

An urban survey of dwellers, knowledge and disposition of bush meat and conservation in Ikorodu Metropolis, Lagos State, Nigeria

Abstract

Wildmeat, a traditional source of protein for local rural homes in Africa has gained increased notoriety in respect to its implications for health when consumed by Man. consumption has in recent times become a source of concern for the global community particularly. As, a food resource often traded to urbanites, who can pay higher prices as a supplement to meals. In spite of the extant studies on this activity, its urban dimensions remain poorly understood particularly in Nigeria. The paper assessed the local insights into why Ikorodu urbanites in Lagos, Nigeria continue to consume wild meat and their awareness of the implications of its consumption on their health. It was found using a questionnaire survey that more than 70% of residents had a low awareness of the negative implications of wildmeat consumption on their health. Furthermore, 45% of residents' view wildmeat as healthier meat carrying less germs contrary to recent findings on its parasitic content. Results indicate that taste and cultural preferences are key reasons for sustained consumption (71%), and Grasscutter (*Thryonomys swiderianus*) continues to be the favoured edible wildmeat. This signals a pertinent need for increased local awareness of the zoonotic potentials of such meat through advocacy and educational campaigns. Continued blithe perspectives to Wildmeat issues may engender future disease outbreaks and eventually negatively impact on the ecological wellbeing of both Man and Bush animals.

Keywords: Bushmeat, urban consumption, Ikorodu, wild meat survey, health awareness

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Introduction

Forested ecosystems are important specie rich environments that support human life and wellbeing with the provision of natural resources, medicines and even act as climate regulators. Biodiversity loss from these ecosystems have in recent times been decried as a much more significant problem to conservation than even deforestation itself (CARPE 2001), given its ripple effects on a myriad of human and environmental issues. While some measured benefits are accruable from some losses such as local livelihood support, the negatives are often termed incalculable by conservationists as it leads to wildlife extinctions of most species of apes, other primates, large antelopes, and elephants. Other indirect effects of defaunation on the food chain could potentially alter forest structure and equilibrium (Swamy & Pinedo-Vasquez 2014).

Bush meat as a key removal from these ecosystems, is a complementary source of protein for local people which is now traded in increasing quantities in African urban centers as Nigerian cities (Wild Aid 2021).^{1,2} Defined as 'any non-domesticated terrestrial mammal, bird, reptile and amphibian harvested for food excluding sea foods as fish and insects,^{3,4} bush meat has historically been harvested by local hunters for primarily for subsistence eating,⁵ and has been termed the second most important black market commodity traded worldwide (Toledo et al 2012). Local drivers as quick economic gains and unregulated access has made such hunting a flourishing activity asides its role in food security support particularly for poor rural families (Bitanyi et al, 2012)⁵⁻⁷ and in certain cities consumption is as high as 80%.⁸

At present, there is some disparity in available data on bushmeat consumption and consumer choices for different parts of Africa^{4,9,10} and more local level studies are needed in determining

resource sustainability and its contributions to urban diet and even livelihoods.^{11,12} For Nigeria, common knowledge surrounding bush meat trading is usually from a gendered perspective with more females trading wild meat, while males hunt (Ebonwu et al 2022). Sales of such meat is often seen as more profitable than selling other kinds of proteins.^{1,13-16} Trading in bushmeat appears to be vulnerable to overhunting as evidenced by the collapse of the bush meat trading in specific areas in South East Nigeria that has recorded dwindling chelonian species.¹⁷ This and other environmental health concerns have led to a growing opinion about the increasing depletion of wildlife in Nigerian forests (Wild Aid 2021),¹⁸ a phenomenon that is purported to lead to 'the emptying of forests'.⁴ Suggested solutions asides curbing bush meat demand includes local wildlife ranching which is still under debate as to its capacity to meet domestic needs fully or sustainably.⁴ Although the urban consumption of bushmeat is acknowledged to be more of a commoditized issue driven more by personal preference and cultural reasons than dietary necessity,^{19,20} there is still a need for greater clarity in understanding the urban drivers of continued wild meat consumption in spite of cheaper domesticated alternatives. Little has also been documented about the recent consumer perceptions given the renewed interest in wild meat associations with the COVID health pandemic (Wild Aid 2021)¹⁸ and the need to sensitize the public on such matters. Understanding bush meat consumer behavior will aid the designing of social strategies with the aim of modifying such behavior.

