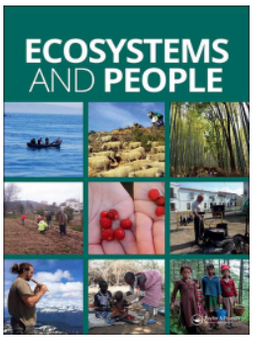

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Wild meat purchasing and consumption behaviours in three urban centres in the Republic of Guinea

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ABSTRACT

West Africa is experiencing rapid population growth and urbanisation which is putting pressure on food systems, including wild-sourced animal meat. Urban demand for wild meat has been identified as a key factor driving wildlife hunting, yet has been little explored in West Africa. To understand the wild meat consumption and purchasing behaviours of urban residents and the sociodemographic factors that influence these behaviours, we conducted a questionnaire survey with 2,935 people in three urban centres (Conakry, Faranah, Nzérékoré) in the Republic of Guinea. Bars/restaurants were important eateries for wild meat, and markets were the most utilised points of sale, however we found differences between urban centres. The greatest wild meat purchasing frequency was among residents living in the smallest urban centre (Faranah) and the lowest in the coastal capital (Conakry). The minority non-Muslim population typically purchased wild meat more frequently than the Muslim population. We found no effect of gender or age on purchasing behaviours surrounding wild meat. Our results suggest that religious identity is an important consideration for initiatives seeking to reduce demand for wild meat, where deemed ethical and necessary, and we highlight the potential importance of engaging with religious leaders and teachers. Caution should be taken when suggesting alternatives to wild meat, which likely have environmental impacts of their own. Our work contributes to improved understanding of urban wild meat consumption patterns and is relevant to policymaking on the sustainable use of wildlife, such as the Convention on Biological Diversity and the United Nations Sustainable Development Goals.

KEY POLICY HIGHLIGHTS

- Urban residents often consumed wild meat in bars/restaurants. We recommend that these locations might be suitable venues for demand reduction campaigns and enforcement (where illegal), although alternative economic opportunities may be needed for those whose income is reliant on selling wild meat in bars.
- Religious identity may influence the wild meat purchasing and consumption behaviours of urban residents. Where wild meat demand reduction is sought, possible initiatives could be co-developed with religious leaders and teachers to contextualise wild meat into existing teachings on environmental stewardship.
- Domestic livestock rearing is often suggested as an alternative to wild meat; however, it is well documented to cause widespread habitat loss and contribute to greenhouse gas emissions. Management strategies need to ensure alternatives are sustainable and could include supporting urban households to establish mini-livestock opportunities and consider diverse sources of proteins.

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Introduction

'Wild meat' is defined as the 'meat of wild terrestrial and aquatic animals, excluding fish' (following Ingram et al. 2021; and here explicitly not including insects). It is estimated that ~150 million households in the 'Global South' harvest wild meat (Nielsen et al. 2018). Tropical rural communities often rely on wild meat for subsistence (Coad et al. 2019), accessing it by hunting or paying low prices relative to other animal proteins in local markets (Fa et al. 2003; Brashares et al. 2011; Chausson et al. 2019). For some communities, wild meat has an instrumental value, directly contributing to livelihoods, nutrient requirements, and safeguarding against malnutrition

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(Golden et al. 2011; Morsello et al. 2015; van Vliet et al. 2022). Wild meat is considered, by some, to be more nutritious and better tasting than domestic livestock (Chausson et al. 2019). It can also have a cultural value not attributed to domestic meats (Chaves et al. 2018; Nijhawan and Mihu 2020; Nguyen et al. 2021). Simultaneously, human populations are increasing in number, hunting tools are becoming more sophisticated, and transport networks are expanding, allowing for increased efficiency in both wild meat hunting and trade (Lescuyer and Nasi 2016; Ingram et al. 2025). In many locations and for many species throughout Africa, Asia and Latin America, the extraction of wild meat is no longer sustainable, with unregulated hunting recognised as one of the leading causes of biodiversity and ecosystem service loss (Brashares et al. 2011; Jaureguiberry et al. 2022). For example, in Central Africa, approximately 1.1 to 1.6 million tonnes of wild meat are extracted annually (Ingram 2018; Bessone et al. unpublished data). This is projected to increase, resulting in significant wildlife population declines in the foreseeable future (Lescuyer and Nasi 2016) and directly negatively impacting rural communities dependent on those resources (Brashares et al. 2014). Demand for wild meat among urban consumers is increasingly of conservation concern, yet remains underexplored (Ingram et al. 2021; Nguyen et al. 2021; Simo et al. 2024).

Urbanisation is increasing in sub-Saharan Africa (UN 2018), as people are drawn to cities and urban areas by the prospect of better employment and living standards (Thomas 2008; Jedwab et al. 2017; Ingram 2020). The human population living in African urban centres is predicted to double to c.1.4 billion people by 2050 (OECD 2025), with over 80% of growth occurring in West African cities (World Bank 2016). Urbanisation is likely to be accompanied by an increase in wealth and in turn, greater demand for meat (Wright et al. 2022; Chaves et al. 2024). While hunger is increasing in West Africa (FAO 2025), the United Nations predicts the demand for animal protein in Africa will increase by 170% by 2050 (FAO 2017). Many rural-to-urban migrants maintain their existing eating habits and trade connections when they move to towns and cities (Randolph et al. 2022; Wright et al. 2022), likely increasing the total demand for wild meat in urban areas.

Economic principles predict that higher living standards should trigger a switch in demand from '*normal goods*', defined as '*a type of good for which demand rises as income rises*' (Sabry 2024) to more luxurious alternatives (Ikeda 2006; Fargeot et al. 2017). For many residents of large towns and cities, wild meat is a consumer choice rather than a dietary necessity (e.g. central Amazon; Chaves et al. 2017), and sociocultural influences, freshness, taste, perceived prestige, price, and income can drive demand for wild meat in urban areas (East et al. 2005; Wilkie et al. 2005; Farouk et al. 2021; Nguyen et al. 2021). For example, in the city of Kinshasa (Democratic Republic of the Congo), consumer willingness to pay for desired products can drive up the prices of wild meats relative to prices in rural markets (Fa et al. 2019). Prices increase further with transport costs and when transporting illegal meats carries a risk of penalty or necessitates bribing officials (LaCerva 2016; Chausson et al. 2019). The meat of some species is an expensive luxury, sometimes consumed as a status symbol. For example, in Kinshasa, the consumption of ape and elephant meat is considered by some to be prestigious, partly due to the illegality and rarity of these species (LaCerva 2016). Similarly in Asia, increasing wealth is driving an unsustainable demand for delicacies such as shark fin soup (e.g. in China; Clarke et al. 2007). In these cases, low levels of wild meat consumption per capita may be responsible for driving unsustainable rates of wild meat hunting (van Vliet and Mbazza 2011; Macdonald et al. 2012; Nguyen et al. 2021).

Wild meat consumption may be limited by various external influences, such as social or religious taboos (Nijhawan and Mihu 2020), gender norms (Chausson et al. 2019; Luiselli et al. 2019) or generational shifts (Chausson et al. 2019; Luiselli et al. 2019, 2020). This may include certain groups avoiding some species, for religious or spiritual reasons, or a species being considered taboo (Colding and Folke 2001; Hockings and Sousa 2013). In Judaism and Islam, swine (domestic or wild) are considered unclean and the meat avoided (Brondz 2018). In Islam this extends to other species, for example, the Quran states the meat of primates, swine, rodents, porcupine and snakes are *haram* (forbidden) (Bonwitt et al. 2017; Bachmann et al. 2019).

