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Frameworks Regulating Hunting for Meat in Tropical Countries Leave the Sector in the Limbo

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Despite restrictive legal frameworks, hunting for meat is a reality in tropical countries. In this policy paper, we argue that formal regulations are ill adapted to the contexts in which they should be applied and are characterized by gaps and contradictions that maintain the sector in a limbo. We use contemporary examples from Latin America and Africa described in detail in publications ranging from 2015 to 2019, to illustrate the need for legal reforms that clarify the rights to sell surplus of meat and align land tenure rights with wildlife use rights to suggest a new definition of subsistence hunting which accounts for the realities of communities from different cultural backgrounds.

Keywords: hunting, tropical count, legal framework, wildmeat, land tenure rights, sustainable use, rural societies, subsistence use

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INTRODUCTION

Wildmeat (or Bushmeat), defined as any non-domesticated mammals, reptiles, amphibians and birds hunted for food in tropical forests (Nasi et al., 2008), continues to play a key role for the food security of contemporary rural societies in tropical countries (Alves and van Vliet, 2018). It is also practiced in relation to a diversity of socio-cultural reasons (Morsello et al., 2015; Santos-Fita et al., 2015; van Vliet, 2018; Martins and Shackleton, 2019); crop protection (Abrahams et al., 2018; Constantino, 2019a), zoo-therapeutical purposes (Santos-Fita et al., 2012; Alves and da Silva Policarpo, 2018), income (Mavah et al., 2018; Rodríguez-Ríos and García-Páez, 2018; Rogan et al., 2018), and sport (Fischer et al., 2013). Our focus in this paper is on hunting for meat, because access to adequate food is a human right globally recognized to local communities. Despite the recognition that hunting for meat significantly contributes to local livelihoods (CBD, 2016) and to local economies (Lescuyer and Nasi, 2016), this type of hunting continues to occur in a context of informality and in parallel with existing regulations. Hunting for meat is therefore often stigmatized as "illegal," without distinction from other more detrimental illegal hunting practices, for example those linked to organized crime. This, on its own, limits innovations in promoting sustainable hunting practices and offers little opportunities for signatory countries to observe the recommendations from the Convention of Biological Diversity (CBD), with regards to sustainable hunting (Coad et al., 2019).

With the global decline of wildlife worldwide, donor's attention continues to focus on efforts to reduce illegal wildlife trade through law enforcement. However, lessons learnt from practical experience show that this has limited impact, and particularly when it only focuses on militarization (Duffy et al., 2019). The reasons for failure are numerous and include corruption, lack of resources from the government to exercise sovereignty in remote locations where hunting takes place, lack

of political will to prioritize law enforcement regarding wildlife crimes, lack of alternatives to replace supply, high level of dependency on wildmeat for households living in extreme poverty, and a demand which is difficult to downsize due to the high value that consumers are ready to pay (Bennett, 2011; Wellsmith, 2011; Challender and MacMillan, 2014; Cooney et al., 2017; Swan, 2017; Constantino, 2019b). In addition, the intrinsic nature of laws and regulations on hunting is also at the heart of the failure, but little is said about the urgency to reform and adapt the regulatory framework, particularly with regards to hunting for food. Indeed, the lack of clarity and ambiguity prevailing in legal texts leaves room for diverse interpretations, favors insecurities and marginalization of subsistence hunters, fuels underground markets that are difficult to control, and dilute responsibilities for sustainable use.

