



# "Bushmeat Crisis" and "Cultural Imperialism" in Wildlife Management? Taking Value Orientations Into Account for a More Sustainable and Culturally Acceptable Wildmeat Sector

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In tropical regions, two decades after the "Bushmeat Crisis" outcry, there is now a growing recognition of the failure of single solutions to the issue. Strict protectionist measures toward wildlife consumption through highly militarized law enforcement has proved to fail (Bennett, 2011; Wellsmith, 2011; Challender and MacMillan, 2014; Cooney et al., 2017). The development of alternative livelihoods, which was based on the hypothesis that hunting and consumption of wildmeat could be downsized if the reliance on wildlife as a source of food and income could be reduced, also evidenced several short comes (Wicander and Coad, 2015; Alves and van Vliet, 2018). More recent recommendations by the scientific community (Wilkie et al., 2016) and endorsed by the Convention on Biological Diversity now acknowledge the need for more comprehensive and context specific responses to prevent wildlife declines (CBD, 2017). While these recommendations clearly show progress in our understanding of wildlife management complexities, I argue that any approach to manage wildmeat use in tropical regions might continue to result inadequate, un-effective or un-acceptable without a mutualistic understanding of the complexity and nuance regarding the multiple connections that people maintain with wildlife and how these reflect the value orientations shared within the resource constituency. I use a humans' dimension approach to characterize human relationships with wildmeat in tropical forest areas, both in rural and urban/western contexts. Then, I analyze how the two opposed ends of the wildlife value orientations continuum are resulting in stigmas, which represent clear bottlenecks for sustainability in tropical regions. Finally, I call for a better understanding of the cultural constructions that shape beliefs, attitudes and behavior among the different beneficiaries of wildlife, taking into account local/international, rural/urban, traditional/western specificities. Indeed, considering that the mass of the funding available for wildlife conservation originates from foreign countries and is mostly executed through international institutions, claims of "cultural imperialism" may legitimately continue to arise if the complex and dynamic cultural dimensions of human-wildlife relations is not adequately analyzed and considered.

# THE COMPLEXITY AND NUANCES IN WILDLIFE VALUE ORIENTATIONS IN RURAL AND URBAN CONTEXTS

Human relationships with wildlife have existed since human kind (Alves and Albuquerque, 2018) and have shaped different value orientations toward wildlife depending on the social and cultural constructs, moral values, material realities and political dynamics characteristic of a given time, location and social group (Manfredo, 2008; Jacobs, 2009; Alves and Barboza, 2018). Different authors in human dimensions research have employed various terms to describe patterns of basic beliefs that give direction to values toward wildlife, but basically follow the "protection vs. use" (Vaske and Manfredo, 2011) or the "mutualism vs. domination" (Teel et al., 2007; Manfredo et al., 2009) continuum. Individuals with a utilitarian or domination value orientation believe wildlife should be managed for human benefit, whereas individuals with a protectionist or mutualism orientation view wildlife as part of an extended family, deserving rights and care (Manfredo et al., 2009). This bi-dimensional model, tested and proved for North American contexts, is not necessarily adapted to other cultural contexts and methodologies based on emotional prompts have been developed to identify context specific wildlife value orientations (Dayer et al., 2007).

In rural areas from tropical regions, despite changing socioecological environments, increased market access, globalization, transition to cash economies, forest degradation, erosion of cultural heritages and nutritional transitions, wildmeat remains part of the menu (Alves and van Vliet, 2018). Rural people in tropical contexts usually maintain a utilitarian link to wildlife, but the degree of utilitarianism varies according to the context. Households more dependent on wildlife products will develop more utilitarian values than those who make a living out of wildlife based eco-tourism (Novelli et al., 2006). Similarly, households that highly depend on wildlife as a source of food (e.g., hunter-gatherer vs. sedentary agro-pastoralists) will have a more utilitarian orientation toward wildlife (Dounias and Froment, 2011). Poor households, who are usually highly dependent on wildmeat, are associated with more utilitarian attitudes toward wildlife and acutely perceive wildlife costs (e.g., crop raiding, dangerous encounters, etc.), particularly women who are more involved in agricultural and gathering activities (Bragagnolo et al., 2016; Rickenbach et al., 2017). Concern for safety or damage is indeed a mayor dimension shaping the domination orientation, with social factors as diverse as religious affiliation, ethnicity and cultural beliefs all shaping humanwildlife conflict intensity (Dickman, 2010).