It has been documented that gender and age may drive differences in wild meat consumption patterns. A higher prevalence of consumption of wild meat among men, compared to women, was found in Pointe Noire, a coastal city in the Republic of the Congo (sample of 30 adults; Chausson et al. 2019), and in Guinea (Bangoura et al. 2025). In a study of six West African cities, Luiselli et al. (2020) found no differences in wild meat consumption between men and women, and the same result was found in Sahelian and Guinean forest areas (Luiselli et al. 2019). In Nigeria, gender differences were more nuanced, with only certain species being avoided by women (Luiselli et al. 2019). In some parts of the tropics, taboos prevent women from eating meat from certain species during pregnancy or menstruation, rather than abstaining from wild meat in general (Colding and Folke 2001; Luzar et al. 2012; Ngoufo et

al. 2014). Generational differences in urban wild meat consumption have also been reported in the literature. Luiselli et al. (2019, 2020) found wild meat consumption was lower amongst younger age groups in Burkina Faso, Togo, Niger, and Nigeria. In Pointe Noire, Republic of the Congo, Chausson et al. (2019) found price limited consumption and, despite the older generation wishing to feed wild meat to their children, they were restricted to cheaper imported meats. As a result, children developed a preference for domestic meat.

With rapid urbanisation, understanding urban wild meat consumption is increasingly important for species conservation (Ingram 2020). Studies quantifying urban wild meat consumption in Africa have largely focused on rainforest habitats in Central Africa (Brugiere and Magassouba 2009; but see Luiselli et al. 2019), with little attention to urban areas in other habitat types and the factors that influence urban wild meat consumption. Few studies have investigated the influence of non-wealth factors or other important sociodemographic and psychographic factors (i.e. those relating to one's interests and opinions; Townsend 1987) that could significantly influence consumption behaviours e.g. purchasing, acquisition, and consumption location (Chausson et al. 2019; Ingram et al. 2021). Other studies have found differences in the prevalence of wild meat consumption, between genders in the Republic of the Congo (Chausson et al. 2019) and Guinea (Bangoura et al. 2025), and between generations in the Republic of the Congo and the Sahelian and Guinean forest regions of West Africa (Chausson et al. 2019; Luiselli et al. 2019, 2020), but have not looked at consumer purchasing, or eating locations. These factors may vary spatially across urban food systems, where people interact with the food environment, and importantly, drive daily decision-making about food choices. However, these possible spatial drivers of wild meat consumption behaviours remain unexplored.

Given the projected increase in urbanisation in the near future, and the known impact wild meat consumption is having on wildlife populations, it is surprising urban demand has not received more attention from the scientific community (McNamara et al. 2019), especially in West Africa. To address this, we conducted our research in the Republic of Guinea (hereafter Guinea), West Africa. According to the latest projections, urbanisation in Guinea is projected to increase by c. 49% from 2018 to 2050, with the number of people living in urban areas overtaking those in rural communities (UN 2018). Through a questionnaire-based study in three urban centres, we aimed to (1) understand meat (including wild-sourced) and fish consumption and purchase behaviour, and (2) understand demographic factors that influence urban wild meat consumer behaviour. Based on the current global literature of wild meat studies (listed in Appendix Table 1), we hypothesise that wild meat consumption rates will be lowest amongst Muslims, women and younger adults.

Materials and methods

Guinea is a multilingual country with over 40 languages spoken. The official language is Guinean French, a variant of European French, but most people also speak at least one indigenous language. National languages include Malinké, Kissi, Toma, Fula, and Kpelle (World Atlas 2025b). Over 89% of the national population identify as Muslim, nearly 7% as Christian, and the remaining are not religious (2.4%), animist (1.6%), or follow indigenous belief systems (0.1%) (PNUD 2022). We conducted our study in three urban centres in Guinea: Conakry, Faranah and Nzérékoré, chosen to represent urban centres of different population sizes, located in different parts of the country with different surrounding habitats (Figure 1). Conakry, the capital city located at the coast (population c.2.3 m; UN 2024), is the largest city in Guinea and is situated on a southwest peninsula. Like much of Guinea, the people of Conakry are predominantly Muslim, but ethnically diverse and 37% of the population speak Susu (Translators Without Borders 2025). Faranah is situated in savannah habitat in central Guinea, 446 km by road from Conakry. It is a large town with c.100,000–150,000 residents. The predominant ethic group is Malinké and most people identify as Muslim, with the majority of people (~44%) speaking Maninka (Translators Without Borders 2025). Faranah is situated near the Haut Niger National Park on a paved road previously documented as a trade hub for wild meat (Brugiere and Magassouba 2009). Faranah is known to have wild meat restaurants and a market (Duonamou et al. 2021). Nzérékoré is located in the tropical forest region in the far east of Guinea, 791 km by road from Conakry. It is a rapidly growing city (population > 230,000), and the second biggest city in Guinea. Christianity is more prevalent here than elsewhere in the country and the population is ethnically diverse, with many Maninka and Kpelle speakers. While there are no specific published wild meat studies in Nzérékoré, some research has looked at the hunters in nearby northern Liberia (Bene et al. 2013; Jones et al. 2019) and studies on zoonotic disease have referred to this prefecture (see Akoi Boré et al. 2024).

To collect data on the wild meat acquisition and purchasing behaviours of urban residents in Guinea, we designed and piloted a structured questionnaire using the KoBoToolbox (2018) which allowed us to work simultaneously in English and

