Original research article

Typologies of urban wildlife traffickers and sellers

Meredith L. Gore⁎, Robert Mwinyihali, Luc Mayet, Gavinet Duclair Makaya Baku-Bumb, Christian Plowman, Michelle Wieland

Department of Geographical Sciences, 2181 LeFrak Hall, 7251 Preinkert Drive, College Park, MD 20742, USA
Wildlife Conservation Society, 56 Ave Col Ebeya, Democratic Republic of the Congo
Wildlife Conservation Society, Avenue du Général De Gaulle, Brazzaville, Republic of the Congo

Article history:
Received 27 January 2021
Received in revised form 21 March 2021
Accepted 23 March 2021

Keywords:
Bonobo
Bushmeat
Chimpanzee
Conservation criminology
Crocodile
Gorilla
Pangolin
Republic of the Congo

Abstract
Urban wildlife consumption can contribute to significant declines in wildlife populations, ecosystem function, and local food security (e.g., Fa et al., 2003; Ripple et al., 2016; Smith et al., 2012). Although the trade in wildlife can be legal and formal in some instances, it becomes illegal when species that are protected by law are taken from any wild place, when species are taken from protected areas, trafficked across borders, or otherwise treated in a manner in contravention of the rule of law, often through informal value chains (van Vliet et al., 2019). Both the growing illegal trade and urban demand for wildlife intensify existing pressures on wildlife (e.g., Gluszek et al., 2018; Swan et al., 2017), particularly species that are vulnerable from other threats such as climate change, deforestation, or pollution. Insight about the urban

1. Urban wildlife trafficking supply chains

Consumption of wildlife—also sometimes called bushmeat—can sometimes contribute to significant declines in wildlife populations, ecosystem function, and local food security (e.g., Fa et al., 2003; Ripple et al., 2016; Smith et al., 2012). Although the trade in wildlife can be legal and formal in some instances, it becomes illegal when species that are protected by law are taken from any wild place, when species are taken from protected areas, trafficked across borders, or otherwise treated in a manner in contravention of the rule of law, often through informal value chains (van Vliet et al., 2019). Both the growing illegal trade and urban demand for wildlife intensify existing pressures on wildlife (e.g., Gluszek et al., 2018; Swan et al., 2017), particularly species that are vulnerable from other threats such as climate change, deforestation, or pollution. Insight about the urban...
dimensions of wildlife trafficking are grossly under-researched although the problem is increasingly recognized as being serious (e.g., Gluszek et al., 2021).

Inquiry on urban legal and illegal wildmeat supply chains help clarify the structure, organization, logistics, resilience, and function of specific chains across the entire crime ecosystem across which they operate (e.g., Bachmann et al., 2019; van Vliet et al., 2019; Patel et al., 2015). Such insight is useful for assessing changes in supply chain structure after interventions designed to deliberately fragment the supply chain, for example. Although demand-side information on wildmeat consumption is growing and complementing our nascent understanding of the structure and operations of the trade (e.g., Bachmann et al., 2019; van Vliet et al., 2019), we have an inadequate understanding of stakeholders involved in various stages of the wildmeat trafficking supply chain, particularly in urban environments (Bachmann et al., 2019; Gluszek et al., 2018; van Vliet et al., 2019). Crime in urban environments is known to have many distinguishing features from rural crime, and vice versa (e.g., crime rates, degree of violence and vice, involvement of firearms). A lack of attention to the distinguishing urban crime features is problematic for conservation because it means that our interventions (e.g., regulatory policies, crime prevention strategies, social marketing campaigns) are limited by design. Without an evidence-based classification system for types of offenders involved in urban wildmeat trafficking, conservationists and their partners risk homogenizing offenders into a single group, which in turn can result in over-stereotyping, fetishizing, injustice, and failed objectives.

2. Urban dimensions of wildlife trafficking

Wildlife trafficking into cities to meet non-essential demand for wildmeat poses a threat to many species of wildlife (El Bizri et al., 2020), particularly in Central Africa (e.g., Gluszek et al., 2021). Species such as pangolins and crocodiles are sold openly in urban markets and restaurants, although they are protected at different regulatory levels. Pangolins, apes, and crocodiles (i.e., “PAC species”) are three groups of concern for conservationists in the Republic of the Congo. The western lowland gorilla (Gorilla gorilla gorilla), bonobo (Pan paniscus), central chimpanzee (Pan troglodytes troglodytes), black-bellied pangolin (Phataginus tetradactyla), giant ground pangolin (Smutsia gigantea), white-bellied pangolin (Phataginus tricuspis) and dwarf crocodile (Osteolaemus osborni) are all known to be consumed as wildmeat in urban areas. For example, the Regional Action Plan for the Conservation of Western Lowland Gorillas and Central Chimpanzees suggests the majority of apes poached are killed for their meat and destined for urban markets. Studies have found that apes represent less than 0.1% of the total number of carcasses found in markets yet apes are highly vulnerable to hunting pressure due to their low reproductive rates and already diminished populations. With pangolins, we know between 0.4 and 2.7 million individuals are hunted annually in Central Africa, making all three species vulnerable to extinction (Ingram et al., 2018, 2019a, 2019b). Tens of thousands of dwarf crocodiles are reaching cities every year, but little is known about the sustainability of current off take, as they are one of the least studied crocodilian species (Shirley et al., 2009, Eaton, 2010).

