wholesalers), turtle were sold based on their sizes and the price indices showed that 0.1 – 0.3kg male turtle cost between N 500 – N 1400, 0.4 – 0.6kg male cost between N 500-2000, 0.7 – 0.9kg male cost between N 800 - N 1900 and ≥ 1kg male cost between N 1250 - N 4000 while female turtle having weights of 0.1 – 0.3kg cost between N 300 - N 1000, 0.4 – 0.6kg female cost between N 700 - N 1500, 0.7 – 0.9kg female cost between N 700 – N 3500 and ≥ 1kg female turtle cost between N 1200 - N 4000. They were utilized for rituals/ancestral worship and served as a food item.

The marketers made an average profit of between N300 - N 400 and as low as N 100 - N 200 per turtle regardless of the size and the major constraint faced by them was low demand which usually necessitated them selling other products along side to breakeven.

Turtle sales provided employment, income, raw materials and food for the populace. It accepted any food consumed by man in captivity which serves as an indicator of the possibility of their ease of culture or being kept as pet

Keywords: Incidences, Pelusios, Benin, Turtle

Introduction

The human race had 850 million members when it entered the industrial age, sharing earth with life forms nearly as diverse as the planet had ever possessed (Blessing, 2016) ^[1].

One cannot talk about an aquatic animal without talking about the environment in which it inhabits. Water is essential for life and is arguably our most precious resource which is made up of the water itself, animals, plants and the minerals in it which are referred to altogether as aquatic resources (Fisheries and Aquaculture, 2009) ^[2].

The term ‘fish’ covers not only finfish, but also other aquatic vertebrates such as reptiles (crocodiles and turtle), mammals (whales and porpoises) and aquatic invertebrates often referred to as shellfish (Imaobong and Mandu, 2013) ^[3].

People seem to be confused with the apt usages of the terms “turtle” and “tortoise” but to put it in a simple manner, the term “turtle” applies to the members of the reptilian family that reside in oceans and fresh waters, while those thriving on land are called “tortoises”.

Turtle are reptiles of the order Chelonii characterised by a special bony or cartilaginous shell developed from their ribs and acting as a shield. Like other amniotes, turtle breathe air and do not lay their eggs underwater (Anquetin, 2012) ^[4]. They are the closest relatives of birds and crocodiles (the archosaurs) and less related to snakes, lizards and the tuatara (Crawford *et al.*, 2012) ^[5]. The earliest known members of this group dates from 157 million years ago, with about 327 known species alive today (Le *et al.*, 2006) ^[6].

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Although turtle inhabits freshwaters and marine waters, some species are semi-aquatic and inhabit various natural and man-made wetlands with soft bottoms of slow or no current (Ernst *et al.*, 1989) [7]. Natural wetlands such as swamp, peat swamp forests, marshes, permanent or temporary wetlands, shallow lakes and man-made wetland such as flooded rice fields, oil palm and rubber plantations that are either partly flooded or that have an extensive drainage system as well as irrigation ditches, canals, orchards, vegetated drainage systems, ponds and pools near houses.

Freshwater turtle populations do not cope well with targeted exploitation of their adult animals. A relatively smaller annual recruitment, very high percentages of hatchlings and juveniles falling prey to predators, longer incubation periods and delayed sexual maturity are the characteristics of freshwater turtle (Congdon *et al.*, 1993; 1994) [8, 9]. According to Schneider (1990) [10], there are six species of sea turtle that occurs in the Nigerian coastal water and they belong to two families: Cheloniidae and Demochelyidae. They are highly migratory and are perceived as open-access resource, therefore, many countries seeing the need to reduce their mortality have provided certain level of legal protection for them. In Nigeria, sea turtle are protected under the Sea Fisheries Decree (No. 17) of 1992, although its currently is being reviewed; makes it mandatory to install Turle Excluder Device (TED) in shrimp trawl nets (Federal Republic of Nigeria Official Gazette, 1992) [11].

Fishing is the main occupation of the coastal communities, with various types of gears being employed. It is conducted in creeks, rivers, estuaries, mudflats, and near-shore and offshore. Wild sea turtle have a long history of being harvested for meat, eggs, for traditional medication preparation, leather and other products (Grahame *et al.*, 2008, Adegbile, 2013) [12, 13]. Turtle are principally hunted using nets, longlines, or harpoons. But efforts are being intensified to meet the ever growing demand with farmed turtle instead of wild caught ones (Hylton, 2007) [14].