However, qualifying rural wildlife value orientations as merely utilitarian or domination oriented would be simplistic and fail to elucidate the complex, nuanced and varied relations that humans have with animals, and that animals have with humans around the world (Hovorka, 2017). In rural contexts, the use of wildlife serves multiple purposes depending on the specificities of each context, but usually include an important role as a source of food, a strategy to reduce costs in crop production, a source of income, a source of medicine, as a means

to strengthen social bounds, or as part of a wider system of interconnected socio-physical relationships and identity (Nasi et al., 2008; Fischer et al., 2013; El Bizri et al., 2015; van Vliet et al., 2015b; Ichikawa et al., 2016; Alves and van Vliet, 2018). Reducing the relationship with wildlife to a materialistic relationship erases the possibility to understand the pluralistic value orientations that persist and reproduce in rural contexts. The *spiritualism/religious* dimension, which could be interpreted as eco-centric (Rose, 2001) is clearly elucidated in buddhism communities living around the Khao Yai National Park and Kui Buri National Park in Thailand (Tanakanjana and Saranet, 2007) or among the Monpa villagers in Tawang district, India, who avoid hunting for religious/spiritual reasons (Aiyadurai et al., 2010). Some traditional people who live in wilderness areas continue to view themselves as elements of nature, asserting spiritual values to wildlife that are reproduced by myths, rituals, taboos, and totems (Jimoh et al., 2012; Golden and Comaroff, 2015). Based on case studies from 33 countries, Bhagwat and Rutte (2006), showed that several communities across the globe believe in sacred areas, which are left relatively untouched. The cultural and ceremonial values of wildmeat are translated in how ritual feasts rely on visual and culinary consistency (e.g., bushmeat used in circumcision ceremonies in Gabon (van Vliet and Mbazza, 2011); festival foods among the Kichwa in Ecuador (Sirén, 2012); Mishmi tribe rituals in India (Aiyadurai et al., 2010); communal rituals among the Chakhesang (Naro et al., 2015). Familiarity, identity and taste for wildmeat are among the values that our nervous systems shape by starving for the familiar flavors and aromas of wildmeat and rejecting the more unusual tastes (Rose, 2001; Aiyadurai et al., 2010; van Vliet and Mbazza, 2011). For most hunters the motivation is not merely to satisfy hunger but also to meet a desire for bushmeat (the socalled "meat hunger" by Dounias and Ichikawa, 2017). Wildmeat consumption promotes a sense of "groundedness," security and identity, whose value is difficult to capture in materialistic terms (Jepson and Canney, 2003). Food preferences and habits are formed in large part through childhood experiences and actually persist throughout the course of an individual's life, helping to maintain memories and strengthen connections with traditional origins and territory (van Vliet et al., 2015c). The importance of hunting for *cultural prestige* is also a reality in many contemporary societies. In Kenva, for example, young men kill lions to earn social recognition, and there is a strong link between adherence to a local evangelical religion and the propensity to kill lions (Hazzah et al., 2009). Either through collective sharing or through the reciprocity logic, bushmeat sharing contributes to strengthen social bonds and reproduce cultural identity (van Vliet et al., 2015c; Lupo and Schmitt, 2017). Even in modern indigenous semi-urban communities in the Amazon, the consumption of wildmeat in positive social contexts results in a positive association between wildmeat consumption, emotional well-being and collective happiness (van Vliet et al., 2015c).

Value orientations toward wildlife probably differ substantially between small to medium sized towns flourishing in wilderness areas and the larger cities in which extinction of experience of wildmeat and wildlife might already be a reality, as evidenced in temperate regions from Europe and the United states (Cox and Gaston, 2018). However, for urban contexts in tropical forest areas, there is a lack of available data to generalize this assumption. With wild landscapes experiencing growing urbanization, new behaviors toward hunting and wildmeat consumption are gradually shaping, for example with the development of urban and peri-urban hunting patterns (Parry et al., 2014; van Vliet et al., 2015a) and the consumption of wildmeat becoming more associated to specific social events or considered as a delicacy or a source of prestige (Morsello et al., 2015; Shairp et al., 2016). In larger towns, urban lifestyles reduce daily interactions with nature as observed in temperate regions (Van Velsor and Nilon, 2006; Ballouard et al., 2011; Soga and Gaston, 2016; Cox and Gaston, 2018) and urban value orientations are likely to become more protectionist with strong emotional attachments to individual animals as already observed in Australia (Miller, 2003). While, available evidence has shown that protectionist orientations are much more prevalent in Western cultures than in other cultures (Novelli et al., 2006; Crudge et al., 2016), through globalization, TV, advertisement, conservation lobbies and social media, Western value orientations toward wildlife are increasingly spread beyond their geographic boundaries (as already evidenced in Kuala Lumpur by Baharuddin, 2013). How new behaviors toward wildmeat consumption actually evidence changes in beliefs and values toward wildlife is a key question that needs urgent attention from a human dimensions perspective. Currently, data available regarding social values toward wildlife, bushmeat, and the environment in urban contexts from tropical forest regions is mostly anecdotal, theoretical, or outdated. In Africa alone, which will see it's urban population increase to 62% by 2050 (World Health Organization Centre for Health Development, 2010), a better understanding of human/wildlife relations along the rural-urban continuum appears to be an evident necessity.