Wildmeat, along with fish, is a traditional food staple and significant protein source for many forest-dwelling peoples. Hunting and fishing contribute to rural diets and in low-density and non-commercial settings do not normally pose a threat to wildlife populations (Nielsen et al., 2018; WCS, 2016). The loss of pangolins, apes, and crocodiles due to illegal overharvesting for wildmeat would result in loss of tourism revenue, have a destabilizing effect on ecosystems, and impact rural communities who still rely on their natural resource base for livelihoods and food security. The Republic of the Congo’s Nouabalé-Ndoki National Park, for example, has huge potential for ecotourism because it is one of the few areas in Central Africa where gorillas can be reliably observed due to the existence of natural forest clearings and viewing platforms.

Wildmeat is a popular type of food in Central Africa’s urban areas (e.g., Ingram, 2020). It adds a broader diversity to the protein market landscape, is seen as healthier than some options of proteins that have questionable cold chain importation, and plays an important role in social cohesion (Chausson et al., 2019). This urban consumption is unsustainable and illegal yet is lucrative for supply chain actors in the short term (Wilkie et al., 2016; van Vliet et al., 2019). Urban wildmeat trafficking, like other types of wildlife trafficking, is widely acknowledged to connect source, transit, and destination geographies (UNODC, 2016). Interventions to reduce harms from trafficking are thus targeted at these specific source, transit, and demand destinations (e.g., poachers, traffickers, sellers). Beyond insight about the linkages between space and time, effective interventions require insight about linkages between involved stakeholders across crime ecosystems (e.g., urban ecosystem). The extant literature has diverse typologies of stakeholders involved with the source geography of wildlife trafficking (i.e., poachers). This literature discusses the motivations, attitudes, behaviours, and other human dimensions of poachers or illegal hunters (e.g., Kahler and Gore, 2012; Eliason, 2004; Muth and Bowe, 1988). There is significantly less literature characterizing stakeholders within the transit and destination geographies of wildlife trafficking (e.g., traffickers and sellers; see South and Wyatt, 2011; Leborato 2017, Phelps et al., 2016 for exceptions), and the literature on consumers in particular appears to be increasing. Consumers are often the primary stakeholders of interest in destination geographies because their consumption behaviour can be so influential on demand. Although consumers can be in urban ecosystems, the discrete urban dimension of consumption does not seem to be a focus of the extant literature.

3. Types of individuals involved in urban wildlife trafficking

Describing “typologies of individuals” involved in urban wildmeat trafficking may help distinguish ordinary citizens from members of criminal organizations (e.g., Pires et al., 2016), and thus reduce stereotyping and injustice. This specificity is important because lawmakers and the general public often view offenders as homogenous populations with high risk of
recidivism and low probability of rehabilitation (e.g., Kaseweter et al., 2016). Research on other populations of actors involved in violations of the rule of law (e.g., drug offenders), suggests they can be heterogeneous and vary considerably in their offending behaviour, motivations, and risk of reoffending (e.g., DeHart, 2018; Chassid-Segin et al., 2020). Homogenous thinking about offenders involved in wildmeat trafficking, or “umbrella labelling” is a consequential decision, not only in terms of restricted liberties for specific individuals but also due to additional costs associated with sentencing, treatment of offenders, community supervision, and allocation of resources (e.g., Kaseweter 2016). Because placing offenders into a single category can be misguided in at least these ways, creating subtypes is often considered by criminologists, scientists with expertise in crime and crime control, to be a most useful endeavour (e.g., van Uhm and Nijman, 2020).

Criminologists and law enforcement practitioners have noted that comparing wildlife trafficking to other more serious crimes such as gun, drug, or human trafficking can make dual contributions to theory that aid appropriate prevention tactics targeted at “green crimes” like urban wildmeat trafficking, illegal trade in electronic waste, or illegal fishing (Wyatt et al., 2020, gibbs et al., 2010). Identifying shared criminal dispositional characteristics such as typologies, also helps situate aspects of wildmeat trafficking against other serious crimes considered by the community of practice exploring the global criminal economy that crosses borders, comprises multiple commodities, and is sustained by multiple modus operandi (South and Wyatt, 2011), such as human trafficking or trade-based money laundering. Characterizing stakeholders is also useful for focusing the format, content and distribution methods of communication, marketing, or education campaigns designed to influence human behaviour (Gore and Knuth, 2009; Phelps et al., 2016). Generally, typologies that enhance conceptual connections to the global criminal economy have a positive, valued-added effect on law enforcement activities (South and Wyatt, 2011). Criminologists often utilize typologies that are created using secondary data (e.g., case file reports) and the literature, and produce descriptive results (e.g., Wyatt et al., 2020, South and Wyatt, 2011).

