



Convention on Biological Diversity

Distr.
GENERAL

CBD/SBSTTA/23/INF/21
25 November 2019

ENGLISH ONLY

SUBSIDIARY BODY ON SCIENTIFIC, TECHNICAL AND TECHNOLOGICAL ADVICE

Twenty-third meeting

Montreal, Canada, 25-29 November 2019

Item 6 of the provisional agenda*

WHY EAT WILD MEAT? PRELIMINARY FINDINGS FROM A LITERATURE REVIEW ON KEY DRIVERS OF WILD MEAT AS A FOOD CHOICE

Note by the Executive Secretary

1. The Executive Secretary circulates herewith, for the information of participants in the twenty-third meeting of the Subsidiary Body on Scientific, Technical and Technological Advice, an in-depth report entitled “Why eat wild meat? Preliminary findings from a literature review on key drivers of wild meat as a food choice”, produced by International Institute for Environment and Development (IIED).
2. The report supports the work of the Convention on Biological Diversity, in particular with regard to paragraph 8 of decision 14/7, in which the Executive Secretary was requested to compile the submissions on the consideration of the voluntary guidance for a sustainable wild meat sector and make them available through the clearing-house mechanism. It is also relevant to paragraph 9 (c), in which the Executive Secretary was requested, in collaboration with other members of the Collaborative Partnership on Sustainable Wildlife Management, subject to the availability of resources, to further evaluate multidisciplinary approaches to combining better knowledge of the use of and trade in wildlife, taking into account the knowledge, innovations and practices of indigenous peoples and local communities and livelihood alternatives for the customary sustainable use of wildlife, possibly including an understanding of the taxonomy and ecology of the species involved, a review and strengthening of legal frameworks, the identification and promotion of best practices for sustainably managing and using wildlife, and an examination of the provisions of food and livelihood alternatives relating to customary sustainable use of wildlife through, among other things, a review of existing activities relating to the Partnership.
3. The report is presented in the form and language in which it was received by the Secretariat.

* [CBD/SBSTTA/23/1](#).



WHY EAT WILD MEAT?

Preliminary findings from a literature review on key drivers of wild meat as a food choice

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November 2019

This literature review was conducted as part of the project *Why Eat Wild Meat? Understanding food preferences to inform effective alternatives to bushmeat consumption* funded by the UK Government's Darwin Initiative. The views expressed do not necessarily reflect those of the UK Government. **The review will be further updated and refined as the project progresses and a final version will be published on the project website www.iied.org/why-eat-wild-meat.** The project focusses on Dja Faunal Reserve in Cameroon and is led by IIED (www.iied.org) in collaboration with the University of Oxford's Interdisciplinary Centre for Conservation Science (ICCS) (www.iccs.org.uk), Living Earth (www.livingearth.ltd) and Fondation Camerounaise de la Terra Vivante (FCTV) (www.fctvcameroon.org). For more details please contact Francesca Booker (francesca.booker@iied.org)



Introduction

Hunting of wildlife for meat is widely practiced across countries of Sub-Saharan Africa (SSA) - the scale of wild meat use in the Congo Basin alone was estimated in 2002 at five million tonnes a year (Fa et al 2002). Such figures are concerning as they represent extraction rates that are estimated to be almost 50% higher than annual production (Fa et al 2002). As such, wildmeat hunting has been viewed as a conservation issue posing great risk to biodiversity.

In the early 2000s, the narrative shifted somewhat, as researchers and policymakers recognised that wild meat is a significant source of macronutrients (eg protein and fat) and micronutrients (eg iron and zinc) for millions of people and the loss of associated biodiversity represents a food security issue. In particular, researchers highlighted that the direct costs of biodiversity loss from overexploitation will fall disproportionately on rural people in SSA. Rural families in SSA typically have had limited affordable alternatives to wild meat (Bennet 2002, Brown and Williams 2003, Milner-Gulland & Bennett, 2003), living in countries which were reliant on wild-sourced meat to meet protein needs (Fa et al 2003), with limited investment and infrastructure in domestic, livestock-based protein sources.