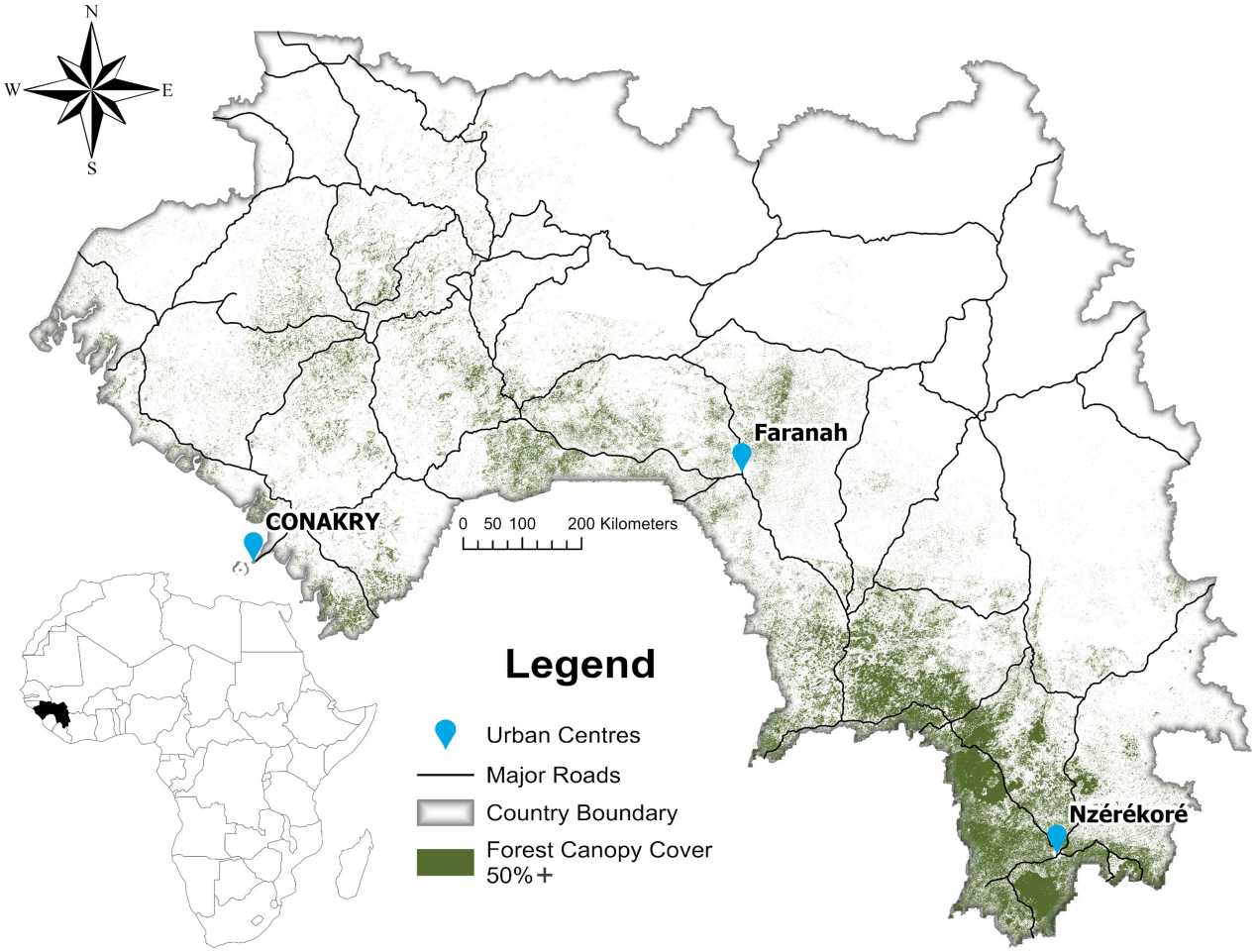

Figure 1. Urban centres where wild meat purchasing patterns were monitored in the Republic of Guinea: Conakry (the Capital city), Faranah and Nzérékoré. Forested areas with >50% canopy cover (Hansen et al. 2013), and major road networks (Tecsult 2009) are also displayed.

French. Questionnaires were designed to be delivered by local research assistants, who were recruited through the partner organisation NGO Guinée Ecologie (www.guineeecologie.net). We ran a training workshop in Conakry, from 15–19 November 2023. The workshop was attended by all of the project team, including eight research assistants and one research assistant team leader. During the workshop we collaboratively translated questions from English to French, then adapted them to suit Guinean French. Questions were co-designed to ensure they were locally relevant and meaningful. The research assistants conducted an *in-situ* pilot of the survey to ensure all questions held up to scrutiny, local context, and enumerator and respondent understanding. We assessed whether the item wording/sentiments matched the local context and the ways in which sentiments and emotions were expressed. This was intended to help reduce inadvertently under- or overestimating a particular phenomenon due to subtle differences in how people or cultures express themselves. Some questions were dropped or adapted/rephrased following the pilot. The final version of the questionnaire included 10 behaviour-related questions. One of the questions was in two parts where the first part was a screening question for the second part (Appendix Table 2).

The questionnaires captured categorical sociodemographic characteristics: Age group, Gender, Religion, and Income. The only question requiring a numeric response was '*Typically, on how many days per week do you buy meat or fish to feed your household?*'. We then focused on wild meat specifically. We used a series of closed-answer questions relating to respondent behaviour surrounding their habits when purchasing and consuming wild meat. For closed-answer questions, the respondents were given a list from which they responded '*Yes*' in the event the response option was applicable to them. Firstly, we asked the screening question '*Please select all the meat and fish you eat*'. Among typically consumed meat and fish options, this question also included '*Wild meat*' and '*None*' as potential response options. We then asked, '*Where do you most commonly eat wild meat outside your household?*' and '*In which ways do you acquire wild meat?*' This included an answer option '*I buy it in this*

town'. If the respondent chose this option, they were included in the analysis of '*Where do you most commonly purchase wild meat in this town?*'. We asked '*Typically, how frequently do you purchase wild meat?*'. This was the only question where a single response could be selected from a list of ordered categories (i.e. it was ordinal), and response options were ordered from '*Never*' to '*Once per week or more*'. We also asked, '*Do you participate in purchasing food for your household?*' where the respondent could answer '*Yes*' or '*No*'.

Research assistants collected data following a random stratified sampling process (Newing 2011). They worked concurrently across all urban quartiers/districts in Conakry, Faranah and Nzérékoré, for 2–3 days per quartier/district, before moving to the next. Research assistants worked in mixed-gender pairs, positioning themselves at several locations in each quartier/district such as near market exits or stations. Research assistants recruited respondents using the street-intercept method (Buschmann 2019), where research assistants approach pedestrians. This method avoids biases that could occur by undertaking household surveys, as people of all ages are active in these locations. Respondent selection was semi-random as the research assistants attempted to ensure a representative sample across demographic groups. Research assistants adjusted their sampling within districts as they went, to try and balance sampling across age groups and genders. The days of the week the survey took place was adjusted to the local context, and data collection took place five days per week between 1 December 2023 and 15 March 2024. Research assistants read questions to respondents and recorded their responses on the KoBoToolbox on Samsung Tab A7 Lite and Lenovo Tab M8 tablets. Questionnaires were conducted in French and local languages were also spoken to aid comprehension when necessary, and automatically coded into English in the KoBoToolbox. The questionnaires took c.30 minutes to complete (Appendix Table 2).

Ethics

Our study was assessed and approved by the School of Anthropology and Conservation Ethics Committee at the University of Kent (ID# 20231699525551535). In Guinea, we received a research permit from the Ministry of Environment and Sustainable Development (MEDD), and before starting any data collection, we were granted approval from the relevant city/town authorities. All surveys were conducted following the principles of Free, Prior, and Informed Consent. All respondents were over 18, deemed mentally fit to answer the questions and informed they could leave at any time or choose to not answer questions. Personally identifiable data was not collected. Research assistants worked five days a week over the study period and were paid for their time. To avoid bias, respondents were not paid for their participation.

Data analysis

We ran models separately for each city, which allowed for comprehension and limited the number of 2- and 3-way interactions in the model. Only data from respondents who stated they eat wild meat were included in the analysis. This resulted in different sample sizes for each demographic group in each location. Closed answer questions with responses '*Yes*' or '*No*' allowed for binomial data analysis on each of the response variables. In some cases, it was necessary to group some response categories to ensure sample sizes were large enough for comparable statistical analysis. For this reason, we grouped all non-Islamic religions (*Christian, Traditional, Indigenous, Animist and no religion*) as one category ('*non-Muslim*') and made the highest age category 46+ (containing all respondents aged 46–86+). It was also necessary to group the responses for the only ordinal response question '*Typically, how frequently do you purchase wild meat?*'. We reduced these buying frequency responses from seven categories ('*Never*', '*Once per year or less*', '*Every 6 months*', '*Every 2–3 months*', '*Once per month*', '*2–3 times per month*', '*Once per week or more*') to four ('*Every 2–3 months or less*', '*Once per month*', '*2–3 times per month*', '*Once per week or more*') (Appendix Table 3). All analyses were conducted using R version v4.4.1 (R Core Team 2024).

To understand whether respondents of different genders and religious identities acquired wild meat in different ways ('*In which ways do you acquire wild meat?*'), we ran chi-squared (χ^2) tests for the frequencies of '*Yes*' replies for each pair (male/female, Muslim/non-Muslim) of subgroups in each town. To avoid Type I errors, due to the number of hypotheses we tested, we used the Bonferroni Adjustment Method (Mundfrom et al. 2006). We only report χ^2 results that were significant after this adjustment and report adjusted *p*-values.

We used the questions '*Where do you most commonly eat wild meat outside your household?*' and '*Where do you most commonly purchase wild meat in this town?*' to visualise consumer behaviour in both eating and purchasing wild meat (Figure 2).