The literature on theoretical similarities across the typologies of offenders involved in specific crimes of drug and wildlife trafficking is limited (e.g., South and Wyatt, 2011). Convergence in nature of these crimes, such as offender’s common use of infrastructure, modus operandi, money laundering techniques, or exploitation of corrupt government officials is a topic of great contemporary interest (e.g., Felbab-Brown, 2017; Shelley and Kinnard, 2018; van Uhm, 2016). There is no peer-reviewed literature that we can find empirically exploring typologies of stakeholders from more than one trafficking geography in the same study, nor for urban stakeholders. This means we lack understanding about the heterogeneity of offenders; effective classification systems are fundamental to the application of scientific evidence in criminal justice systems. To these ends, we set the following objectives for this study: (1) create and apply a typology for urban wildmeat traffickers and sellers; and (2) explore linkages between types of urban wildmeat traffickers and sellers. We created a draft terminology of urban wildmeat trafficking typologies for five types of individuals or groups based on an existing typology of drug traffickers (South and Wyatt, 2011); trading charities, mutual societies, business sideliners, criminal diversifiers, and opportunistic irregulars. We created a draft typology of wildmeat sellers, or individuals at the end of the illicit supply chain, on Leberatto’s (2017) wildlife-based typology that has not been applied to drug-related crime. Using Leberatto’s (2017) terminology, we explored five demand typologies: casual, transient, opportunistic, hidden, and professional.

4. Methods

This research was part of a broader effort designed to increase knowledge about motives for urban wildmeat trafficking, strengthen cross-border information sharing and law enforcement, and increase, then sustain, efforts to change the behaviour of urban consumers in the Republic of the Congo and the Democratic Republic of the Congo. Chausson et al., (2019), Gluszek et al. (2021), Kahler et al. (2019), and Boratto and Gore (2018), for example, detail the sociocultural drivers of urban wildmeat consumption, role of restaurants across the value chain, obstacles and opportunity structures associated with trafficking, and trafficking flows into cities. Our smaller research effort can be contextualized within this literature and focused on the Republic of the Congo, home to more than 4.5 million people (World Health Organization [WHO], 2015). The majority of the country’s population (about 70%) resides in the capital, Brazzaville, the west coast city of Pointe Noire, or along railways that connect these urban centers (CIA, 2019). Two cities in the Republic of the Congo were selected because of their large urban population size relative to the country and proximity to a wide range of biodiversity in the Congo Basin forest; both cities also exemplify the wildmeat trade in many parts of Africa with strong and established wildmeat cultures. Congo-Brazzaville is part of the second largest contiguous tropical forest in the world 1000 (United States Fish and Wildlife Service, 2014). Pangolins, great apes, and dwarf crocodiles are species of conservation concern, known to be trafficked into urban areas to meet non-essential demand for protein (Table 1).

4.1. A Typology of Wildmeat Traffickers

We created a typology of urban wildmeat traffickers, recognizing these types of offenders vary at least in their professionalism, offending rates, criminality, and need for resources that support offending (Table 2).

Trading charities traffic wildmeat because it helps to fill a cultural, medicinal, or other important social purpose, for example celebrating a lifecycle event or rite of passage such as a wedding, birth, funeral, circumcision or other important celebration. Trading charities have cultural commitments to having wildmeat at these important celebrations. They profit from wildmeat sales, but the profit is secondary to the wildmeat’s role in the cultural event. One possible example would be a trafficker that
supplies a customer with great ape meat so she can send the meat overseas to a diaspora family member who is about to welcome a new baby into her house.

**Mutual societies** include individuals with disposable income who enjoy the act of collecting exotic and rare species as well as comparing and sharing their collections. These friendship or hobby networks may exchange or sell wildmeat amongst themselves in a reciprocal fashion and traffic specific species for specific purposes (e.g., great ape meat consumed for strength and power) or connoisseurship (e.g., add a new specimen to collection). These individuals may have a particular “collector type” lifestyle that matches their customers; this lifestyle revolves around their livelihood profession; wildlife trafficking is more of an identity characteristic than a livelihood endeavour.

**Business sidewinders** operate legal commercial businesses for economic profit and make their way into trafficking wildmeat as a way to supplement income. Ultimately the legal business may act as a “cover” or “shell” for the illegal wildmeat business, which may not be more profitable than the legal business. Legal wildmeat business or other agricultural commodity businesses such as those that sell maize, rice, manioc or farm-raised meat may overlap with wildmeat trafficking.