In response to conservation and food security concerns, many NGOs and government bodies have undertaken projects to reduce wild meat hunting. These have included providing *livelihood alternatives* for hunters (such as new crops or farming techniques) and *alternative protein* sources to rural consumers (through fish, livestock or captive-bred wild species). Evidence of the impact of these projects is limited, but anecdotally IIED and colleagues have heard from many practitioners and researchers who suggest that both livelihoods and alternative protein projects are failing to fully achieve their conservation and/or food security objectives.

Focussing particularly on *alternative protein* projects, one reason why they may not be achieving their objectives could be because they are not fully appreciating the underlying reasons that drive people to actively choose to eat wild meat. The implicit assumption may be that wild meat can be replaced by other forms of animal protein if it is comparable in price and

easily available. However, other motivations may also be important, such as taste, cultural importance, and health benefits. This review explores the current state of the literature on this issue.

Methodology

We undertook a keyword driven search of published literature to understand existing evidence on the drivers of wild meat as a food choice. Research in the Amazon has suggested that in urban areas human beliefs, attitudes, and social norms are key to understanding wild meat consumption and preference and can be a stronger predictor of consumption and preference than economic factors (Morsello et al 2015). This rapid review of the literature focused on whether the same might be true in SSA, and to what extent the underlying reasons for wild meat as a food choice are understood. We searched for reasons including availability, affordability, taste and culture, as well as socio-cultural characteristics affecting choice, such as age or gender.

Our searches for evidence were undertaken using the bibliographic database Scopus and search engine Google Scholar in April 2019. The key words are detailed in Appendix 1. We applied all the search terms in one search string to Scopus and produced over 1,800 search results which we then reviewed for inclusion based on the relevance of the titles, then abstracts and then full texts. We applied the keywords to Google Scholar's search engine, though we only reviewed the first 100 results for inclusion based on the relevance of the titles, then abstracts and then full texts.

Additionally, we put out calls for evidence and case studies through the Poverty and Conservation Learning Group, the IUCN Sustainable Use and Livelihoods (SULi) Specialist Group, personal contacts and social media. These calls were used to find additional reports/papers not showing up in the main searches, though we did not identify any additional papers. Finally, we also searched the websites of well-known organisations leading research on wild meat in SSA including IUCN, CIFOR, CIRAD and the FAO for relevant literature.

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We included any peer reviewed or grey literature that *described* or *assessed* drivers of wild meat hunting as they relate to people's food choice preferences (eg culture, health, nutrition, taste). We deliberately made our inclusion criteria broad to ensure we captured as much existing knowledge as possible. Between April 2019 to December 2020, we monitored newly published literature relevant to this evidence review by following the Poverty and Conservation Learning Group's Research Digest and the IUCN SULi Research Digest , which are issued monthly.

Results

1. Overview of studies identified

We were surprised at the limited number of relevant studies we were able to find. There is a large literature on wild meat in general but our findings reflect the limited focus to date on drivers of wild meat consumption. We found many references to culture and taste in the literature, but few studies had actually undertaken a specific analysis of these factors as drivers of food choice, particularly in rural contexts. The most quantifiable studies related to availability and affordability of wild meat but, this might simply be a reflection of the fact that these are tangible, measurable factors. For example, wild meat is often the most accessible source of protein for sustenance in tropical forest conditions (characterised by low productivity of domestic livestock and barriers to investment in livestock husbandry; Fa *et al* 2016). The roles of other drivers such as taste preferences, tradition, religion and culture are less tangible, and overall, we found limited literature that interrogated the role of these factors. Typically, where they were considered, it was not the primary objective of the research, unlike the research that has interrogated the influence of availability and affordability.