In this policy paper, we argue that formal regulations are ill adapted to the contexts in which they should be applied and are characterized by gaps and contradiction that maintain hunting for meat and the sale of its surplus in a limbo. We use examples from Latin America [Mexico, Brazil, Colombia, Guyana) and Africa (Congo, Gabon and Democratic Republic of Congo (DRC)] to illustrate the urgent need for legal reforms that enhance the sustainable use of wildlife resources. Three questions have guided our analysis (**Table 1**): Is hunting for food legal? Can a hunter sell a surplus of wildmeat? Does the wildlife belong to the land owner? Based on the analysis on case studies in those two regions (Van Vliet et al., 2015; Sartoretto et al., 2017; Gomez, 2018; Santos-Fita, 2018; Antunes et al., 2019; Pezzuti et al., 2019), we discuss the main reasons why current legal texts fail to address the need for more sustainable practices and further marginalize those who depend on hunting for their livelihoods. General recommendations for the improvement of current regulations in line with the principles of adaptive management are provided.

THE BLURRY CONCEPT OF SUBSISTENCE HUNTING

The scientific literature on hunting originally distinguished two main types of hunting for meat carried out by local communities depending on the main motive for hunting: subsistence hunting and commercial hunting (Nasi et al., 2008). While the main incentive for hunting is often the need for self-consumption, hunters may sell part of the game as a source of income while keeping the rest to satisfy the food security of their families. In fact, the proportion and volumes of meat being sold varies from one context to another, making it difficult to establish simple categories. From a technical perspective, a flexible definition of subsistence hunting could include selling (mostly locally) part of the game hunted for consumption to purchase other subsistence goods (e.g., soap, gasoline, oil). However, in legal terms, the concept of subsistence hunting is defined differently and refers to different realities across our case studies. The diversity of terms used in legal frameworks attests of the difficulty to constrain the concept into a clear definition.

In Brazil, only Amerindians have the right to hunt in indigenous lands. For non-Amerindian hunters, this right is amenable to legal interpretation from a set of contradictory laws and incongruous legal concepts regarding human rights or wildlife protection. In practice, subsistence hunting is generally tolerated if intended "to quench the hunger" of a person in remote regions. As such, the concept of subsistence has been interpreted by some as restricted to the concept of "extreme necessity" (Antunes et al., 2019; Pezzuti et al., 2019). In Colombia, hunting for non-protected species, for food provision to the hunters' families is authorized under the term "subsistence hunting" (Van Vliet et al., 2015). All inhabitants may hunt for subsistence without permit in the national territory, provided there is no prohibition issued by environmental authorities. Guyana grants Amerindian villages the right to hunt for consumption as part of the "traditional rights," defined under the Amerindian Act as "any subsistence right or privilege, which is exercised sustainably in accordance with the spiritual relationship with the land" (Gomez, 2018). In Mexico, there is no clear indication of whether hunting can be practiced as part of the legally recognized "subsistence uses" or if it is subject to previous authorization by the Ministry in charge. Subsistence uses include the use of resources for direct consumption or sale, for satisfaction of basic needs, as well as those of economically dependent subjects (Santos-Fita, 2018). In an attempt to account for the spiritual dimension of subsistence hunting, the Mexican law allows communities to request a specific authorization for the use of wildlife in rituals and traditional ceremonies (Santos-Fita, 2018).

In Central Africa, the legislations of Gabon and Congo recognize customary use rights to local communities, which can take many forms, but often include all use and exploitation of timber and non-timber forest products to meet needs and requirements, including hunting (Sartoretto et al., 2017). However, due to the undistinguished regulation across all forms of hunting (commercial, sport, subsistence), it is often unclear whether current hunting restrictions (e.g., hunting seasons and gears) also apply to subsistence hunters. Moreover, since customary rights are often granted for subsistence reasons, the law limits their enjoyment solely to the satisfaction of personal or community needs. Trade in products resulting from the exercise of user rights is either prohibited, as in Congo, or restricted within the local community, as in Gabon. The DRC does not explicitly include the right to hunt among customary rights and, by doing so, excludes hunting from the regime of free exercise (Sartoretto et al., 2017). Hunting, including by local communities, is subordinated to the acquisition of a collective hunting license, which authorizes hunting "within the strict limits of their food needs."