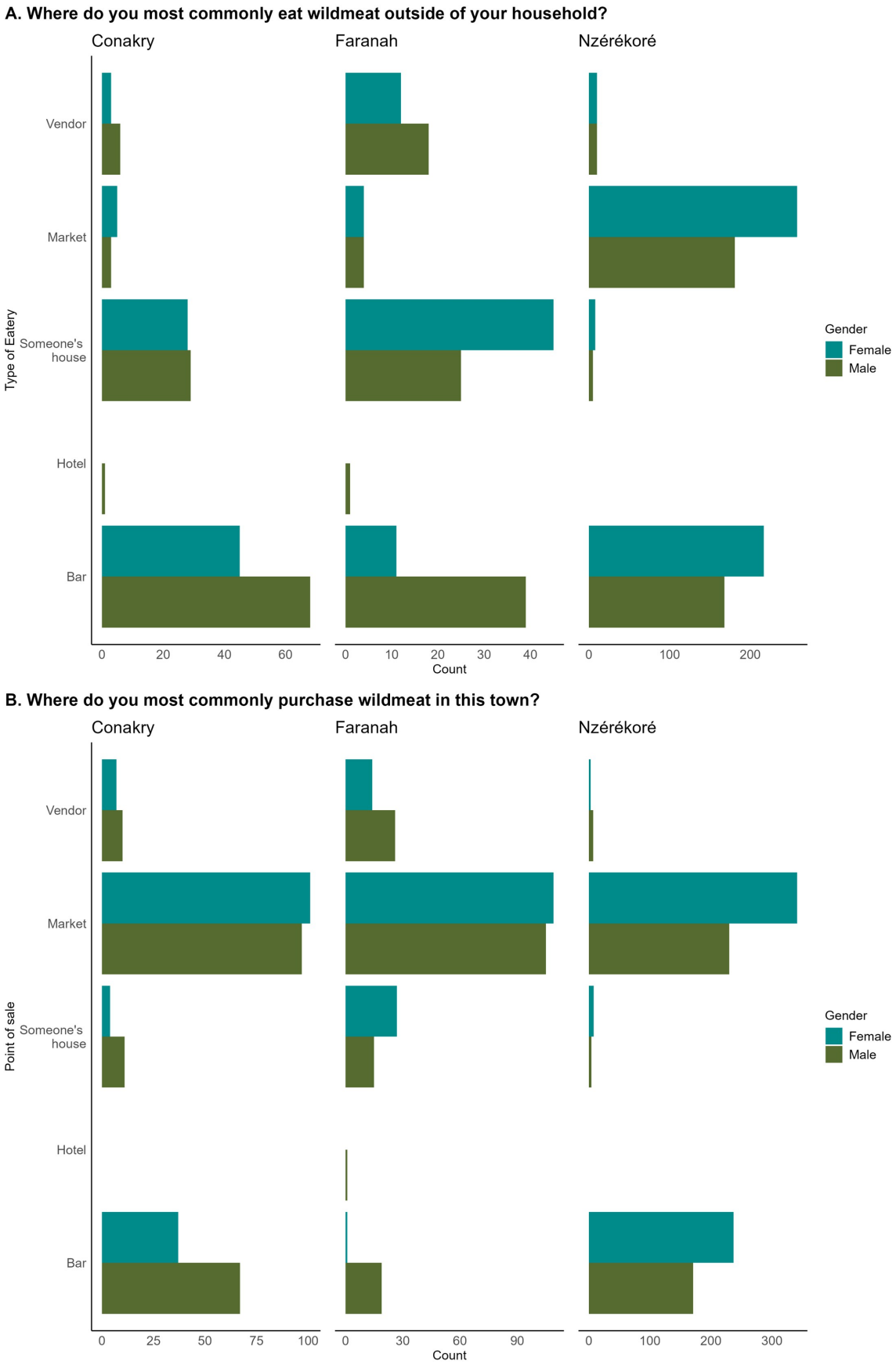

Figure 2. Frequency of yes responses of male and female participants who (A) eat wild meat at various types of eatery (n = 1,219 responses; respondents could choose multiple options) and (B) buy wild meat at various points of sale (n = 1,685 responses). Note the different scales on the rotated y axis at each urban centre. Vendor refers to an informal salesperson, whereas Market is a stall in a permanent marketplace. Note that this sample includes people who did not know their age (n = 43).

For this line of enquiry, we included all age groups. We later removed people who did not know their age from the sample when it was necessary to merge age groups for statistical analysis. For '*Where do you most commonly eat wild meat outside your household?*', the category with the most respondents was a restaurant/bar. For '*Where do you most commonly purchase wild meat in this town?*' we only included respondents who confirmed that they purchase wild meat in the survey town. The most frequently chosen response category for this question was Market. The frequency of '*Yes*' responses for these categories was used as the response variable and models were built using predictor variables, based on *a priori* hypotheses (Appendix Table 1). We chose Age, Gender and Religion for all models and an additional predictor of whether the respondent answered '*Yes*' to '*Do you participate in purchasing food for your household?*' (referred to as Youbuy in the model). These predictor variables and two-way interaction terms (Age*Gender, Age*Religion and Gender*Religion) between these predictors were used to build models for each town using a binomial distribution and 'logit' function running packages *tidyverse* (Wickham et al. 2019), *pak* (Csárdi and Hester 2024), *remotes* (Csárdi et al. 2024), *performance* (Lüdecke et al. 2021) and *arm* (Gelman and Su 2024). For age, we used the 18–25 age group as the reference group in Faranah and Nzérékoré, but in Conakry we used the 46+ age group as the reference group to improve the reliability of estimate comparisons because the 18–25 group was small.

To understand purchasing frequency, we asked '*Typically how frequently do you purchase wild meat?*'. We built models using the Ordered Stereotype Model (OSM) function osm() in the *clustord* package (Anderson 1984; McMillan et al. 2024) treating the response categories as ordinal. OSM is an alternative to the function polr() that overcomes problems when results fail the Brant test, which is used to assess whether the parallel regression assumption for ordinal logistic regression models has been met (Brant 1990). We used the same predictor variables (Age, Religion and Gender) and the same interactions (Age*Gender, Age*Religion and Religion*Gender) as in the GLMs. To ensure all models converged, when necessary, we changed the upper limit of number of iterations to 5000. We used the lowest AIC score, and Δi AIC < 4 (Burnham and Anderson 2004), to select the best-fitting model and then used phi parameter scores from the OSM output to check that our *a priori* merging of response variable categories was suitable. Additional R packages used in this analysis were *MASS* (Venables and Ripley 2002), *ggeffects* (Lüdecke 2018) and *effects* (Fox and Weisberg 2019).

Results

Across the three study sites, 2,935 respondents completed the questionnaire (1,526 respondents in Conakry, 732 in Faranah, and 677 in Nzérékoré; Table 1). In answer to '*Typically, on how many days per week do you buy meat or fish to feed your household?*' 2,290 respondents provided an answer. Of these, the majority ($n = 1{,}658$, 72.4%) claimed they bought meat or fish seven days a week. Only 24 (1.0%) respondents answered *zero days* to this question. In total, 1,458 respondents stated that they ate wild meat and were included in the analysis, after removing 14 respondents who did not know their age (Conakry $n = 482$ [31.6% of the number of respondents who completed the questionnaire in Conakry], Faranah $n = 373$ [51.0%], Nzérékoré $n = 603$ [89.1%]). Our analysis sample included a near 50:50 male-to-female ratio and 51.0% stated they were Muslim (Table 1). The majority of our respondents were self-employed (47.9%, $n = 699$), while the rest were either

Table 1. Demographic profile of respondents by urban centre, gender and religion.