Often, we found instances where researchers inferred or hypothesised about the role of taste or culture, tradition and religion rather than producing evidence to support it directly. An illustrative example is the higher price of smoked meat at an urban market in Ghana, which the authors hypothesised could be due to a mixture of factors including taste preferences, and higher travel and processing costs (Cowlshaw *et al* 2003). A second example involves the existence of two specialised wild meat markets located at a distance from markets selling domestic meats in urban Gabon, which the authors suggested could indicate that people are willing to travel long distances to purchase wild meat, and inferred that wild meat may be valued for reasons that are not strictly limited to economic ones (Bachand *et al* 2015).

There were some suggestions in the literature that the effect of taste as a driver of food choice may be exaggerated, and that in African countries other factors such as familiarity, tradition

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and prestige are likely to play a more important role – particularly in urban contexts (eg Schenck *et al* 2006).

Overall the literature highlighted the following key drivers of wild meat as a food choice:

- *availability or affordability – particularly in rural areas*
- *taste – particularly in urban contexts*
- *particular species preferences (for various reasons)*
- *culture*
- *human wildlife conflict*

It is important to emphasise that the findings presented here are just a reflection of what has been written about in the literature. Further verification would be needed to determine if these are the actual drivers. Fieldwork conducted by the *Why Eat Wild Meat?* in Cameroon will assess the drivers based on community perspectives and behaviour at the Dja Reserve in Cameroon which will provide further insights into the degree to which the literature reflects reality on the ground.

2. Key findings from the literature on each driver

2.1 Availability and affordability

Findings were often specific to rural contexts and availability was often measured in terms of distance to a protected area.

In four studies, wild meat consumption was greater in areas closer to harvestable wildlife populations (eg a protected area; Foerster *et al* 2012, Mgawe *et al* 2012, Mwakatobe *et al* 2012, Luiselli *et al* 2019). In one of these studies, from rural Gabon (Foerster *et al* 2012), the researchers found that the likelihood of a species being consumed was correlated with households' distance to the nearest park boundary and also with land-cover type; local variation in land cover can determine the composition and quantity of bushmeat consumed. Another of the studies, focused on households around the Serengeti National Park, Tanzania,

found that the species consumed depended on location, habitat type and availability in markets (Mwakatobe et al 2012).

Other studies have found, however, that proximity to harvestable species is not the only important factor. For example a study at the Ugalla Game Reserve (Tanzania) found that while generally there was a higher frequency of wild meat consumption in villages closer to the reserve, there was considerable variation between villages that could not be fully explained by availability – as measured by distance from the reserve (Wilfred and Maccoll 2015). Similar results have been observed elsewhere, for example in the Kahuzi–Biega National Park and Itombwe Nature Reserve (Democratic Republic of Congo). Here, researchers found that motivations for consumption varied between localities; at Itombwe and Lulingu respondents mostly consumed wild meat because of its availability, at Bunyakiri mainly because of taste preferences, and at Nzovu mostly because it was cheaper than domestic meat (Spira *et al* 2017). In another study in rural Tanzania, the researchers found that consumption of wild meat and species preferences was primarily explained by availability, but that traditional beliefs and religious affiliations also had an important influence (Ceppi and Nielsen 2014) – a finding supported by other studies (McNamara et al 2016; Mavah et al 2018).

In the urban market of Bata city, Rio Mundi (Equatorial Guinea) researchers found a correlation between species preference and availability of individual species and concluded that it is likely that there is strong feedback between these two factors (East *et al* 2005, Kümpel *et al* 2006). This association has been observed in rural contexts too; for example, in the north-west Lebialem division of rural Cameroon, authors found that the tastiest species tended to be those that were available; species such as porcupine, guenon and blue duiker were all listed among the most abundant and all ranked highly according to taste (Wright and Priston 2010). A further study at Serengeti National (Tanzania) also suggests a relationship between availability and preference – the authors found that consumer preference for species is largely driven by taste, but that preferences can change because of availability, as rural consumers shift their preferences during food insecurity (Ndibalema and Songorwa 2008).