**Criminal diversifiers** incorporate wildlife trafficking into existing illicit supply chains such as those involved in drug trafficking; they have identified profitable opportunities in trafficking wildlife and respond in an economically rational way. These groups could be organized crime syndicates looking for large profits alongside a low risk of detection. Low level and amateur poachers and dealers may pass on their wildmeat to organized crime contacts who then become involved as experts in moving the illicit product across the border regardless of what the project is.

** Opportunistic irregulars** can include individuals and groups of any size who are often street-level operators who are very familiar with the communities in which they traffic. They take advantage of limited openings and may acquire wildmeat accidentally. They are not likely to be involved with wildmeat trafficking over the long term and may not be well resourced. It is

---

**Table 1**
Pangolins, great apes and dwarf crocodiles were the species of interest for this research because they are species of conservation concern and are known to be trafficked into urban areas to meet non-essential demand for protein in Pointe Noire and Brazzaville, the Republic of the Congo.

<table>
<thead>
<tr>
<th>Species</th>
<th>International Union for Conservation of Nature’s Red List Profile</th>
<th>Wildmeat poaching and trafficking-related concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dwarf crocodile (<em>Osteolaemus tetraspis</em>) (<em>Crocodile Specialist Group, 1996</em>)</td>
<td>Listed as vulnerable, included in international legislation, subject to international trade controls and management, with unclassified threats and trade uses</td>
<td>N/A</td>
</tr>
<tr>
<td>Western lowland gorilla (<em>Gorilla gorilla gorilla</em>) (<em>Maisels et al., 2018</em>)</td>
<td>Listed as critically endangered, included in international legislation, subject to international trade controls and management, threatened by agriculture, energy production and mining, transportation corridors, biological resource use, human disturbance, invasive species, climate change</td>
<td>Illegal hunting for wildmeat is considered a serious problem across species range, which is fuelled by increased access to forested areas from logging and mining road construction, giving poachers access into species range and traffickers access out (<em>Laporte et al., 2007; Edwards et al., 2014; White and Fa, 2014</em>).</td>
</tr>
<tr>
<td>Central chimpanzee (<em>Pan troglodytes troglodytes</em>) (<em>Humle et al., 2016</em>)</td>
<td>Listed as endangered, included in international legislation, subject to international trade controls and management, threatened by development, agriculture, energy production, transportation corridors, biological resource use, invasive species, climate change</td>
<td>Illegal hunting for wildmeat is a serious problem, fuelled by ease of obtaining guns and ammunition, transport system efficiency, and high financial incentives for supplying urban markets; species are sometimes targeted opportunistically but also targeted because they provide more meat than smaller mammals (<em>Quiatt et al., 2002</em>); when adults are killed for meat their infants sometimes are trafficked for pets (<em>Hicks et al., 2010</em>).</td>
</tr>
<tr>
<td>Giant ground pangolin (<em>Smutsia gigantea</em>) (<em>Nixon et al., 2019</em>)</td>
<td>Listed as endangered, included in international legislation, subject to international trade controls and management, threatened by agriculture, energy production, transportation corridors, biological resource use, human disturbance, climate change</td>
<td>Species is subject to widespread exploitation for bushmeat and traditional medicine in both rural and urban areas; the breakdown of norms protecting the species has led to an increase in hunting pressure in some areas (<em>Colyn et al., 1987; Kingdon et al., 2013</em>).</td>
</tr>
<tr>
<td>Black-bellied pangolin (<em>Phataginus tetradactyla</em>) (<em>Ingram et al., 2019a, 2019b</em>)</td>
<td>Listed as vulnerable, included in international legislation, subject to international trade controls and management, threatened by agriculture, energy production, transportation corridors, biological resource use, human disturbance, climate change</td>
<td>Species is threatened by hunting for local and increasingly international traditional medicine and bushmeat markets, indicated in part by 2.3% increase in urban market prices (<em>Ingram et al., 2018</em>).</td>
</tr>
<tr>
<td>White-bellied pangolin (<em>Phataginus tricuspis</em>) (<em>Pietersen et al., 2019</em>)</td>
<td>Listed as endangered, included in international legislation, subject to international trade controls and management, threatened by agriculture, energy production, biological resource use, climate change</td>
<td>Overexploitation and habitat loss are the two main threats to this species; white-bellied pangolins are by far the African pangolin species most frequently found in bushmeat markets; the species is widely used for traditional medicine and is often preferred by healers over other species; illegal international trade to Asian markets suggests the species are often intentionally targeted at the point of harvest for their scales for illicit trade as opposed to being a by-product of the wildmeat trade (<em>Ingram et al., 2018</em>).</td>
</tr>
</tbody>
</table>
possible these individuals are not overly successful in trafficking wildmeat because they lack criminal experience, resources, and connections.

4.2. A typology of wildmeat sellers

We created a typology of urban wildmeat sellers, recognizing these individuals vary in their professionalism, offending rates, criminality, and need for resources (Table 3).