	Full survey					Sample who eat wild meat				
	Conakry	Faranah	Nzérékoré	Total	%	Conakry	Faranah	Nzérékoré	Total	%
Muslim Female	656	263	151	1070	36.5	124	106	117	347	23.8
Muslim Male	655	245	143	1043	35.5	173	105	118	396	27.2
	1311	508	294	2113	72.0	297	211	235	743	51.0
Proportion %	44.7	17.3	10.0			40.0	28.4	31.6		
	85.9	69.4	43.4			61.6	56.6	39.0		
Non-Muslim Female	107	105	243	455	15.5	92	74	235	401	27.5
Non-Muslim Male	108	119	140	367	12.5	93	88	133	314	21.5
	215	224	383	822	28.0	185	162	368	715	49.0
Proportion %	7.3	7.6	13.0			25.9	22.7	51.5		
	14.1	30.6	56.6			38.4	43.4	61.0		
	1526	732	677	2935		482	373	603	1458	
	52.0	24.9	23.1			33.1	25.6	41.5		

Most proportions shown as percentages are out of the overall sample, but the proportions of non-Muslims in each urban centre are out of the sample in each urban centre.

unemployed (23.9%, $n = 348$), employed (16.7%, $n = 244$), or students (11.5%, $n = 167$). A large proportion of participants (53.1%, $n = 774$) preferred not to disclose their income, meaning once the data were split by location and category, we did not have sufficient responses for each income group to run meaningful analysis (Conakry $n =$ 64–116, Faranah $n = 10$–64, Nzérékoré $n = 16$–75). Of those who disclosed their income ($n = 684$), 37.3% ($n = 255$) earned less than 300,000GNF/month (US$34.77 [xe.com, 2024]), with only 13.2% ($n = 90$) earning over 1,500,000GNF/month (US$173.83 [xe.com, 2024]).

In response to the question '*In which ways do you acquire wild meat?*' 1,458 respondents provided an answer. Countrywide, most people said they bought wild meat in their town ($n = 1,208$, 82.9%) compared to buying it in a village/rural area ($n = 107$), being gifted it by people in the same town ($n = 92$) or village ($n = 156$), exchanging it in town ($n = 3$) or a village ($n = 4$), or hunting it ($n = 42$). In Conakry, significantly more Muslim respondents, than people of other religions, stated they were given wild meat by people in that town ($\chi^2 = 12.52$, $df = 1$, $p < 0.01$) or by people living in villages/rural areas ($\chi^2 = 27.71$, $df = 1$, $p < 0.01$). Significantly more Muslims in Conakry claimed to hunt animals for wild meat than respondents from other religious groups ($\chi^2 = 9.32$, $df = 1$, $p < 0.01$). In Nzérékoré, significantly fewer Muslims than other religions stated they buy wild meat in this town ($\chi^2 = 24.01$, $df = 1$, $p < 0.01$). Significantly more women than men in Nzérékoré responded '*Yes*' to '*I buy it in this town*' ($\chi^2 = 19.31$, $df = 1$, $p < 0.01$). No other results were significant after the Bonferroni adjustment.

When asked '*Where do you most commonly eat wild meat outside your household?*', across the urban centres, the majority of people said they ate wild meat in bars/restaurants (Figure 2(A)). Of note, 23.3% of women in Faranah who stated that they eat wild meat claimed to eat in someone else's house ($n = 42/180$ excluding those that did not know their age), while in Nzérékoré 73.0% said they eat wild meat at the market ($n = 257/352$) (percentages include respondents who did not know their age). However, these trends were not consistent across urban centres.

The best-fitting model of respondents that stated they eat wild meat in a bar, varied between urban centres (Table 2A). Our models show that in all three urban centres, non-Muslims were less likely to eat wild meat in bars/restaurants. In Conakry and Faranah, men were more likely than women to eat wild meat in these eateries. In Conakry and Nzérékoré, the best-fitting models contained an interaction which included Age; however, we found no trends that suggested whether people ate wild meat in bars/restaurants changed as they aged (see detailed statistics below).

There were no significant results from Conakry. In Faranah, men were significantly more likely to claim to eat in bars/restaurants than women ($\beta = 1.51$, CI: 2.24–0.79, $p = 0.00$). Also in Faranah, respondents aged 46+ were significantly less likely to claim to eat in a bar than 18–25 year olds ($\beta = -1.71$, CI:-0.51–2.92, $p = 0.00$), but no comparisons against 18–25 were statistically significant (although the effects were slightly negative as respondents got older). In Nzérékoré, those aged 26–35 were significantly less likely to claim to eat wild meat than the other age groups ($\beta = -0.71$, CI: −0.06- −1.35, $p = 0.03$). Non-Muslims were significantly less likely than Muslims to state that they eat in bars/restaurants ($\beta = -0.82$, CI: −0.24- −1.41, $p = 0.01$), with the exception of 26–35 and 46+ year old non-Muslims, who were significantly more likely to claim they eat in these types of eatery (non-Muslims aged 26–35: ($\beta = 1.55$, CI:2.39–0.71, $p = 0.00$), non-Muslims aged 46+: ($\beta = 1.50$, CI:2.52–0.47, $p = 0.00$)).

In answer to the question '*Where do you most commonly purchase wild meat in this town?*', the option with the highest frequency of positive responses across all urban centres was Market, and this response was used as the binary response variable for the subsequent models (Figure 2(B)). In all three urban centres, the simplest model for predicting

Table 2. The best-fitting logistic regression models with binomial distribution of yes responses at each urban centre for where respondents . most commonly eat wild meat in a bar/restaurant, and . purchase wild meat from a market.

Urban centre	Model formula	AIC	Δi
Conakry	eat_in_a_bar~age+religion+gender +age*gender	522.76	7.68
Faranah	eat_in_a_bar~age+religion+gender	276.73	1.34
Nzérékoré	eat_in_a_bar~age+religion+gender +age*religion	788.55	9.78
Conakry	buy_from_a_market~age+religion +gender+youbuy	366.92	0.61
Faranah	buy_from_a_market~age+religion +gender+youbuy	335.62	0.44
Nzérékoré	buy_from_a_market~age+religion +gender+youbuy	114.42	2.95

Youbuy refers to a variable of whether the respondent is responsible for the household food shop.

whether people buy wild meat from markets was the best fitting: Age, Religion, Gender and whether the respondent is responsible for the household food shop (Table 2B). However, different demographics behaved differently across urban centres.

In Conakry, no age groups were significantly more or less likely to claim to buy from a market compared to 18–25 year olds. Non-Muslims were significantly more likely to claim they buy from markets than Muslims (β = 1.86, CI: 2.40–1.32, $p = 0.00$). Respondents who buy meat for their household were significantly more likely to state they go to the market for wild meat than people who were not the primary food shopper (β = 0.72, CI:1.36–0.07, $p = 0.03$).

In Faranah, respondents aged 36–45 were significantly more likely to state they shop in markets (β = 0.94, CI: 1.75–0.12, $p = 0.02$) than those aged 18–25, and there was weak evidence of this also being true for 46+ year olds (β = 0.85, CI:1.74- −0.04, $p = 0.06$). Non-Muslims were significantly less likely to shop in markets than Muslims (β = −1.87, CI:-1.32- −2.42, $p = 0.00$). Although not statistically significant, respondents who purchase the food for their household tended to state they were more likely to buy wild meat from a market than respondents that do not have this responsibility (β = 2.08, CI:4.36- −0.20, $p = 0.07$).

In Nzérékoré, the only significant finding was that men were less likely to buy from markets than women (β = −1.51, CI: 0.99–2.00, $p = 0.05$). There were trends towards all age groups being less likely than 18–25 year olds to buy from markets, however the only age group for which this was approaching significance was 36–45 years (β = −1.60, CI: 0.14- −3.33, $p = 0.07$).