Although a few studies have emphasized the capacity of bushmeat to act as parasitic reservoirs upon consumption (Swamy et al 2014),^{18,20,22} more confirmatory studies like this are needed to give more insight to local bushmeat consumption issues in light of post-covid fears of emerging zoonoses and infections. This study characterizes urban consumption, preferences and its health implications in a Nigerian city Ikorodu amidst prevailing health concerns about wild meat. It

highlights consumptive differentials between domestic and wild meat while it attempts to qualitatively capture nuances to support existing data from online e-survey methods (Wild Aid 2022). Results will be useful as an added case study to improve Meta analyses particularly from a tropical country's perspective (Figure 1).

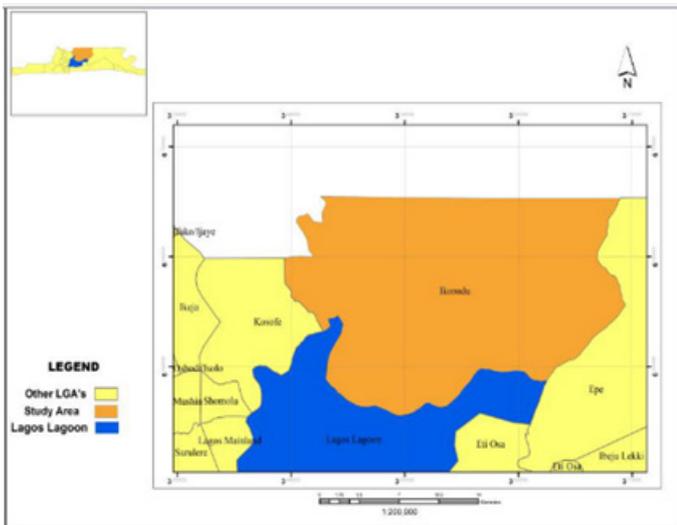


Figure 1 The Study area.

Source: Odunuga et al, 2018.

Method

Ikorodu LGA is located approximately between latitude 6° 37'–6° 45' North and longitude 3° 3'–3° 5' East with a land area of about 394 sq. kilometers. It is bounded in the east and west by Epe and Kosofe Local Government Areas respectively, in the south by the Lagos lagoon, and towards the north by Ogun State. Ikorodu is part of the natural wetland ecosystem valued for its contribution to ecological balance and biodiversity in Lagos state,²³ but which has lately come under ecological pressures from sand mining, road construction and fishing activities^{24,25} as well as existing markets for trade in wild meat.^{1,15}

The study area Ikorodu was stratified following political administrative units into 16 urban areas, out of which three areas based on geographical distribution, were chosen for the study. These include Isiu, Maya and Odogunyan. 120 questionnaires were administered, out of which 104 were retrieved. Prior informed consent of each respondent was sought before the questions were administered. Respondents were first asked about their socio-demographic backgrounds, followed by questions regarding bushmeat consumption experience and preferences. Awareness on conservation policies and practices were also sought. Data was analyzed using Microsoft Excel 15.0 Software to run descriptive statistics such as frequencies and percentages, Crosstabs, Chi square.

Results

Bush meat consumption pattern observed

The results indicate that the mean age of respondents was about 34 years and more than 60% were married. Majority of the respondents had an education beyond secondary or were enrolled in a higher institution as students. At least 50% said they were involved in business or trading, while 19% were students and 15% were involved in agriculture (Table 1).