Marketing and distribution of fisheries product is not usually on fishermen-consumers basis but distribution is mainly by brokers, retailers and wholesalers (Njai, 2000) [15]. Therefore prices of turtle changes as it passes through this chain of sales, becoming more expensive by the time it gets to the final consumers. This study was therefore undertaken to determine the incidences and marketing of turtle and the socio economic characteristics of the sellers in Edo – State.

Materials and Methods

Study area

Benin City the capital of Edo State, Nigeria is situated between latitude 7^o and 8^o north of the equator, the amount of rainfall is between 175cm and 200cm annually with an average temperature of about 34^oC. The City is made up of three Local Government Areas (LGA); Oredo, Egor and

Ikpoba-Okha.

Sampling for this study was carried out in twelve major markets across the different L.G.A viz Uselu/Edaiken market, New Benin market, Oregbeni/Ikpoba Hill market, Osa market, Oba market, Yanga Market, Uwelu market, Uwa market, Oliha market, Ogida market, Ogiso/New market, Oka market.

Method of survey

Collection of the information was through the use of structured questionnaire, administered in each of the twelve markets surveyed. This was used to collect background and other vital information from the water turtle sellers in the twelve markets; information was also obtained through personal communication and interviews. Interviews were conducted in English and Pidgin languages, because some of the sellers interviewed had no formal education. The interviews ran concurrently with the administration of questionnaire. The basic reason for adopting this interview method was due to the low level of education of the respondents, coupled with their wrong perception that any formal interview could have been sponsored by governmental agencies in a bid to increase their taxes and other dues paid to government coffers.

Results

A total number of hundred (100) questionnaires were distributed and retrieved, but only eighty-three (83) of the retrieved questionnaires were found useful for analysis. Majority of the markets were located in Oredo LGA which was the parent LGA from which Egor and Ikpoba-Okha LGA carved out from.

Socio-economic characteristics

The survey showed that the business of selling water turtle at these markets was mainly done by women (100%).

The age distribution of the water turtle sellers in these markets showed that majority of the sellers were within the 51-64years (49.4%) age group while very few of the sellers fall within the age group of 15-20years (1.2%), it must be noted that most of these young sellers were mostly standing in for their mothers or guardian. None were between 20-25years, others were between the 40-50years age range as shown in Table 1.

Generally, majority (80.0%) of the turtle sellers were married, 16.2% were widowed, 2.5% were divorced/separated and only 1.2% was single. 74.0% of the respondents were married in all the markets in Oredo; 100.0% and 70.0% were married in Egor and Ikpoba Okha markets (Table 1).

33.3% of the turtle marketers attended secondary school in markets in Oredo while 35.0% and 40.0% in Egor and Ikpoba Okha respectively. Water turtle marketers in Oredo had the highest population of non-educated turtle sellers 25.0% followed by Egor 20.0% and 20.0% in Ikpoba Okha (Table 2).

Table 1: Age Range and Marital Status of turtle marketers by Local Government Areas

Age range (years)	Oredo LGA (%)	Egor LGA (%)	Ikpoba OkhaLGA (%)	Marital Status	Oredo LGA (%)	Egor LGA (%)	Ikpoba Okha LGA (%)
15-20	2.0%	0.0%	0.0%	Single	2.0%	0.0%	0.0%
21-25	0.0%	0.0%	0.0%				
26-30	5.9%	5.0%	10.0%	Married	74.0%	100.0%	70.0%
31-35	2.0%	5.0%	0.0%				
36-40	3.9%	5.0%	0.0%				
41-45	11.8%	45.0%	30.0%	Divorced/Separated	2.0%	0.0%	10.0%
46-50	11.8%	20.0%	20.0%				
51-64	62.7%	20.0%	40.0%	Widowed	22.0%	0.0%	20.0%

Source: Personal Survey, 2016

Table 2: Educational status of turtle marketers

Level of Education	Oredo LGA (%)	Egor LGA (%)	Ikpoba-Okha LGA (%)
None Formal	25.0	20.0	20.0
Primary	41.0	45.0	40.0
Secondary	33.3	35.0	40.0
Post Secondary	Nil	Nil	Nil

Source: Personal Survey, 2016

Marketing intensity

Water turtle was mostly called *Evbuwor* by the Binis (Edo people) in Edo State, Nigeria 93.3% in all the markets surveyed and 6.67% of the turtle sellers called it *Eguwi-Ame*. Turtle were transported from the place of capture (river) by bus 74.7%, bus and boat 4.8% and was brought to the retailers in sac bag 84.3%.

From the oral interview, sellers’ differentiated sexes of turtle by the males were having a hollow plastron and female having flat plastron (96.25%). There was the demand for turtle regardless of the sex as both sexes were generally sold (78.5%) although male turtle was the least sold (8.9%); this could be due to availability.