A large-scale, comparative analysis using survey data from urban and rural areas in seven countries of SSA (Botswana, Kenya, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe) found that in all but one rural area, affordability was the main reason why rural households consumed wild meat. They found that in rural contexts wild meat was 129% cheaper in Kenya, 75% cheaper in Zimbabwe and 30% cheaper in Botswana, than domestic meat (Barnett 1997). Similarly, researchers studying the Tarangire-Manyara ecosystem (Tanzania) also found that wild meat was half the cost of meat from domestic animals. The authors concluded that wild meat consumption was largely driven by its availability and low cost, and only to a small degree by cultural differences (Kiffner *et al* 2015).

2.2 Taste

Out of 26 papers that noted taste as a driver of food choice, only six provided detailed insights as to whether this was a primary driver (Ladele *et al* 1996, East *et al* 2005, Kümpel *et al* 2006,2010, Schenck *et al* 2006, Mwakatobe *et al* 2012 and Chausson *et al* 2019). This reflects the findings of a similar literature review focusing on wild meat consumption in urban areas that also highlighted limited inquiry into the influence of taste preferences (van Vliet and Mbazza 2011).

Generally, we identified more literature focusing on the role of taste in urban contexts than in rural areas. In rural settings, wild meat demand is often linked in the literature to availability and affordability. Although taste may not be the primary factor driving wild meat demand in rural areas, it does appear to be an important contributor. For example, a study using participatory cognitive mapping to develop community models of the drivers of wild meat demand around the Serengeti National Park (Tanzania) found that while there was homogeneity in local people's perceptions of the main drivers of wild meat demand (e.g. low income, scarcity of food crops), there was heterogeneity in the perceptions of secondary drivers. This included cultural and taste preferences for wild meat and beliefs that wild meat is organic and a healthier alternative to domestic protein alternatives (Nyaki *et al* 2014).

We identified three additional studies that suggested taste was an important secondary contributor to wild meat demand in rural areas. A study in Kahuzi–Biega National Park and

Itombwe Nature Reserve (Democratic Republic of Congo) found that, while the main motivation to consume wild meat over domestic alternatives was availability (68% of n=727), taste was also an important driver (57% of n=727), followed by cost (23% of n=727; Spira *et al* 2017). At Save Valley Conservancy in Zimbabwe, researchers found that 75% of buyers (total buyers n=391) preferred wild meat over meat from domestic animals because it was cheaper (69%), tastier (50%) and added variety (13%; Lindsey *et al* 2011). Likewise, at Serengeti National Park (Tanzania), while consumption of wild meat over domestic alternatives was linked to lower costs, residents in the area also reported preferring wild meat for its taste and nutritional quality relative to domestic meat and fish (Ndibalema and Songorwa 2008).

A comparative analysis of seven countries of SSA found that in urban areas, taste preferences were the most important factor affecting consumption choices of wild meat. For example, in Beira town, Sofala Province (Mozambique) and Lusaka (Zambia), wild meat prices were considerably higher than domestic meat and as such it was only affordable to wealthier urban inhabitants who might consider it a luxury item (Barnett 1997).

Other evidence from urban areas suggests that wild meat is preferred over frozen domestic meats due to its taste and perceptions of wild meat as fresh, organic, healthy, nutritious or a luxury item. At Bata market in Rio Muni (Equatorial Guinea) consumers reported that their top three most preferred foods were fresh fish or wild meat species (ie red snapper, porcupine and blue duiker), and wild meat was regarded as a healthier, more nutritious food choice than frozen, domestic meat options (East *et al* 2005, Kümpel *et al* 2006,2010). Despite these preferences, however, people most commonly reported eating domestic meat because it was cheaper. Another study in Bata, Equatorial Guinea, found that wild meat protein intake is higher in wealthier sectors of Bata city, and the authors suggested that this possibly could be related to prestige (Fa *et al* 2009).