Table 1 Socio-demographic characteristics of surveyed respondents

Characteristics (N=104)	Number of respondents	(%)	
Age (Mean 34.7, S.D 19.5)	20 -35	54	52
	36 -45	35	34
	46 and above	15	14
Marital Status	Single	41	39
	Married	63	61
Level of Education	Primary	4	4
	Secondary	40	38
	Tertiary	60	58
Occupation	Student	20	19
	Driver	2	2
	Farmer	16	15
	Tailor	5	5
	Business/ Trader	54	52
	None	7	7

As much as 74% of respondents consume bush meat and they identified common species such as Grasscutter (Oya), Squirrel (Okere), Snake (Eejo), Pouched rat (Okete) and Duiker (Etu). The Grasscutter bushmeat was the most commonly identified bushmeat specie (43%), followed by the Pouched rat (20%) and the Antelope (13%). Some species like the civet cat, wild pig, and porcupine were rarely seen (Figure 2). 26% of the interviewees however reported not liking nor consuming bushmeat (Table 2).

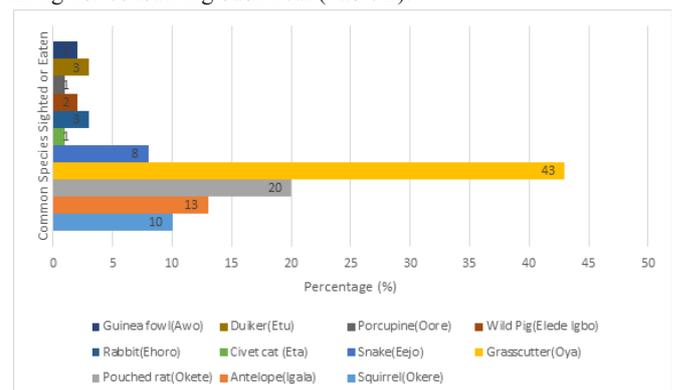


Figure 2 Bushmeat species commonly sighted or eaten in Ikorodu area.

Table 2 Distribution of respondents according to consumption parameters

Consumer parameters	Number of respondents (N=104)	Frequency (%)
Like eating BM	77	74
Do not like eating BM	27	26
Reasons for consumption		
Taste	92	88
Healthier	2	2
Freshness	1	1
No Reason	9	9
Source of bush meat		
Markets	51	49
Roadside/Highway	43	41
Sabo	7	7
Forest	3	3
Ease of Access to BM	70	67
Frequency of eating BM		
Frequently	64	60
Occasionally	12	12
Monthly	4	4
Not at all	24	23

The main reason cited for consumption of bushmeat by more than 80% of the respondents was its taste said to be delicious, while a few others saw it as healthier being lean meat(2%). Almost half of the respondents (49%) identified the most frequent sources of bushmeat in Ikorodu to be markets and roadsides or highways (41%) in the area (Table 2). More than 60% of the respondents considered themselves to be frequent eaters of bushmeat. When asked to compare bushmeat and other regular protein sources as fish or meat, approximately 80% of the interviewees considered bushmeat a healthier protein source, while 65% of them agreed that regular fish and meat were significantly cheaper to purchase than bushmeat (Figure 3).

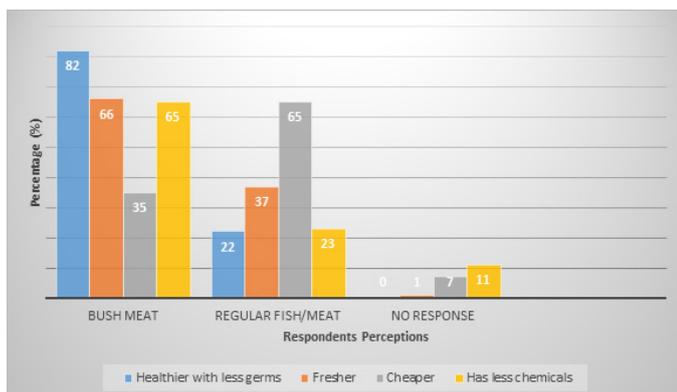


Figure 3 Percentage of Respondents' Perceptions when comparing Bushmeat & Regular Fish/Meat.