Casual sellers can be either individuals or groups taking advantage of single opportunities or chance encounters to traffic wildlife and may have come across wildmeat by accident or through a connection with a friend or a family member. Typically,
sellers are not that familiar with the best places to sell illegal wildmeat nor have a formal mechanism (e.g., table at a market) or infrastructure (e.g., cold storage) for doing so.

**Transient sellers** engage in low frequency selling of wildmeat, do not often have large quantities or varied types of wildmeat at a single point in time. Transient sellers may not always be able to afford to buy wildmeat and then sell it for profit, nor do they necessarily have infrastructure (e.g., table in market, refrigeration) to support their sales.

**Opportunistic sellers** commercialize species of wildmeat when the opportunity presents itself and may only sell what they are able to obtain at very low prices. Wildmeat is a supplement to the regular commodities they sell, and they may only sell certain types of wildmeat because they don’t have the infrastructure or other means to sell different types of wildmeat.

**Hidden sellers** commercialize wildmeat in a concealed or secretive manner, but are not necessarily organized crime groups. They may sell endangered species or very rare species of wildmeat. Buyers have to know who hidden sellers are and how to reach them in order to gain access to wildmeat; this means hidden sellers have to have a known reputation. They may work to fill direct requests when clients call, or they may push out calls to clients to alert them that a particular type of wildmeat is available.

**Professional sellers** frequently sell wildmeat, perhaps many different species at a single time; these individuals derive a large proportion of their income from selling wildmeat. Professional sellers may have a personal interest in traditions of wildmeat selling or have wildmeat-related connections to family, such as an uncle who sends wildmeat from forest-adjacent towns.

### 4.3. Validating the typologies for urban wildmeat trafficking and selling

We used focus groups with experts to help achieve objectives (i.e., adapted expert elicitation) Trochim and Donnelly (2001). Focus groups are a form of group interviewing where there is a questioner and one or more interviewees; the purpose is to probe the ideas of the interviewees about the phenomenon of interest. Focus groups are a common field research method in conservation; the methodology enables paper and electronic note taking, videography and other forms of data collection Trochim and Donnelly (2001). Two focus groups of 7–10 individuals were held in Brazzaville and Pointe Noire, the Republic of the Congo, February 2019. Expert elicitation is widely used in conservation, particularly in contexts where substantive information on a particular topic is not widely known or studied (Martin et al., 2011). In some instances, expert judgement is the only source of information for making conservation decisions, particularly those that involve risk assessment (e.g., invasive species management, different intensities of livestock grazing on woodland birds). The informativeness of expert elicitation is reflected in the precision and confidence of judgements and not necessarily on the number of elicitation procedures or experts involved. Focus groups are commonly used methods for expert elicitation. McBride and Burgman (2011) proposed three different types of expertise: substantive (i.e., domain knowledge), normative (i.e., ability to accurately and clearly communicate), and adaptive (i.e., capacity to extrapolate to new contexts). Our focus groups purposefully included individuals with a range of these types of expertise, as identified by the authors based on the participants’ professional reputation. Individuals meeting these expertise criteria, plus availability and willingness to participate, were recruited for the focus groups Trochim and Donnelly (2001). Participants were not compensated for participating however a coffee and tea break was provided.

The focus group “script” (i.e., agenda or lesson plan), used in both focus groups, was informed by previous research detailing attributes of the illicit PAC supply chain in Kinshasa and Brazzaville (Gluszek et al., 2018; Gluszek et al., 2021; Kahler et al., 2019; Boratto and Gore, 2018). Focus groups opened with a presentation of typology definitions and examples via Powerpoint presentation in English translated verbally into French. To compliment the Presentation, each of the five typologies was hand-written in English and French on a single 3’x5’ card; trafficker typologies were printed on pink cards and seller typologies were printed on blue cards to help participants visually distinguish the typologies from each other. After the presentation, participants discussed definitions as a group and verbally agreed with definitions. Participants were next asked to consider the local urban context and rank the trafficking and selling typologies from high to low perceived importance and high to low perceived frequency. Perceived importance was defined as the value in terms of facilitating the trade and also the perceived frequency of the type, or the tempo of the trade; one was ranked as the highest risk and five ranked as the lowest risk. Perceived prevalence was defined as the frequency in groups of two to three people. Risk ranking was conducted verbally among all focus group participants and participants were encouraged to incorporate examples into the discussion in support their judgements and estimates (Kahler and Gore, 2015). There were no instances where participants were unable to come to consensus on their risk rankings. Risk rankings were recorded on flip charts by participants. In these regards, typology validation was produced via indirect elicitation, in that answers relate to expert’s experiences and are later encoded by a scientist (Martin et al., 2011). Focus groups were conducted in English and French, with a locally certificated professional English-French interpreter and translator with environmental subject area expertise. The interpreter reviewed the focus group script prior to the first focus group commencing and had prior experience interpreting on the same subject for the lead author (see Gore and Kahler, 2015 for reliability and validity of conservation criminology research methods in cross-cultural contexts).