Similar results have been found elsewhere. At Pointe Noire (Republic of Congo) wild meat consumption was associated with perceptions that it was tasty or appetising, part of traditional

lifestyles (eg feeling a connection to village life), natural, fresh, organic¹ and healthy (Chausson *et al* 2019). Household surveys in the cities of Lubumbashi and Brazzaville (Democratic Republic of Congo) suggested that taste is an important driver of wild meat consumption with 52% (n=1400) and 68% (n=1050) of respondents in the respective cities reporting it as important to their food choice (Tshikung *et al* 2019; Mbetete *et al* 2011).

However, these findings cannot be generalised universally across SSA. For example, in urban areas of western Madagascar, a study using surveys, informal discussions with hunters and observations found evidence that people are consuming wild meat species such as primates, carnivores, bats and wild birds, but that domestic animals (eg pig, cattle, duck and chicken) are largely the most preferred sources of protein (Randrianandrianina *et al* 2010). This finding is echoed by research in rural and urban areas of Madagascar, where wild meat was found not to be preferred (Reuter *et al* 2016a) and was considered inferior to fish and domestic protein sources (Jenkins *et al* 2011). Nonetheless, another study found that, in 12 urban and 9 rural towns in central northern Madagascar, urban respondents consumed twice as much wild meat per year than their rural counterparts. The researchers hypothesised that this could be due to taste preferences (Reuter *et al* 2016b).

Interestingly, in some SSA countries demand for wild meat is not just from wealthy urban consumers with a taste preference. Three studies documented the importance of wild meat for poorer, urban households, implying that wild meat is not just a luxury product in urban contexts, but can also be a necessity (Van Vliet *et al* 2014 and Fargeot *et al* 2017). While the more expensive meats (such as primates like the drill) may be consumed by wealthier households, rodents and blue duiker may be the mainstay of poorer households (Albrechsten *et al* 2006).

2.3 Species preferences

¹ Note the term 'organic' is often used to refer to meat that has had minimal interference during processing – such as freezing – as described in Chausson *et al* 2019.

We found eight studies that suggest consumers preferred the meat of specific wild species. This evidence was from both rural and urban settings.

For example, interviews with Malinké hunters in rural Guinea showed that cane rat, red-flanked duiker, Maxwell's duiker and bushback were the four most targeted species by hunters because of their taste, ease of capture, and/or marketability (Pailer *et al* 2009). At Kilombero Valley Game Controlled Area (Tanzania), Nielsen *et al* (2015) found that rural consumers are willing to pay a price premium for certain wild meat species. The authors propose that this could reflect taste, cultural or other preferences.

Two taste tests in the literature show that people distinguish between species and the method of food preparation, suggesting that wild meat should not be treated as a generic food source. A taste test of wild meats in the vicinity of Serengeti National Park (Tanzania) found that sundried meat - especially beef, impala and wildebeest - was the most frequently preferred by respondents, followed by boiled meat, with smoked meat being least preferred (Mwakatobe *et al* 2012). In urban and rural areas of Gabon, consumers' choices in a taste test depended on their stated preferences for generic meat types. For example, consumers with a stated preference for fish chose porcupine rather than chicken in taste tests and showed no preferences between duiker and beef (Schenck *et al* 2006).

In urban Ghana, surveys identified grasscutter (cane rat) as the favourite species at town markets and in restaurants (Ntiamao-Baidu 1997), and in urban Nigeria, taste tests and questionnaires also revealed that cane rat was the most preferred species in demand by consumers; rated higher than mutton and beef according to sensory quality, including factors such as meat colour, flavour, tenderness and juiciness (Ladele *et al* 1996). In urban areas of western Madagascar, the common tenrec (*Tenrec ecaudatus*) commanded a high retail price. The authors hypothesised that this may be related to tastiness and seasonal availability (Randrianandrianina *et al* 2010).