Comparism of health perceptions of consuming Bushmeat & regular fish/meat

Many bushmeat consumers feel it is has less germs than regular meat and approximately half of them opined that consuming it posed no risk to their health, while about 24% were undecided on the issue (Figure 4).

Bushmeat conservation awareness and implications for future conservation efforts

Some of the recorded responses revealed a high level of negative perceptions of possible bushmeat scarcity as more than 35% of the respondents felt this could not happen even though 50% felt extinction was a possibility with bushmeat wildlife. Although many of the respondents were part of the youthful cohort, more than 70% see themselves continue bushmeat consumption in the future with barely 19 % affirming their knowledge of Nigerian laws restricting hunting or consumption in any way (Table 3).

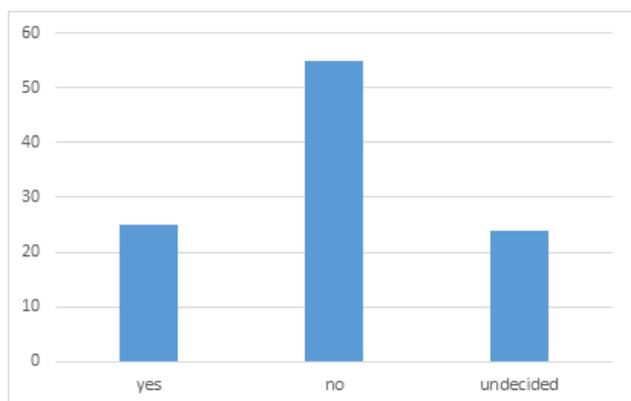


Figure 4 Surveyed Perception of Health Risk posed by Bush meat Consumption.

Table 3 Links between Bushmeat consumption and conservation knowledge

Perceptions	Resident response	Count	Frequency (%)
Awareness of legal restrictions on eating or hunting	No	78	75
	Yes	20	19
	No Response	6	6
Likelihood to continue consumption in future	Likely	74	71
	Unlikely	14	13
	Undecided	16	15
Awareness of possible extinction of BM in Forests	No	36	35
	Yes	52	50
	Undecided	16	15

Discussion

This study contributes to the number of exploratory studies concerned with consumer behavior and importantly provides confirmatory data on drivers of bushmeat demand in Southwestern Nigeria that may be useful in designing future intervention strategies.

Prevalence of Bushmeat eating and preferences

The study assessed the bush meat eating habits and preference of Ikorodu residents and found positive perceptions about its consumption due mostly to taste.^{5,7,26,27} Findings suggest a surprising acceptability of its consumption among young residents (more than 50% were under 35 years) who had some measure of education to at least secondary school level. Many of the respondents or their families may have migrated to the city in their quest for better living and overtime adopt urban lifestyles while retaining rural dietary habits as eating bushmeat. Some highlighted their cultural affinity and traditional links to this part of their diet.^{28,29} Responses indicate that learned cultural habits strongly influence consumption as surmised by Morsello et al 2015 and Randolph.³⁰ As cities are poised for more inflow and population growth, positive perceptions leading to increased consumption practices may offer alternatives for food security alongside endangering wildlife populations leading to probable faunal extinctions.