### 5. Analysis

Risk rankings listed on flip charts, for each species and city, were encoded into an Excel file format for analysis. Encoding involves translating information that has been elicited indirectly into more quantitative formats that can be used in other analyses; it is common practice for analysing data derived from indirect expert elicitation (Martin et al., 2011). Three risk indices were created for each typology and city, Brazzaville and Pointe Noire, to facilitate standardized data comparison. We calculated
an importance index ($P$), incident index ($I$), and total risk index ($R_j$) based on the number of typologies participants identified as being relevant (Tschakert, 2007; Kahler and Gore, 2015):

$$P = \frac{(r - 1)}{(n - 1)} + 1$$

where $r$ is the rank and $n$ is the total number of typologies identified by participants as being relevant (range 0–1). The incident index was the proportion of participants that ranked a particular typology as being common (range 0–1). The total risk index ranged from 0–1 and was calculated as $R_j = I_j/(2-P_j)$. These calculations were computed for both trafficker and seller typologies and for each city individually and then aggregated.

6. Results

Our first objective was to create and apply a typology for urban wildmeat traffickers and sellers for PAC species in Brazzaville and Pointe Noire, the Republic of the Congo. Expert focus groups initially agreed that both the seller and trafficker typologies were conceptually relevant to PAC wildmeat trafficking, however groups documented variation in the typologies’ perceived importance, incidence, and total risk for both traffickers (Fig. 1) and sellers (Fig. 2). No trafficker or seller typology ranked above average, illustrating heterogeneity in actors involved in the illegal supply chain, according to study participants. Business sideliners and trading charity trafficker types were associated with the highest total risk toward wildlife trafficking in Pointe Noire.

Fig. 1. In 2019, expert focus groups in Brazzaville ($N = 1, n = 7$) and Pointe Noire ($N = 1, n = 10$), the Republic of the Congo, ranked five typologies of traffickers involved in urban wildmeat trafficking of pangolins, great apes, and dwarf crocodiles. These typologies varied in their perceived seriousness (importance), frequency (incidence) and overall risk (seriousness plus frequency), on scales ranging from 0 (low) to 1 (high). Variations in perceptions are evident across trafficker types as well as cities.

Fig. 2. In 2019, expert focus groups in Brazzaville ($N = 1, n = 7$) and Pointe Noire ($N = 1, n = 10$), the Republic of the Congo, ranked five typologies of sellers involved in urban wildmeat trafficking of pangolins, great apes, and dwarf crocodiles. These typologies varied in their perceived seriousness (importance), frequency (incidence) and overall risk (seriousness plus frequency), on scales ranging from 0 (low) to 1 (high). Variations in perceptions are evident across seller types as well as cities.
In 2019, expert focus groups in Brazzaville (N = 1, n = 7) and Pointe Noire (N = 1, n = 10), the Republic of the Congo, ranked five typologies of traffickers involved in urban wildmeat trafficking of pangolins, great apes, and dwarf crocodiles. Participants perceived variation in the prevalence of each type of trafficker across different species and different cities, presented in scales ranging from 0 (low) to 4 (high). (Fig. 3)

In 2019, expert focus groups in Brazzaville (N = 1, n = 7) and Pointe Noire (N = 1, n = 10), the Republic of the Congo, ranked five typologies of sellers involved in urban wildmeat trafficking of pangolins, great apes, and dwarf crocodiles. Participants perceived variation in the prevalence of each type of trafficker across different species and different cities, presented in scales ranging from 0 (low) to 4 (high). (Fig. 4)

Noire and Brazzaville, respectively. (Fig. 1). A similar pattern of divergence was detected for seller typologies; hidden and casual sellers were associated with the greatest total risk in Pointe Noire and Brazzaville, respectively (Fig. 2).

Focus group participants differentially ranked the perceived prevalence of trafficker typologies across PAC species and their parts (Fig. 3). For pangolins, participants immediately identified a distinction in stakeholders trafficking for meat versus trafficking for scales; the breadth of typologies helped facilitate discussion of the distinction, which appeared important for participants. Pangolin scale trafficking was qualitatively characterized as being a more organized and profit-driven, transit and high-level criminal activity whereas pangolin wildmeat trafficking was characterized by more informal, relational typologies. We included pangolin scales in our final presentation of results because participants identified the issue and we did not want to artificially constrain the data. Inquiry into the linkages between pangolin wildmeat and scale trafficking would help untangle this relationship from an illegal value chain perspective. Our analysis of species-specific rankings revealed a sharp dichotomy between perceptions of the role of, in particular, business insiders and criminal diversifiers within each city. Analysis of participants’ perceptions of seller prevalence illustrated city and species-specific variation, with the most overlap in perceptions of opportunistic and casual sellers (Fig. 4).