A study of market surveys in the Cross-Sanaga region of Cameroon found that prices in rural and urban markets revealed preferences for individual taxa. For example, pouched rats were

consistently cheaper than expected (based on the anticipated price for their body mass); the authors suggested that this could be due to consumer preferences (Macdonald *et al* 2011).

2.4 Culture, tradition and religion

Three other reviews identified culture as important, including the uses of wild meat in rituals and ceremonies (van Vliet and Mbazza 2011, Cawthorn and Hoffman 2015). A meta-analysis of local hunting practices affecting carnivores in forested Africa and Madagascar found that nearly a quarter of records gave reasons for taking carnivores as cultural uses; primarily as skins or in fetish practices (ie medicinal or spiritual uses) (Doughty *et al* 2015).

Overall, we found twenty-one studies that referred to culture as a driver of wild meat use. Examples include a survey of urban and rural respondents in Gabon, where commonly cited reasons for the preference of wild meat over domestic meat include taste, health, habit, ease, price and culture (Abernethy and Ndong Obian 2010). Another example includes a study of rural hunting communities in Nigeria, which found that survey respondents stated a preference for wild meat over domestic meat (84% of n=327) and the authors connected this to cultural ties (ie cultural group, hunter within family and traditions linked to festivals and holidays) related to wild meat consumption (Friant *et al* 2015).

As well as providing food and symbols for cultural ceremonies, hunting itself is an important cultural practice. For example, a study in lower Omo, Ethiopia, found that hunting large game created symbolic and social capital that established and maintained human-human relationships (Taide and Fischer 2013). A number of other studies we identified reported that while consumptive motivations typically dominate, sociocultural reasons also exist (eg Kaltenborn *et al* 2005, Gandiwa 2011, Knapp 2012, and Nkemmyi *et al* 2017). At the Serengeti National Park (Tanzania), for example, more than one-half of informants (n=590) agreed that hunting is part of their culture and there was interesting heterogeneity in their responses; 'hunters gaining respect from the community from a successful hunt', 'coming in contact with the spirits of animals', 'seeing hunting as a way for young men to express themselves', and

'perceiving hunting as a part of the traditional culture of the communities' (Kaltenborn *et al* 2005).

Another sociocultural reason for hunting and consumption of wild meat is that cuttings of meat can be shared and gifted amongst local people and kin groups. An example we came across in the literature includes a study in rural Central African Republic that showed as scarcity increases, sharing among kin groups became increasingly important (Lupo and Schmitt 2017).

Interestingly, a study conducted around the city of Makokou, in north-east Gabon, found that one-half of the total annual offtakes were animals killed for food or symbolic value as part of cultural ceremonies during the dry season (van Vliet and Nasi 2008). We also found other anecdotal examples in the literature suggesting that cultural events can be an important driver of wild meat demand. At Port Gentil, Gabon, a study found that wild meat was more frequently consumed on Sundays and the authors hypothesised that this may be because wild meat is associated with cultural or family events (Bachand *et al* 2015). Another study from Mozambique's capital, Mputo, observed that prices for red duiker quadruple in the month prior to Christmas when wealthier customers purchase their preferred meat for the season's festivities (Barnett 1997). And, at Ranobe PK32 (Madagascar) three key informants stated that they and villagers go hunting to find meat before celebrations, such as Christmas, New Year and Independence Day (Gardner and Davies 2014).

Our literature search captured four studies that reported that they found tribal differences in wild meat consumption and species preference (eg Fa *et al* 2001, East *et al* 2005, Ndibalema and Songorwa 2008, and Ceppi and Nielsen 2014) and two studies that found no difference by tribe or ethnicity (Mwakatobe *et al* 2012, Boakye 2018). This includes a study on Bioko Island (Equatorial Guinea) which found that while availability was the predominant driver of wild meat consumption, there were clear differences in what members of ethnic groups - the Bubi and the Fang - consumed or preferred; many of the species the Fang preferred were mainland species (such as the giant pangolin or some monkeys) suggesting a traditional link to eating these species (Fa *et al* 2001). In Tanzania, a comparative study of wild meat consumption by ten tribes found that the traditional beliefs and religious affiliation reflected in a tribe had a clear

influence on wild meat consumption and that certain species hold significant cultural values such as the trunk of elephants which is believed to increase male virility (Ceppi and Nielsen 2014).