Results also indicate interestingly that cost was not the secondary factor in protein choice for these respondents, instead the perceived healthiness of bushmeat carried more weight. This meat was seen to be natural with little chemical contamination presumably from vaccines and drugs domestic meat are often exposed to. Respondents who viewed such meat as fresher with less germs often alluded negatively to the practice of freezing domestic meat for long periods in storage. While the apparent categorization of bushmeat as lean meat gave the impression of healthiness, more comparative evidence is needed as both types have varying protein contents.³¹ Although many admitted that domestic/regular meat and fish was cheaper, the view was that bush meat was a favoured delicacy inspite of its higher cost. This suggests that interventions to curb urban demand must look beyond price control mechanisms to measures which are culturally acceptable. The popularity of Bushmeat as an enduring urban dietary supplement is incontrovertible and presents an opportunity for the intervention strategy of domestication of well accepted species as Grasscutter (*Thryonomys swinderianus*) to meet demand. This is in consonance with Osunsina et al.¹⁵ and Alade and Onadeko,¹ pointing to the untapped potentials it can bring to food security.

Perception on health risk and legal deterrents surrounding Bushmeat consumed

Results indicate that risk perceptions associated with bushmeat is rather low as many respondents did not seem to link consumption with any possible personal health repercussions. Some past studies have disputed this notion with empirical evidence of the zoonotic potentials of bushmeat to act as reservoirs^{12,22} with sometimes as high as 95% such traded meats in markets carry parasitic infections in animal muscles.¹⁸ In contrast however, Friant et al 2015 has reported some measure of health risk awareness among hunters engaged in bushmeat processing activities. Other studies indicate that besides the risk of contracting parasitic diseases, bushmeat is also known to contain heavy metals in measures that are sometimes above recommended WHO limits (Ogunbible et al, 2022)³² that may lead to nervous system illnesses. This issue alludes to the dearth of such needed knowledge among the urban populace which may help deter the increasing demand. Without this, consumption may continue unabated and Public health becomes more at risk, with many in danger of contracting zoonotic diseases.

Findings also reveal the apparent consumer obliviousness to laws regarding use or harvest of bushmeat in the study area. While many opined that such were not existent or not enforced,^{12,33} they still indicated their continual seeking out bushmeat even if laws were in place as they could not correlate their seemingly small scale actions to deleterious consequences as specie depletion and eventual extinction of faunal populations.¹² It was a surprise that the belief that wild animals were still in plentiful supply still holds and faunal extinction was some far-off issue that could come in the distant future if it ever could. This is probably because wildlife is widely seen as a common open access resource that is always available to all (Bowen-Jones et al. 2002) and as such harvesting would continue unrestrained, partly also due to the weak institutions of restraint to be found in these climes (Although the Wild Aid study (2021) emphasized that supply was still available, scarcity of certain species was beginning to show up. These specie erosions from wide spread bushmeat consumption may bring about ecological distortions and imbalance as such populations dwindle.

Conclusion

Urban bush meat consumption previously considered a negligible threat to biodiversity conservation has intensified as trading across countries have gained traction. Rising international bush meat trade has been a concern among conservationists but newer alarms are now being raised on how urban demand is fuelling local trade in Nigeria due to the desire for alternative sources of protein in cities (Wild Aid 2021) with implications for current conservation efforts in the country.^{9,34-45}

The study confirms Bush meat as a continued alternative source of protein for urban dwellers in Ikorodu and highlights its local importance beyond cultural habits to personal preference and taste. Findings indicate the popularity of grasscutter as the most preferred wild meat for consumption outside domestic meat. This suggests a fair chance of widespread acceptability of such meat to assuage urban demand in keeping down hunting levels. As results indicate the affirmed desire of respondents to continue future bush meat consumption emphasizing its perceived positives on their health, there is a pertinent need for increased awareness of the zoonotic potentials of bush meat through advocacy and environmental educational campaigns. The generally low level of awareness of laws restricting hunting or consumption of bush meat from the forest and knowledge of its impact on wildlife extinction need to be addressed, targeting even the young

urban dweller. Legislative deterrents to protect wildlife need to be approached differently with more advocacy focused on the health risks involved with consumption and the ecological imprints of such on wildlife population and on forests. Policies on such issues need to be fashioned out bearing in mind need for sustainable access to wild meat to meet urban demand without criminalizing its consumption.

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Conflicts of interest

The authors declares that there is no conflict of interest.

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