THE SALE OF SURPLUS MEAT: FROM LACK OF CLARITY TO COMPLEX PROCEDURES

While selling the surplus of meat after fulfilling the needs of the family is an integral part of subsistence strategies, it

TABLE 1 | Comparison of national regulations regarding the use and trade of wildmeat in Colombia, Brazil, Guyana, Mexico, Republic of Congo, Gabon, and Democratic Republic of Congo.

Country	Hunting rights	Wildmeat trade rights	Relevant legal code
Colombia	Subsistence hunting allowed for any resident except for protected species in protected areas (unless specified by a management plan in the case of overlap with indigenous reserves)	Trade allowed in theory for species listed by the Ministry of Environment (no list has been issued to date) provided permit being issued by the regional environmental agency after submission of an Environmental Assessment Study (EIS)	• Decree-Law 2811 of 1974–National Code on Natural Renewable Resources Environment Protection • Decree 1076 of 2015–Regulatory Decree of the Environment Sustainable Development Sector • Law 17 of 1981–Approves the CITES convention • Resolution 705 of 2015–Establishes safety requirements for commercial hunting • Decree 1272 of 2016–Establishes regulations on wildlife hunting compensatory fees
Brazil	• Only explicitly allowed for Indigenous people (Amerindians) within titled land. • Generally tolerated to other ethnical groups and rural populations if intended "to quench the hunger" in remote regions.	• Trade is forbidden in the entire Brazilian territory, except inside titled indigenous lands where Amerindians have management rights over aboveground natural resources and there are no legal restrictions on internal commercialization of meat surplus • Commercial extensive management can be permitted in exceptional circumstances upon the existence of management plans and governmental licenses	• Law 5197/03 January 1967-Wildlife Protection Act • Law 6001/19 December 1973–Indian Statute • Brazilian Federal Constitution/05 October 1988 • Law 9605/12 February 1998–Law of Environmental Crimes • Law 9985/18 July 2000—National System of Conservation Units (SNUC) • Law 10826/22 December 2003—Disarmament Statute • Decree 5051/19 April 2004—Promulgation of ILO Convention 169 • Law 11346/15 September 2006—National System of Food and Nutritional Security (SISAN) • Decree 6040/08 February 2007—National Policy for the Sustainable Development of Traditional Peoples and Communities
Guyana	Only allowed in Amerindian titled lands Outside Amerindian titled lands, hunters are required to request a permit delivered by the Guyana Wildlife Conservation and Management Commission	Allowed for any citizen, pending obtention of a commercial license	Kaieteur National Park Act of 1930 • Fisheries (Aquatic Wildlife Control) Regulations of 1966 • Amerindian Act of 2006 • Animal Health Act of 2011 Protected Areas Act of 2011 Wildlife Management and Conservation Regulations of 2013 Wildlife Conservation and Management Act of 2016
Mexico	There is a lack of clarity whether hunting can be practiced as part of the legally recognized "subsistence uses" or if it is subject to previous authorization by the Ministry in charge	Trade is legal only if the meat comes from intensive or extensive breeding authorized centers (called Wildlife Management Units—UMA) and is sold in established and official markets	• General Law for Wildlife (Ley general de vida sylvestre, LGVS) (SEMARNAT, 2016/2000) • LGVS Regulations (SEMARNAT, 2014/2006) • National Strategy for Wildlife 1995–2000 (INE, 2000) • Program of Wildlife Conservation and productive diversification in the rural sector 1997–2000 (SEMARNAP, 1997)
Republic of Congo	Hunting for the satisfaction of personal or community needs is allowed under customary rights	No commercial trade is allowed under any circumstances	• Loi 37-2008 du 28 novembre 2008 sur la faune et les aires protégées • Loi 16-2000 portant code forestier • Loi 5-2011 du 25 février 2011 portant promotion et protection des droits des populations autochtones • Arrêté 3772 du 12 Aout 1972 fixant les périodes d'ouverture et de fermeture de la chasse sportive en République du Congo • Arrêté 5053/MEF/CAB du 19 juin 2007 définissant les directives nationales d'aménagement durable des concessions forestières