Our second objective was to explore linkages between PAC wildmeat traffickers and sellers. Linkages, and lack thereof, between trafficking and selling were evident in encoded and quantified rankings of typology prevalence and importance, as well as the qualitative descriptions recorded on flip charts. Looking across all information elicited from experts about both typologies, participants revealed differences in linkages according to different species (Table 4).

7. Discussion

Typologies are useful for the community of stakeholders working to respond and prevent urban wildmeat trafficking (Sollund, 2019; van Uhm and Nijman, 2020). Beyond “target specific” insights about wildlife, identifying commonalities typologies of urban wildmeat trafficking and selling with drug trafficking can help support interagency efforts to counter trafficking writ large because of new understanding about the typological characteristics of offenders that are involved. For example, typology-related insight would help fulfill commitments posed in the proposed Wildlife Protocol to the United Nations
Convention on Organized Crime, which includes “increasing the exchange of information, including on known organized group suspected of taking part in trafficking, means of concealment of illicit goods…and enhancing border controls including the means of transporting specimens.” We know urban wildmeat trafficking is unsustainable and at times can be associated with other criminal activities such as drug (e.g., cocaine) trafficking (C. Plowman, personal observation). In some instances, urban wildmeat trade connects large geographical areas in ways that provide unique vantage into forest-city landscapes (e.g., the forests of northwest Democratic Republic of Congo and the port city of Lagos, Nigeria) (Mayor et al., 2019). Typologies can help highlight human behavioural similarities between illicit trades that may appear to be at opposite ends of the threat spectrum, or that may not be discernible using other approaches such as cultural or economic-only approaches (e.g., Bachmann et al., 2019). Multisectoral and interdisciplinary groups can only benefit from recognizing the commonalities that exist among those threats (Foss, 2017).

In criminology, typologies are often used to inform tailored regulatory and criminal justice reforms and improve understanding of the different ways that crime manifests, for example urban wildmeat trafficking likely has a unique urban dimensions when compared to rural wildlife trafficking (e.g., different crime patterns, crime rates). In conservation, typologies are often used to segment stakeholders for public engagement, social marketing, citizen science efforts, public perceptions, or sociodemographic variables (Mayor et al., 2019). Typologies can inform comparative analysis between the process of wildmeat trafficking in urban regions (e.g., capital city such as Brazzaville, port city such as Point) or countries with different levels of law enforcement capacity. For example, Sollund (2019) compared law enforcement authorities from Norway and Colombia, highlighting capacity and efficacy measures. Typologies can enable comparative analysis of levels of crime seriousness (e.g., Wyatt et al. (2020) explored Russian organized crime syndicates). The United Kingdom’s Home Office demonstrated how typologies can be used when they issued a report on their creation of a typology of human trafficking offenses which informed allocation of new operational responses; they used expert elicitation as one method of data collection for their work (Cooper et al., 2017). To date, the conservation community has lacked such typological information. Evidence-based typologies of actors involved in crime can be central for understanding how offenses manifest (e.g., are measured, tracked) and why offenders desist. Typologies such as those presented herein can raise new questions that can be asked and answered, such as how different types of offenders are recruited, to what extent is urban wildmeat trafficking driven by profit versus other drivers such as personal gratification, to what extent is organized crime involved, or what are the main methods of control used by offenders during exploitation and/or commission of crimes (Cooper et al., 2017).

The typologies discussed here help demonstrate the diversity of contemporary wildmeat trafficking in urban areas; this diversity can help focus interventions so they are more precise and are more likely to achieve intended outcomes. Trafficking can pose threats to wildlife populations and the humans that interact with them (Bachmann et al., 2019), as well as contribute to the global criminal economy. Semantics are an important consideration for interventions being implemented the context of crime in conservation. Illegal trade refers to criminalized acts such as drug, human and arms trafficking. Law enforcement
authorities are ready to allocate resources to address threats to the community but are much less ready to respond to less clearly harmful forms of illicit trade or forms that are not codified as being illegal. Many possible causes or forms of illicit trade are not enforcement priorities; the effects of illicit trade are often underappreciated or unseen by the very people who are best placed to respond. Criminalization is the harshest form of regulation, involving the most invasive forms of punishment and proceedings. Many scholars (e.g., Wyatt, 2013) argue criminalization should be used in a proportionate and reasonable manner and should be reserved for serious violations of wildlife laws. Pangolins, great apes and dwarf crocodiles are legally protected species. It is a crime to kill, transit, or sell these species for wildmeat (or other products). The crime of interest then, is the taking, movement, or sale of the animals or their parts. Wildlife-related crime is often not considered to be a serious crime, although it can involve considerable harm (e.g., in the form of threats to animal welfare from being trafficked alive). Clarifying the types of traffickers and sellers involved in the wildlife trafficking supply chain can inform intervention priorities, finding patterns among prioritized offender types such as repeat offending (i.e., recidivism), engagement in other types of crime, and desisting. Focusing on the most professional types of offenders is a common objective of conservation law enforcement officials and also criminal justice professionals.