Table 3: Percentage number of markets and turtles sold per Local Government Area

Local Government Areas	Number of Markets / LGA (%)	Sales No. / LGA (%)
Oredo	58.33	63.4
Egor	25.00	24.4
Ikpoba Okha	16.67	12.2

Holding and feeding method

Turtle were held before sales mostly by putting them in containers with water at the bottom and by the use of cages (30.8%) at markets in Oredo. 55.0% and 50.0% in Egor and Ikpoba Okha LGA’s respectively. Very few sellers used wooden boxes with cover (1.9%) and 5.0% in Oredo and Egor turtle markets respectively. None used wooden box at Ikpoba Okha turtle markets.

Majority of the turtle were fed with any food items like *eba*, *garri* soaked in water, boiled yam mixed with oil, cooked corn starch and the likes which are consumed by man (80.0%) while 20.0% fed on fruits like mangoes, pawpaw, pineapple and mangoes. During the oral interview, most of these marketers reiterated that about 81.0% of turtle just bought from fishers who had collected them from the wild, accepted food the same day, while about 19.0% do not, until a later day.

Average daily sales

The price of turtle of different sex and weight varied within the different Local Government and in response to the average number of turtle sold daily (Figure 1). During the survey, turtle were classified based on their weight – Small (0.1 – 0.3kg), Medium (0.4 – 0.6kg), Big (0.7 – 0.9kg) and Extra Large (1kg and above).

0.1 – 0.3kg male turtle were sold for between N 500 – N 1400, 0.4 – 0.6kg male N 500-2000, 0.7 – 0.9kg male N 800 - N 1900 and ≥ male N 1250 - N 4000 while the price for 0.1 – 0.3kg female turtle ranged from N 300 - N 1000, 0.4 – 0.6kg female N 700 - N 1500, 0.7 – 0.9kg female N 700 – 3500 and ≥ female N 1200 - N 4000. Although the exact price in which a turtle was sold was dependent on the bargaining power of the customer.

57.1%, 42.9% and 50.0% sold turtle (whole and body parts) that died during their holding period while 42.9%, 57.1% and 50.0% respondent did not sell dead turtle in Oredo, Egor and Ikpoba Okha respectively.

63.1% attested that season affected price while 36.9% had an opposite opinion. 66.2% of the water turtle sellers did not experience difficulty in sales while 33.8% experienced difficulty in sales due to low demand.

The result showed that they had more sales in the dry season (41.5%), than rainy season 36.6% and 22.0% were indifferent. The result also showed that the number of turtle sellers was increasing in all the markets in the different LGA’s.

Profitability

From interactions, respondents revealed that they made between N 300 - N 400 per turtle on a favourable business day and as low as N 100 – N 200 on a less favourable day. The level of profitability of this business was dependent on the forces of demand - supply and the season of the year as consumers demanded for turtle more during the dry season (41.4%).

Utilization of water turtle

Turtle were used for food, rituals and ancestral purposes 100%.