We also captured four studies that suggested religion and taboo play an important role in wild meat consumption and preference. In Madagascar, two studies described that taboos lead to less consumption of wild meat (Jenkins et al 2011, and Reuter et al 2016). One of these studies found a clear relationship between taste preference and taboos; with taboo species receiving low rankings in terms of taste preference (Jenkins et al 2011). Another study in rural Nigeria found that superstition (eg bushback), religious taboo for Muslims (eg monkeys, bushpig and warthog), and taste or toughness (eg bushback and elephant) can affect wild meat preferences (Anadu 1988). Similarly, in northern rural Cameroon, a study identified superstition (eg wild cats) and religious taboo for Muslims (eg monkeys) as important factors affecting wild meat consumption (Njiforti 1996). In these two cases superstition affected preferences in different ways, in Cameroon superstition about eating wild cats is believed to make the consumer more agile and offer protection from death by motor car accidents (Njiforti 1996). While in Nigeria, it is taboo to the Owan, Etsako, Ishan, and Bini people to consume wild cats due to their use in charms (Anadu 1988).

2.5 Other drivers

Human wildlife conflict

In six studies we reviewed, hunting wild meat was at least in part a response to human wildlife conflict, though the prominence of this driver varied. In a study in Madagascar while taste preference did not appear to be an important driver of wild meat consumption, there was anecdotal evidence that human wildlife conflict played a role - for example, the Vasa parrot was reportedly preferred by less than 1% of people (n= 1,154) but was commonly eaten, perhaps because it is considered a crop pest (Jenkins *et al* 2011).

At Serengeti National Park (Tanzania) a study found that hunting is seen as a moderately important means of controlling problematic animals by one-third of the respondents (32%, n=590). The authors noted that such functional reasons for acquiring wild meat outweigh other reasons for hunting when considering the various motivations for hunting as independent factors (Kaltenborn *et al* 2005). In Ghana, another study identified that trap hunting plays an important role in crop protection around fields and may play a larger role in the rural economy than currently acknowledged as a risk mitigation strategy that contributes to income protein consumption and crop security (Alexander *et al* 2014).

Other studies citing human wildlife conflict as a driver include:

- Research in the Ashanti region of Ghana where about 30% (n=468) hunt wild meat to protect their crops (Crookes *et al* 2007).
- A study in the northern Gonarezhou National Park (Zimbabwe) which found that in one ward (Chizvirizvi ward) revenge killings of wildlife were reported as a way to reduce crop destruction (40%, n= 114) and livestock depredation (14%, n=114) (Gandiwa 2011).
- Research at Tofala-Mone Forest Corridor (Cameroon) which identified harvesting wildlife to protect animals from destroying crops (9.6%, n = 7) as an additional driver to hunting for sustenance and income (Che *et al* 2017).

Gender, age and other social factors

Where studies undertake sex-disaggregated analyses, few identified differences in consumption patterns or preferences (eg Fa *et al* 2001, Ndibalema and Songorwa 2008, Mwakatobe *et al* 2012). The most detailed gendered analysis that we found in the literature describes the highly gendered roles of hunting in the western Serengeti (Tanzania) and lower Omo (Ethiopia). In both rural areas, women did not actively hunt, but through their behaviour and interactions women and men maintained and reinforced hunting practices; women actively encouraged male hunting and men used appeal as a hunter to attract women, and often kept control over the benefits derived from hunting (Lowassa *et al* 2012).