# FROM CONTINUUM TO STIGMAS AND CONFLICT OVER WILDLIFE MANAGEMENT

While the relationships with wildlife are obviously complex and full of nuance, the debate has often ended in over simplifying and polarizing the opposed visions. The more the "hunterwildlife" relationship is reduced to the negative connotations of domination values, the more likely it is that protectionist behaviors are accused of "cultural imperialism" and provoke cultural backlash. With the media acting as a debate heater, these two extreme visions are becoming more difficult to reconcile.

On one hand, over the past decades, with the alarming scientific evidences of wildlife declines (Dirzo et al., 2014; Ripple et al., 2016; Benítez-López et al., 2017; van Velden et al., 2018), the protectionist orientation has gained more strength (Cooney et al., 2017). A conservation war through stricter law enforcement, militarized protection, and behavioral change approaches, are all part of the international agenda to downsize consumption of wildmeat in tropical regions at local, national and international

scales (Government of the UK., 2013; Commission européenne, 2015; USAID, 2016).

On the other hand, active indigenous groups worldwide are gaining more power to voice their right to consume wildlife, including the right to trade wildmeat (Eilperin, 2013; Searles, 2016; O'Neill, 2018). The main arguments used are food sovereignty (Searles, 2016; Hoover et al., 2017), quality of the diets (Samson and Pretty, 2006; Bodirsky and Johnson, 2008; Bordeleau et al., 2016; van Vliet et al., 2017a,b), protection of cultural identities (Fischer et al., 2013), and the right for selfdetermination (Schweitzer et al., 2000). Protectionist measures are increasingly tagged with severe accusations of cultural imperialism (Neves-Graça, 2010 and cultural genocide Kingston, 2015. Recently, an international conservation organization has been accused of inadvertently facilitating serious human rights abuses against pygmy groups living in Cameroonian rainforests (Survival International, 2016). The report entitled "The human costs of conservation in Republic of Congo" (Ayari and Counsell, 2017) reached un-precedent influence on conservation business in Africa and is pushing funding agencies to foster human rightsbased approaches to conservation.

These extremes in "cultures of nature" only exacerbate conflicts over management decisions. Following the term used by Manfredo et al. (2017), the stigmatization of the debate around the use of wildmeat in tropical regions will ultimately foster a "cultural backlash" with negative impacts on both wildlife and local livelihoods. A recent paper by Verweijen and Marijnen (2018) already demonstrates that strict law enforcement and joint operations of the Congolese army and park guards in Virunga National Park, fuel, rather than mitigate, wildlife poaching and armed mobilization. Local resistance to the strict enforcement approach translates into forms of "resistance poaching" within the boundaries of the park (purposely targeting key conservation species), under the protection of armed groups. As such, the perpetuation of extreme value orientations will result in a lack of adequate policy and management responses, trapping rural/indigenous communities in a vicious cycle of illegality, un-sustainability and criminalization and leading to the continued ecological and cultural extinctions of tropical wildlife.

# CONCLUSION

I stress the need for a more careful consideration of value orientations toward wildlife not assuming attitudes in congruence with western conservation interests nor assuming that traditional /indigenous values toward wildlife are carved in stone. The challenge is to bring segmented perspectives away from hegemony, into an overall vision for conservation that is broadly inclusive of a full range of wildlife values (Manfredo et al., 2017). Taking into account both hegemonic and marginalized ideas about wildlife will reduce the likelihood for conservation abuses in postcolonial contexts (McGregor, 2005) and provide a unique opportunity to shift the paradigms in tropical wildlife management. The human stakeholders with the most to lose often have no voice in decision-making. This

is why, although some conservation practitioners suggest that promoting cultural change regarding wildlife use is legitimate based on evidence-based scientific knowledge about the "bushmeat crisis" (Jepson and Canney, 2003; Dickman et al., 2015), I argue that acknowledging the disparities in power relationships, providing the necessary grounds for a fair debate and support free decision making by the legitimate constituency are all necessary steps to avoid claims of "cultural imperialism" in conservation practice. Failing to do so might increase the potential for social conflict over wildmeat management issues. In line with Hovorka (2017) I think it is crucial to embrace the richness and complexity of cross-cultural plurality and take disparate value orientations seriously without privileging any-one presumptively. In a period of unparalleled socialecological change, bringing together the differences in wildlife value orientations between local/international, rural/urban, traditional/western visions is as necessary step in radically