Although our study does not provide complete answers or clarifications about these important urban criminogenic points, it does advance thinking and evidence about nuances to the illegal trade of wildlife. Specifically, this research describes the types of stakeholders involved in the illegal urban wildmeat trade of PAC species in Brazzaville and Pointe Noire, the Republic of the Congo. These typologies offer one description of urban PAC wildmeat traffickers and sellers. This information may be used for record keeping (e.g., prosecutions and convictions across PAC species and/or over time), better detection of PAC offenders (e.g., across age groups), and inform program evaluation (e.g., how the system of PAC conservation is, or is not, responding to wildlife crime). In exploring typologies in this context, we were able to acknowledge differences across value chain geographies. It is interesting to note heterogeneity and nuance of stakeholder typologies in trafficking and selling across wildlife species; it is also noteworthy that the typologies enabled us to distinguish between stakeholders involved in trafficking and selling pangolin meat versus pangolin scales. This distinction compliments, Bachmann et al. (2019), Mayor et al. (2019), van Vliet et al. (2019) and others who have tracked market trends, supply chains, trade routes, and law enforcement seizures of African pangolins and other species but from a different research perspective. Social and biological information can be combined and used to evaluate regulations for efficiency (e.g., are wildlife crime regulations and guidelines sufficient to sanction the more professional offender types?).

Differences in stakeholder typologies in particular may warrant additional and empirical investigation about types of people involved because of the potential connections to the global criminal economy. For example, how are professional offenders recruited, retained and promoted within the industry? How do different types of offenders communicate (e.g., email, SMS). Insight into which species are associated with other criminal activities—that is, organized, professionalized or formal types of trafficking and/or selling, can help prioritize or to the global criminal economy consider separately the wildlife trafficking geographies of source, transit, and demand (e.g., Kahler and Gore, 2012, South and Wyatt, 2011). Concomitantly considering stakeholder typologies across trafficking geographies can influence how different sectors, law enforcement and conservation for example, devise cooperative strategies to control or prevent harms from wildmeat trafficking. Such linkages may enable law enforcement and criminal justice authorities to differentiate (and thus prosecute differently) between the stakeholders involved in the transit and destination geographies of PAC wildmeat trafficking from those at the source geography. In many ways, this is a rural-to-urban challenge, not just a rural one. There may be differential levels of involvement of gangs, drug abuse, violence, and availability of guns in urban vs. rural areas that need to be accounted for in crime prevention. Differentiating but not stoving stakeholders will help clarify the illegal supply chains as well and promote thinking about new sectors to involve in interventions and solutions—particularly private industry or corporations. In many instances, illegal traders are not specialized and seize targets of opportunity and use existing trade routes to an advantage. In some instances, wildmeat trafficking converges with the legitimate economy because of the specific individual’s involvement in the trade. This means that illegal wildmeat trade is not always part of an informal economy but rather part of legitimate companies’ business models and not confined to black markets. Illegal wildmeat trade is not always part of a shadow economy (i.e., economy of goods and services not declared for tax), meaning that trade abuse could be occurring (e.g., abusing their role as a legitimate trader by incorporating illegal products). Trade abuse can often signal efforts to mask kleptocratic theft (Shelley, 2018).

Differentiations emerging from this research can help facilitate a law enforcement focus on the higher impact criminals as opposed to the lower-level individuals who are not part of the global criminal economy and are sometimes considered to be vulnerable populations; this focus also helps ensure human rights protections and environmental justice for vulnerable groups. It also helps send a message to higher level criminals that they are being targeted and to local community members that they are not automatically being treated as criminals or offenders, although changes in local community behaviour can be a desired outcome for conservation.
Further refining the lists and definitions of, as well as linkages between, stakeholder typologies for illegal urban wildmeat markets will be useful, as urbanization continues at a rapid pace in the Republic of the Congo, and elsewhere in the world. We still lack empirically based typologies for the motivations of high-level individuals who facilitate crime through their position of power (see Wyatt et al., 2020 for foundational insight). Tools and theories from white collar crime, perhaps once thought unconventional for conservation, could prove relevant for such exploration (e.g., Braithwaite, 1985). As the size and wealth of the urban populations grows, the demand for wildmeat is expected to increase. Minimizing adverse per capita impacts of cities on resources and the living environment and supporting more positive environmental linkages between urban and rural areas, can be accomplished in part through reduced wildmeat trafficking. Reducing the scope and scale of criminality associated with wildmeat trafficking can enable better realization of sustainable development goals, such as tourism revenue from protected areas and rural communities relying on natural resource bases for livelihoods and food security. Conservationists and law enforcement practitioners are increasingly aware that in order to prevent conservation crime, the preventers must understand the crime environment as least as well as the offenders, and preferably better (Cornish, 1994). Stakeholder typologies are part of the knowledge equation for preventative interventions designed to help reduce harms from urban wildmeat trafficking.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

U.S. Fish and Wildlife Service: F16AP00865.

References