(Continued)

TABLE 1 | Continued

Country	Hunting rights	Wildmeat trade rights	Relevant legal code
Gabon	Hunting for the satisfaction of personal or community needs is allowed under customary rights	Trade within the community is allowed without restrictions following the economic user rights For trade beyond the community boundaries, the trader should obtain a certificate of origin, a zoo-sanitary certificate and a certificate of harvest	• Loi 16-2001 portant code forestier • Décret 161/2011, fixant les conditions de délivrance des permis et licences de chasse et de capture • Décret 163/2011, fixant les conditions de détention, de transport, de commercialisation des espèces animales sauvages, des trophées et produits de chasse • Décret 164/2011, règlementant le classement et les latitudes d'abattage des espèces animales. • (Décret 677/1994 relatif à l'agrément spécial de commerce des produits de la chasse) • (Décret 679/1994 fixant les périodes d' ouverture et de fermeture de la chasse)
Democratic Republic of Congo	Hunting, including by local communities, is subordinated to the acquisition of a collective hunting license, which authorizes hunting "within the strict limits of their food needs"	Trade is allowed under a specific license or a "commercial catch" permit, pending the obtention of a "hunting ability test" and a hunting license	• Loi 82-002 portant règlementation de la chasse • Arrêté 014/CAB/MIN/ENV/2004

is not recognized as such by most regulations. Differences exist across countries, but a common denominator is the lack of clarity concerning the right to sell game. Currently, the sale of surplus meat is at a cross-road between being under regulated, on one hand, and over-regulated on the other. While a number of key aspects regarding hunting and trade rights remain a vacuum, some very specific instruments, probably developed in isolation from the rest of the regulatory framework, have ended up over-regulating the activity, to a point where enforcement becomes nearly impossible. Many of the regulations are inoperative, and the institutions in charge are not prepared, operationally and or financially to comply with established responsibilities.

In Brazil, it is forbidden to transport, sell and acquire eggs, larvae or specimens of fauna and by-products from hunting and harvesting or from un-authorized breeding sites (Antunes et al., 2019; Pezzuti et al., 2019). Inside indigenous lands, Amerindians have management rights over aboveground natural resources and there are no commercial legal restrictions. Commercial extensive management of wildlife by local communities is permitted in exceptional circumstances that require specific regulations currently available for few species [e.g., *Melanosuchus niger* (Ranzi et al., 2018)].

In Colombia, the sale of surplus falls into the category of commercial hunting, and therefore subsistence trade is not distinguished from commercial trade (Van Vliet et al., 2015). For the purpose of selling the surplus of meat, a subsistence hunter should apply for a commercial hunting license that is subjected to complex requirements including the submission of an Environmental Assessment Study (EIS). These requirements fall far from the capacities of local communities promoting illegality. Moreover, given the lack on regulations establishing hunting quotas, obtaining a commercial hunting license is impossible in practice. As such, even if wildmeat trade is not explicitly forbidden it is not allowed in practice (Van Vliet et al., 2015).

In Guyana, the Wildlife Regulations of 2013 established that any person who proposes to engage in buying or selling wildlife shall, before commencing such activities, apply for a commercial license. This license includes the commercial activities but not the collection of wildlife. Thus, a commercial license holder who will harvest the animals by himself will require a wildlife collecting license as well (Gomez, 2018).

In Mexico, despite the creation of the Wildlife Management Units (UMA), which were initially designed to ensure that sustainable resource use could be an economic opportunity as well as a conservation strategy, only sport hunting was recognized in practice. Indeed, the term subsistence hunting was implicitly associated with concepts such as "furtive," "illegal," "unregulated," or "inadequate use" and was therefore not valued as a valid option for sustainable use, management, and conservation of wild fauna under the initial strategic proposition of UMA instrument (Santos-Fita, 2018). For the case of wildmeat, only intensive or extensive breeding authorized centers (under UMA) were given the right to trade meat and other products obtained from wild species in established, official and legal markets (Pilar and Moguel, 2007).