In response to '*Typically how frequently do you purchase wild meat?*' we found people claimed to purchase wild meat more frequently (at least 2–3 times a month) in Faranah (n = 261/335, 77.9% of respondents who stated they buy wild meat, excluding those who did not know their age) compared to Nzérékoré (n = 259/587, 44.1%) and Conakry (n = 123/337, 36.5%). The simplest model including Age, Religion, and Gender was found to be the best fitting for each urban centre. We found religious identity to have the strongest differences in all three urban centres. Non-Muslims stated they bought wild meat significantly more frequently than Muslims, with a greater effect size in Conakry ($\beta = 2.08$, SE = 0.26, p = 3.48e-15) and Nzérékoré (β = 2.26, SE = 0.56, p = 6.04e-06) compared to Faranah (β = 1.11, SE = 0.40, $p = 0.01$) (Figure 3).

We found inconsistent effects of gender across the urban centres. In Nzérékoré (β = 0.64, SE = 0.30, t = 2.22, $p = 0.03$), men claimed to purchase wild meat significantly more frequently than women claimed. However, there was no significant difference between genders in Faranah (β = −0.20, SE = 0.30, $p = 0.51$) and Conakry ($\beta = 0.27$, SE = 0.23, $p = 0.24$) (Figure 4).

Age was not a strong predictor of purchasing frequency across urban centres. The only significant result was in Nzérékoré where respondents aged 36–45 bought wild meat significantly more often than 18–25 year olds (β = 1.04, SE = 0.40, $t = 2.60$, p = 9.60e-03) (Table 3).

Discussion

We aimed to understand wild meat consumption and purchase behaviour in three urban centres in Guinea and identify demographic factors that influence these behaviours. Nationwide, bars/restaurants (hereafter bars) were important eateries for wild meat, but we found differences between urban centres. The consumption of wild meat at other people's houses was more important in Conakry and Faranah than Nzérékoré. This was particularly apparent for women in Faranah, suggesting wild meat potentially performs an important social function for this group. In Nzérékoré, markets and bars are important eateries for women. Markets were the most utilised point of sale for wild meat across Guinea, followed by bars, particularly in Conakry and Nzérékoré. In Nzérékoré, women claimed to buy wild meat from bars more often than men. While Nzérékoré had the greatest proportion of respondents that claimed to eat wild meat, the stated wild meat purchasing frequency across the country was polarised. Respondents, irrespective of their religion or gender, claimed they either never/rarely bought wild meat, or bought it at high frequencies. Participants claimed they purchased wild meat most frequently in the smallest urban centre, Faranah, and the least frequently, in the coastal capital Conakry. This may be because residents likely have greater access to fish and imported meats in the capital, where these proteins may be cheaper than wild meat. Religion had a strong effect on all best fitting models. According to their responses, people who do not identify as Muslim buy and eat more wild meat than those that do. It is possible that this result may reflect a difference in social desirability bias (Ibbett et al. 2021) between the different religious groups. For example, there may be no social pressures or restrictions on non-Muslim participants when admitting to a stranger that they consume wild meat, whereas Muslims may feel shame or fear of recrimination by society if they admit to consuming haram meats. We mitigated for this bias by only including participants who claimed to eat wild meat and by not distinguishing between types of wild meat, as some wild meats are haram. Nevertheless, we consider that some respondents may claim they eat less wild meat than the

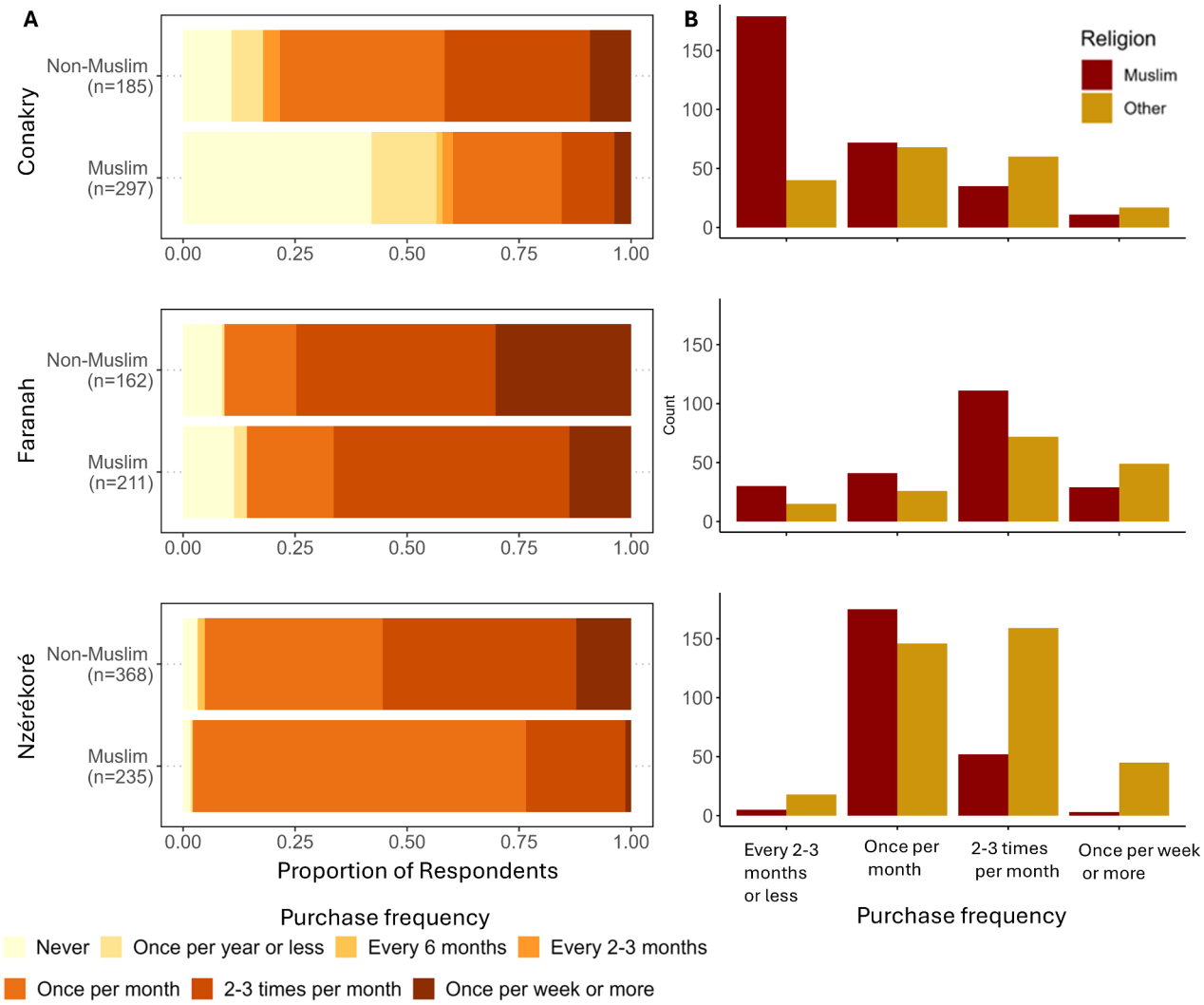

Figure 3. (A) Proportional wild meat purchase frequency of respondents from different religious groups in Conakry, Faranah and Nzérékoré. (B) Purchase frequency based on *a priori* categories of different religious groups in each urban centre.

actual quantities consumed. We did not find any countrywide patterns relating to gender or age.

The importance of markets as wild meat trade hubs reflects other studies. Anstey (1991) in Monrovia, Liberia found c. 76–88% of wild meat purchases were from markets. In Río Muni, Equatorial Guinea (East et al. 2005), Yaoundé, Cameroon (Edderai and Dame 2006) and Pointe Noire, Brazzaville and Kinshasa in the Congo Basin (Wright 2018; Wright et al. 2022), the majority of wild meat in urban areas is consumed at home. Wright et al. (2022) report a variety of urban wild meat outlets are available in Brazzaville and Kinshasa, targeting different consumer groups. These can range from high-end hotels for wealthier urbanites to simple outdoor stalls. The diversity of these eateries means urban wild meat is available to most budgets (van Vliet et al. 2011). According to our data, one third of people in Conakry (population c. 2.3 m [UN 2024]) consume wild meat. If the consumption rate of those people was only 1 kg once or twice a year, c.759–1,518 tonnes of wild meat would be consumed annually in Conakry.