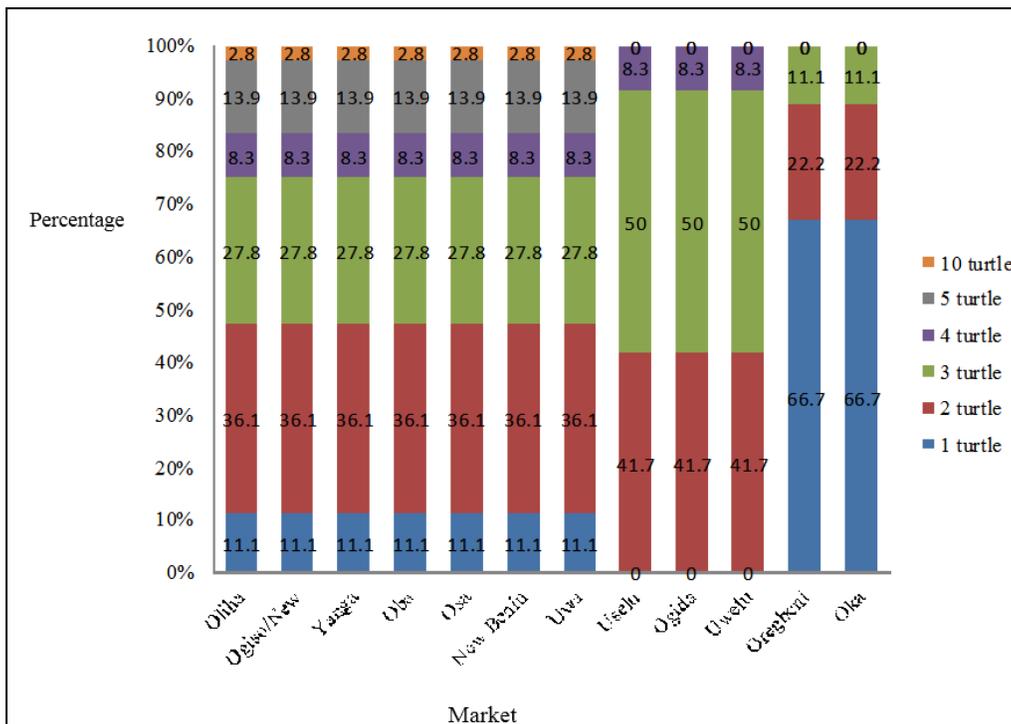


Fig 1: Average number of water turtle sold per day and their percentages.

Constraints

The major constraint was low demand (100%) by consumers in this environ, since they have not fully embrace the idea of consuming turtle meat; which usually results in low sales thereby increasing the length of their holding period. Consequently, the traders incur additional cost through the use of extra resources such as food and water to ensure that the turtle stayed alive and maintain and if possible increase their weight before they were bought. They also incur losses through the death of the turtle when they are not promptly purchased due to the prevailing high ambient temperature.

Discussion

The information and result from this study revealed that turtle were sold in the twelve markets surveyed and that they were found in traditional stores popularly known as ‘Owe kevbin-kevbin’ alongside with tortoises as earlier reported by Nwokoro *et al.* (1999) [16] while working on land tortoise. Fresco (1998) [17] reported that 60% – 90% of women were engaged in agricultural products marketing but marketing of turtle was done by mainly women (100%). In this localities, the women had mainly primary school education (42.3%), secondary school education (34.6%) and few had no form of formal education (23.1%) which means that a higher percentage of them (76.9%) were literate enough to read and write which aided ease of communication between them and their customers, this is in consonance with Remziye (2013) [18] assertion that education was necessary for communication and that there existed a strong correlation between communication and marketing. Source of turtle to the sellers was mainly from intermediaries who got their concerns from fishers that caught their turtle with the use of fishing nets, hook and line, hand picking and this is in agreement with Shamsur *et al.* (2013) [19] that turtle could be caught through this means. Turtle is locally called *Eybuwor* and occasionally called *Eguwi ame* which means ‘water tortoise’, it was observed that

there was no major special preference for any sex of turtle, demand by consumers were based basically on availability. Also, the method of holding turtle at these markets contrasted to the use of rope as a method of holding as reported by Elijah *et al.* (2014) [20] but this finding was similar to the findings of Nwokoro *et al.* (1999) [16] while working on tortoise in Benin City. Majority of the markets surveyed used any food consumed by man to feed the turtle during holding period provided there was no pepper or spice in it. Sales of the turtle was affected by season and determined mainly by demand which was very low as the trade was referred to as *Eki - Iziengbe* which when interpreted means ‘endurance market’, since this meat has not gained general acceptance by the populace like other meat items. Price of various sizes and sex of turtle differed and depended on the customers bargaining power. On favourable business day 3 – 10 turtle could be sold but 0 - 2 on an unfavorable day which was in contrast to Elijah *et al.* (2014) where turtle/tortoise sellers sold 16 – 20 turtle on a favourable day and 13 -19 turtle on a less favourable day while working in Delta State. 41.1% of the turtle retailer made below N 2000, 50.8% made above N 2000, 5.1% made N5000 weekly as their gross profit but made an actual profit which was within the range of N100 - N 400 per turtle sold. Turtle were utilized mainly for food, ancestral worship and the number of retailers during the study tends to be increasing as the number of persons now trading on them are no longer just children of past sellers.

Conclusion

Turtle were sold in virtually all the markets but were restricted to traditional stores in Benin City; it serves as a source of employment, income, food and raw materials. It is said that turtle meat taste like chicken and majority of the turtle sellers testified that turtle meat was the sweetest meat. In addition to the meat having a good taste, it is a source of protein which is required by the human body which can compare favourably with that of fin fishes and red meat but

very few persons from areas especially where they are used for sacrifice or rivers eat this meat.

Turtle accept any food consumed by man as soon as they are brought to the market which shows that with appropriate management they can easily adapt within a short time to culture conditions thus can be reared for meat or kept as pet. The need to domesticate this species with appropriate management in place to make it readily available will encourage more persons to benefit from this rich and healthy source of animal protein. As many persons are still very much on aware of their availability in the state and the nutritional benefits they stand to gain from their consumption.

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