In Central Africa, Gabon is the only country which, following a forest law reform in 2008, introduced the concept of "economic user rights" (Sartoretto et al., 2017). These are rights, recognized by the State to local communities, to market locally and without intermediaries, part of the collection of products derived from their customary use rights. Customary hunters selling game products outside their community must apply to a hunting

permit and a commercial capture license. In addition, the Gabonese legislation provides that the possession and transport of the remains of species requires a certificate of origin, a zoo-sanitary certificate and a certificate of harvest (Sartoretto et al., 2017). Those requirements complexify processes far beyond the capacities of contemporary Gabonese hunters.

In the DRC, following the creation of two community permits for different purposes, there is a fairly clear legal framework for the marketing of game products. The commercial exploitation of wild animals and their by-products is possible only under a specific license subject to a number of conditions. The DRC also provides for a "commercial catch" permit among the special hunting permits, which can be allocated to communities (Sartoretto et al., 2017) but a "hunting ability test" is required for anyone applying for a hunting license (Sartoretto et al., 2017).

In Congo, user rights, including the right to hunt, are reserved for the satisfaction of the personal needs of their beneficiaries and the products derived from them cannot be used for commercial purposes. As such, commercial use in Congo is forbidden (Sartoretto et al., 2017).

LAND TENURE AS A GUARANTY TO RESOURCE USE RIGHTS: FROM POSITIVE DISCRIMINATION TO FURTHER MARGINALIZATION

Land tenure and resource ownership are key elements guarantying to diverse degrees the rights of local communities over wildlife. Land tenure legislations in different tropical countries provide special rights to indigenous people and traditional ethnic groups. This, in a sense, can be interpreted as part of the exceptional rights intended to compensate for past inequities imposed on indigenous communities. In Latin America, legislations on indigenous rights have evolved, especially since the 1980s, with the rewriting of national constitutions and the ratification of the ILO Convention 169. In Guyana, titles were granted to 96 Amerindian Villages over Guyana's territory. Brazil and Peru together account for more than 75% of all indigenous lands in the Amazon (RAISG, 2016). However, many titles do not correspond to the land extent of indigenous territories, leading to claims (Dooley and Griffiths, 2014; Constantino et al., 2018). This is particularly critical because current indigenous lands might not be large enough to guarantee the sustainable subsistence hunting. Although policymakers recognize the importance of hunting for indigenous people, and participatory zoning has been encouraged, hunting is still poorly considered in land delimitation in Brazil and Peru (Constantino et al., 2018). In Mexico, biodiversity is still considered to be "property of the nation," but the UMA model implies the possibility to transfer the rights of ownership and usufruct (including sale) to legal landowners, private or community owned. In this sense, the system in place does not discriminate one group or another. However, because the UMA instrument was originally formulated with the goal of guaranteeing the legality of sport hunting and commercial wildlife farming in northern Mexico, the procedures for the establishment of UMAs were developed with the private land model in mind and are poorly adapted to communal land tenure systems, marginalizing de facto subsistence hunting by indigenous groups (Santos-Fita, 2018).

In Central Africa, one of the characteristics of the tenure systems is the coexistence of property rights based on the modern civil law system and customary land rights. The distinction between statutory rights and socially recognized customary rights is blurred in some countries and when statutory tenure rights are granted regardless of existing customary tenure rights, the resulting overlap creates conflicts and abuse (Sartoretto et al., 2017).