The sociodemographic variable with the strongest effect, in all best fitting models, was religion. We interpret our findings relating to religion as broad correlations, recognising that different branches of religions have different teachings, and that correlation does not equal causation. We found that where people acquire wild meat varied among people of different religions and across urban centres. Non-Muslim respondents bought wild meat significantly more frequently than Muslims, particularly in Conakry and Nzérékoré. The religious demographic of our sample reflects that of the wider population, with the majority of people in Conakry and Faranah ascribing to Islam, whereas in Nzérékoré around half the population are Christian. Across the three cities, we found Muslim respondents were more likely to claim they eat wild meat in bars, than people from other religions. One explanation for this may be found in research conducted in Faranah. Previous studies have indicated that in Faranah, when some Muslims consume meat

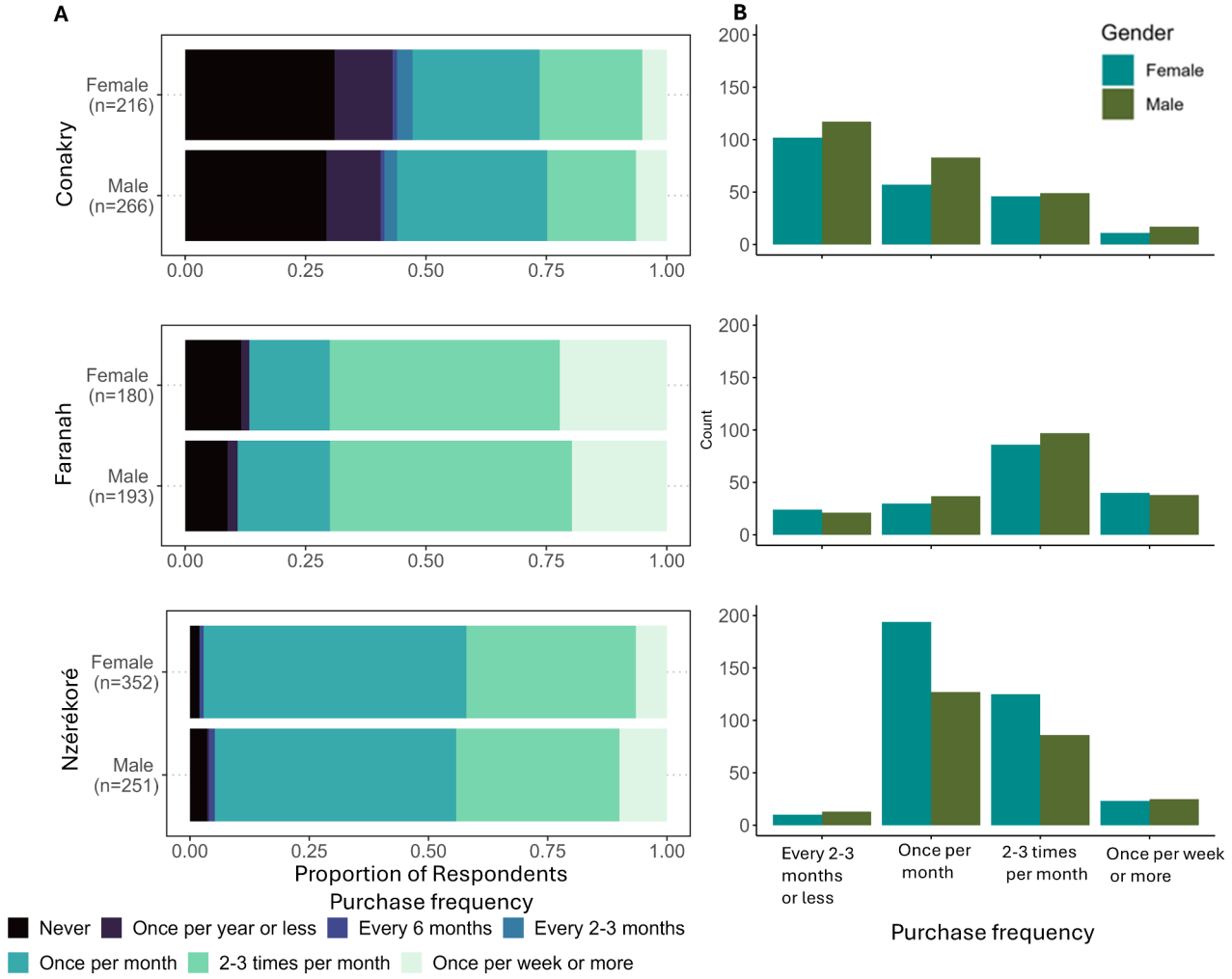

Figure 4. (A) Purchasing frequency of male and female respondents in Conakry, Faranah and Nzérékoré. (B) Purchase frequency based on*a priori* simplified categories for genders. Note that in (B) Nzérékoré, it appears women buy meat significantly more than men which contradicts the OSM finding that men purchased wild meat significantly more frequently than women. This is because the "*once per month*" bars depict infrequent purchases. Therefore, more women make infrequent purchases than men, meaning men buy wild meat more frequently than women.

Table 3. OSM model output for wild meat purchasing frequency of different ages across the three study sites in the Republic of Guinea.

Urban Centre	Age	ß	SE	*T*	*P*	*N*
Conakry†	18–25	−0.17	0.44	−0.39	0.69	41
	26–35	−0.50	0.30	−1.65	0.10	104
	36–45	−0.01	0.29	−0.05	0.96	123
	46+	–	–	–	–	214
Faranah	*18–25*	–	–	–	–	70
	26–35	−0.48	0.39	−1.22	0.22	133
	36–45	−0.33	0.42	−0.79	0.43	98
	46+	−0.64	0.51	−1.26	0.21	72
Nzérékoré	*18–25*	–	–	–	–	212
	26–35	0.59	0.33	1.77	0.08	189
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	46+	0.56	0.37	1.50	0.14	111

†due to the small sample size for 18–25s we changed the reference category to 46+ for this model. Reference category for each model is depicted in italics.
Bold text to depict significance.

in a bar/restaurant, they are more relaxed about their religious limitations/consumption taboos and do not always ask what animal the meat is from i.e. they will consume any meat in these public eateries, but are stricter at home (Konate A, personal communication, 2015). In Conakry, we found more Muslims either hunted or were given wild meat by people from Conakry or villages/rural areas, than non-Muslims, although we note that the sample of urban residents who stated they hunt was very small.

Differing religious doctrines may explain the higher consumption rates among non-Muslim respondents. Broadly speaking, Christian teaching, for example, dictates that humans are separate from and dominant over nature, natural resources are provided by God, and therefore supply is protected by God (Gifford 2014; Bachmann et al. 2019). This has seen Christianity superseding traditional cultural norms alongside the erosion of traditional hunting/consumption taboos that previously restricted or prohibited the use of some species (Luzar et al. 2012; Knoop et al. 2020; Supit et al. 2021). Islam, on the other hand, teaches that Allah created humans as part of a holistic system for which they are responsible (Gifford 2014). In Islam, it is also required that animals are killed and prepared to *halal* (permitted) specifications. Wild meat hunting in Guinea increasingly involves the use of guns (Duonamou et al. 2021), as elsewhere across West and Central Africa (Ingram et al. 2025), however if the animal dies instantly (by trap or gun) it is *haram* to consume it's flesh (Njiforti 1996). Our finding that Muslims in Conakry hunted or were gifted wild meat (at low prevalence), may be due to the assurance of its source. By killing the animals themselves, or having meat gifted by a trusted party, it allows the consumer to be certain of the species and that it was killed according to halal stipulations. However, it is important to note that *haram* stipulations may only apply to consumption, and not extend to the killing or sale of meat, as Bonwitt et al. (2017) found in Sierra Leone. In Faranah, Duonamou et al. (2021) found religious taboos surrounding the killing and consumption of red river hog (*Potamochoerus porcus*) by Muslims were weakening. Muslims typically will not eat the meat of this species; however, there are examples where Muslims kill these crop raiding animals and trade/offer the meat to non-Muslims (Duonamou et al. 2021). Urban markets offer opportunities to benefit financially from the sale of meat to non-Muslim consumers. Indeed, our results align with those of Bangoura et al. (2025), who found that the prevalence of wild meat consumption was lower among Muslims respondents.