Understanding around household dynamics and the number of children, or status of children's health may be another important factor in determining wild meat consumption. A study at Tai National Park (Côte d'Ivoire) found that low-income rural households with more dependent children in school consumed more wild meat (Kouassi 2014). And, research at Masoala National Park (Madagascar) identified poverty, poor health and child malnutrition as the factors that best predicted the decision to hunt lemurs for sustenance. Knowledge of laws, level of education, involvement in ecotourism, traditional cultural values, taste preferences, opportunity, and human–wildlife conflict all had no impact on lemur hunting (Borgerson *et al* 2016).

One interesting finding from gender-disaggregated analyses in the urban context of Province Orientale (Democratic Republic of Congo) is that urban children whose mother had an income-generating activity ate meat and wild meat more frequently than others. The authors suggested that this is because mothers spend their income on the nutrition of their family whereas fathers tend to spend their income on other items (van Vliet *et al* 2014).

Lastly, we identified just two studies that explored the impact of age on consumption of wild meat and these studies were from urban contexts. In both cases, young people in urban areas of Burkina Faso, Niger, Nigeria and Togo were described as eating less wild meat than older individuals, and this was associated with increasing urban westernisation meaning that wild meat consumption was becoming less socially acceptable (Hema *et al* 2015 and Luiselli *et al* 2019).

Summary conclusions

There is a large body of literature on wild meat hunting, trade and consumption, but very little that specifically deals with the drivers of wild meat as a food choice in rural and urban areas. Of the literature that does discuss this issue, few studies have specifically evaluated drivers, more often it is mentioned in passing or inferences are made, but causal factors not actually evaluated.

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The literature that does exist frequently highlights culture and taste as being important drivers, but availability and affordability of wild meat are the factors that have received the most direct analysis. Other factors include a specific preference for particular species (which can be due to a mix of all the factors above) and human wildlife conflict. We found few studies that investigated the influence of social factors such as gender, age or social status.

More research is required to investigate exactly *why* people choose to eat wild meat if effective response strategies are to be put in place. Undoubtedly the drivers of wild meat choice will be context specific and responses need to be equally specific.

We welcome further insights into this issue and suggestions of further bodies of literature that we have not yet investigated. Please contact Francesca Booker (Francesca.booker@iied.org) with any suggestions.

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Appendix 1 : Search terms and sources

Search terms:

Bushmeat		Driver
bushmeat	AND	age
community w/5 hunt*		consumption
indigenous w/5 hunt*		cultur*
traditional w/5 hunt*		diet
wildlife w/5 hunt*		ethic*
wild w/5 meat		food w/5 access
		"food security"
		food w/5 choice
		harvest
		health
		hunger
		income
		livelihood
		market
		medicine
		nutrition or nutrient*
		poverty
		preference
		protein
		religion
	subsistence	
	"sustainable use"	
	"sustainable harvest"	
	use or utilization	

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		taboo
		taste
		trade
		tradition*
		trib*
		wealth
		welfare
		wellbeing well-being

Note:

W/x is a search function that allows you to search for two words (W) within a specific number (x) of places in a sentence (i.e. community W/5 governance will look for places where community and governance appear within 5 words of each other in a sentence).

* is a search function that allows searching for different word beginnings and endings (i.e. *legal will search for legal and illegal)

\$ is a search function that allows searching for different spellings of words (ie utilisation or utilization)

"" is a search function that allows searching for phrases

Inclusion criteria:

1. Relevant population: the study focuses on species harvested for wild meat.
2. Relevant exposure: the study describes or assesses drivers of wild meat hunting as they relate to people’s food choice preferences (eg culture, health, nutrition, taste etc).
3. Relevant comparator: N/A
4. Relevant outcomes: N/A

Search Language: English

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Bibliographic databases: Scopus and Google Scholar

Possible grey literature sources: CIFOR (<https://www.cifor.org/bushmeat/resources/bushmeat-database/> and <https://www.cifor.org/bushmeat/resources/bushmeat-data-map/>), CIRAD, FAO, IUCN

Calls for papers: PCLG, CPW, UK Bushmeat Working Group, IUCN SULi, ICCS, CBD Bushmeat Working Group