Efforts to protect the rights of traditional people have often left some marginalized groups behind. Indeed, the exceptional rights for indigenous groups concerning land tenure and resource use was often based on stereotypes and ended up fostering further marginalization of non-indigenous traditional groups. In Brazil, a line of interpretation understands that non-indigenous traditional groups have no granted rights to use wildlife, even in officially protected areas specifically designed to allow for sustainable use (Antunes et al., 2019; Pezzuti et al., 2019). In Guyana, subsistence use is not granted to Amerindians without title land, nor to afro-descendants, west-Indians and European descendants (Gomez, 2018). In Congo, the law recognizes customary land rights in different ways depending on whether they are local communities or indigenous peoples (e.g., pigmy groups) (Sartoretto et al., 2017). For indigenous peoples, pre-existing customary tenure rights are recognized even in the absence of land titles. The law gives them the right to own, access and use the land and natural resources that they possess, occupy or traditionally use for subsistence but implementing decrees are still missing. Instead, for local communities (despite their traditional lifestyles and cosmovision), recognition of customary land rights follows a (a priori) simplified procedure, but still requires that the rights are registered to be recognized through a titling process.

ACTIONABLE RECOMMENDATIONS

The "ample government tolerance" to hunting for food contrasts with the rather prohibitive legal frameworks and the discourse stigmatizing hunters as criminals. The question is: who benefits and who loses in the context of ill adapted and ambiguous legal frameworks? The absence of enabling legal frameworks for sustainable use is clearly detrimental to the most marginalized sections of the society and hampers the possibility to generate new knowledge and test innovative models for sustainable use.

The following recommendations are formulated to the attention of countries that are showing increased interest in recognizing the importance of hunting and the need to provide an enabling environment for sustainable use:

- The concept of subsistence use should be re-discussed based on a culturally respectful and practically feasible definition that integrates the rights to food sovereignty and local autonomy as well as wildlife conservation priorities.
- National regulations should provide for the creation of flexible mechanism that allow to contextualize management options according to local specificities, in order to adjust to the

heterogeneous realities of the ecological and socio-cultural contexts of hunting.
- Cultural strategies for wildlife management, such as taboos, should be recognized and legitimated in management plans for their effectiveness on harvest regulation.
- Monitoring systems at local and national levels must be encouraged to generate long term data sets on wildlife population trends and on livelihoods, so as to inform the revision and updating of guidelines, rules or regulations.
- Frameworks that mainstream participation in self-management or co-management models based on pre-existing traditional management mechanisms and coupled with scientific and traditional knowledge, should be encouraged.
- The right balance between regulating to guaranty sustainability, while remaining realistic in terms of enforcement, is critical to ensure sustainable use. Over-regulation, only ends up killing the regulations.
- Reformulations of hunting regulations should be comprehensive to avoid dispersion, regulatory overlaps, gaps, or contradictions, particularly with regards to land tenure regulations. Without a comprehensive analysis of the entire legal framework governing the subject, the promulgation of new laws, which partially or fully repeal previous laws, contributes to the creation of significant confusion. Formulation of new regulatory instruments should follow the principle of legal certainty.

CONCLUSIONS

The analysis of available case studies describing legal frameworks concerning the use of wildlife for food highlights the need to clarify the rights to sell surplus of meat and to reconsider sustainable use of wildlife in light of a new definition of subsistence hunting. It will also be key to support the articulation of land tenure with wildlife tenure in such a way that accounts for the realities and needs of communities from different cultural backgrounds. Without the revision of current inconsistencies, overlaps and gaps, there is little hope that investments in law enforcement will achieve tangible outputs for wildlife conservation and the livelihoods of marginalized groups.

AUTHOR CONTRIBUTIONS

NvV had the idea of drafting this paper, collected information from different tropical countries on hunting for meat regulations, wrote a first draft and consolidated a final version based on the comments and changes made by other authors. AA, PC, and DS-F made direct contributions to the paper based on their research work in Brazil in regards to regulations on hunting for meat. DS-F also contributed from his research of this topic in Mexico. JG made direct contributions to the paper based on her research work on the legal framework on wildlife in Colombia and Guyana. ES made direct contributions to the paper based on his research work in Gabon and Congo in regards to hunting for meat regulations.

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