We found little difference in the consumptive behaviours between women and men across the urban centres. This is not typical of findings from other urban environments in Central Africa. We offer four explanations why we did not find differences in consumption patterns between men and women in our study. Firstly, to our knowledge, our study has a typically larger number of participants in a survey of urban wild meat consumers, so it may be as straightforward as a reduced sampling effect. Secondly, it is possible that as Guinea sees an increase in urbanisation, we may be seeing a narrowing of the differences between the roles typically played by genders, as is currently taking place in other parts of West Africa (i.e. Nigeria) as women's lifestyles, particularly of the younger generation, become more comparable to men (Luiselli et al. 2019). Thirdly, women play a pivotal role in trading wild meat (Willis Key et al. 2025). In urban Africa, wild meat is predominantly traded by women either in markets or restaurants (Bachmann et al. 2019; Jones et al. 2019; Randolph et al. 2022; Wright et al. 2022). This may explain why women eat in markets and bars in Nzérékoré. Finally, it is often women who purchase food for the household, as we found in Faranah and Nzérékoré, so there is a high likelihood that the family eat the same foods together.

We found no influence of age on wild meat consumption, meaning people are not claiming they consume more or less wild meat as they get older, nor are we seeing a generational shift in consumption patterns. An explanation for our result might be a dichotomy between urban migrants (maintaining rural wild meat consumption habits) and urban-born people (with lower wild meat consumption habits), thus potentially diluting the effect of age. Future studies could investigate this hypothesis.

Rural communities often have limited access to animal protein beyond wild meat, whereas alternatives, such as domestic meat or fish, are typically available in urban areas. Nevertheless, urbanisation does not guarantee food security. In contrast to rural livelihoods, access to food in urban areas is governed by a market economy, with low resilience to shocks and little room for diversification (Bachmann et al. 2019). Although food availability is high in urban areas, access is restricted to those with the financial means to purchase groceries. This can result in food or nutritional insecurity for households living on low incomes (Garekae and Shackleton 2020; Chaves et al. 2024). This was evident in South Africa, 2017, where 63% of households living with hunger were in urban areas and, for many, over 50% of their monthly household expenditure went on food (Garekae and Shackleton 2020). As urban expansion continues, social inequalities are expected to increase. Without hunting opportunities or access to land to absorb environmental or financial shocks, it is likely hunger in urban areas will also rise (Sneyd 2016; Barthel et al. 2019). This may impact wild meat consumption in two ways. Poorer households may become more reliant on cheaper imported domestic meats as they become priced out of even the cheapest wild meat species, e.g. cane rats (*Thryonomys sp.*) and porcupine (*Atherurus sp.*). At the same time, the consumption of wild meat could accelerate as consumer demand is driven by wealthy urbanites. This could see an increase in both wild meat consumption in general and demand for the more prestigious meats with a higher retail value (Brashares et al. 2011; Bachmann et al. 2020). Shortly after our study was conducted

(2023–4), we note that Guinea started to experience political and economic uncertainty (ISS 2025), which may similarly have impacts on urban-rural migration trends, income, and diets including the consumption of wild meat.

The greatest consumers of wild meat were the minority non-Muslim population, suggesting that initiatives designed to improve the sustainability of wild meat use may want to engage with this group. A possible approach could be to work with the church to contextualise wild meat into existing Christian teachings on good stewardship. Pope Francis was influential in these teachings in his encyclical On Care for Our Common Home (Chan et al. 2016). Here, he wrote of the failing of humanity to act as 'caretakers' and that due to human activities, plant and animal extinctions mean 'thousands of species will no longer give glory to God' (Francis 2016). These progressive teachings steer away from the belief that all God's creatures are for use, and rather emphasise the importance of being a good neighbour and a steward of God's creations (Mcleod and Palmer 2015). Another avenue may be to tackle this issue indirectly through Christian leaders teachings (Supit et al. 2021). In Cameroon, Simo et al. (2024) found that, among urbanites that consume wild meat, the most trusted messengers were religious leaders and teachers. Thus, engaging with the Christianity-based church is likely to be important in reducing urban wild meat consumption in this region, in circumstances where it is deemed unsustainable and/or illegal.

Nationally, we found that women have similar eating habits to men, so demand reduction efforts should not focus on a single gender. We also found no clear trend across age groups, which is concerning as it suggests that wild meat purchasing and consumption may not simply reduce steadily over time. It also means that age may not be a useful grouping factor for targeting initiatives. However, our finding that the majority of people ate in bars does offer an opportunity to reduce consumption. Where deemed unsustainable and/or illegal, approaches could include demand reduction/supply alternatives campaigns (e.g. Chaves et al. 2018; Cisse et al. 2025), engaging with restauranteurs (e.g. Wright et al. 2022), or enforcement (where species are sold illegally), although alternative economic opportunities may be needed for those whose income is reliant on selling wild meat in bars.

Reducing demand for wild meat can have unintended consequences for public health and the environment. A decrease in wild meat consumption may cause an increase in unhealthy alternatives, such as ultra-processed foods high in salt and saturated fats, and known to increase the risk of cancers (Chaves et al. 2024). Domestic livestock rearing is well documented to cause widespread habitat loss and contribute to greenhouse gas emissions (Pendrill et al. 2022). Therefore, demand reduction alone is not sufficient to reduce wild meat consumption sustainably. Management strategies need to incorporate sustainable alternatives. One option could be to support urban households establish mini-livestock opportunities such as small-scale rabbit, cane rat, chicken, or insect production or adopt more plant based proteins into their diets. This type of scheme has seen success in East Africa and Asia (Jori et al. 2005; Durst and Hanboonsong 2015; Johnson et al. 2024) and requires minimal input whilst offering food security for urban households. However, it is important to note that animals are not inherently interchangeable in food cultures.

Conclusion

Guinea, alongside the rest of Africa, is predicted to see a rapid increase in urbanisation. Compared to rural residents, urban residents are generally better educated, wealthier and exposed to influences from the media, technology and a market economy. This is likely to cause an increase in consumption generally, and possibly a higher demand for wild meat. Responding to increases in demand is vital for the conservation of wildlife populations and human food security, before wildlife is depleted. Our work directly contributes and builds on understanding the dynamics of urban wild meat consumption. Our findings and management recommendations are directly relevant to policy makers for Target 5 of the Convention on Biological Diversity (i.e. ensure sustainable, safe and legal harvesting and trade of wild species). Further our work supports the United National Sustainable Development Goals, particularly goals 2 (Zero Hunger), 5 (Gender Equality), 11 (Sustainable Cities and Communities) and 15 (Life on Land) (UN 2025) (Appendix Figure 1).

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Data availability statement

Anonymised data is available in the Kent Data Repository https://data.kent.ac.uk/id/eprint/621.

Use of artificial intelligence statement

ChatGPT – GPT-4o was used to improve code writing and troubleshoot issues when using R.

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