### REFERENCES

- Aiyadurai, A., Singh, N. J., and Milner-Gulland, E. J. (2010). Wildlife hunting by indigenous tribes: a case study from Arunachal Pradesh, north-east India. *Oryx*, 44, 564–572. doi: 10.1017/S0030605309990937
- Alves, R. R. N., and Albuquerque, U. P. (eds.). (2018). "Introduction: animals in our lives," in *Ethnozoology* (Oxford, UK: Elsevier), 1–7.
- Alves, R. R. N., and Barboza, R. R. D. (2018). "The role of animals in human culture," in *Ethnozoology*, eds R. R. N. Alves and U. P. Albuquerque (Oxford, UK: Elsevier), 277–301.
- Alves, R. R. N., and van Vliet, N. (2018). "Wild fauna on the menu," in *Ethnozoology*, eds R. R. N. Alves and U. P. Albuquerque (Oxford, UK: Elsevier), 167–194.
- Ayari, I., and Counsell, S. (2017). The Human Costs of Conservation in Republic of Congo. London: The Rainforest Foundation.
- Baharuddin, Z. M. (2013). Environmental attitude: values on urban wildlife a case study of Kuala Lumpur Urban Parks. *Edinburgh Arch. Res.* 33, 25–45.
- Ballouard, J. M., Brischoux, F., and Bonnet, X. (2011). Children prioritize virtual exotic biodiversity over local biodiversity. *PLoS ONE* 6:e23152. doi: 10.1371/journal.pone.0023152
- Benítez-López, A., Alkemade, R., Schipper, A. M., Ingram, D. J., Verweij, P. A., Eikelboom, J. A., et al. (2017). The impact of hunting on tropical mammal and bird populations. *Science* 356, 180–183. doi: 10.1126/science.aaj1891
- Bennett, E. L. (2011). Another inconvenient truth: the failure of enforcement systems to save charismatic species. Oryx 45, 476–479. doi: 10.1017/S003060531000178X
- Bhagwat, S. A., and Rutte, C. (2006). Sacred groves: potential for biodiversity management. *Front. Ecol. Environ.* 4, 519–524. doi: 10.1890/1540-9295%282006%294%5b519:SGPFBM%5d2.0.CO;2
- Bodirsky, M., and Johnson, J. (2008). Decolonizing diet: healing by reclaiming traditional Indigenous foodways. *Cuizine* 1. doi: 10.7202/019373ar
- Bordeleau, S., Asselin, H., Mazerolle, M. J., and Imbeau, L. (2016). "Is it still safe to eat traditional food?" Addressing traditional food safety concerns in aboriginal communities. *Sci. Total Environ.* 565, 529–538. doi: 10.1016/j.scitotenv.2016.04.189
- Bragagnolo, C., Malhado, A. C., Jepson, P., and Ladle, R. J. (2016). Modelling local attitudes to protected areas in developing countries. *Conserv. Soc.* 14, 163–182. doi: 10.4103/0972-4923.191161
- CBD (2017). Sustainable wildlife management: guidance for a sustainable wild meat sector. *CBD SBSTTA* 21/3.
- Challender, D. W., and MacMillan, D. C. (2014). Poaching is more than an enforcement problem. *Conserv. Lett.* 7, 484–494. doi: 10.1111/conl.12082
- Commission européenne (2015). Au delà des éléphants. Éléments d'une approche stratégique de l'UE pour la conservation de la nature en Afrique –

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The author confirms being the sole contributor of this work and approved it for publication.

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- Cooney, R., Roe, D., Dublin, H., Phelps, J., Wilkie, D., Keane, A., et al. (2017). From poachers to protectors: engaging local communities in solutions to illegal wildlife trade. *Conserv. Lett.* 10, 367–374. doi: 10.1111/conl.12294
- Cox, D. T. C., and Gaston, K. J. (2018). Human-nature interactions and the consequences and drivers of provisioning wildlife. *Phil. Trans. R. Soc. B* 373:20170092. doi: 10.1098/rstb.2017.0092
- Crudge, B., O'Connor, D., Hunt, M., Davis, E. O., and Browne-Nuñez, C. (2016). Groundwork for effective conservation education: an example of *in situ* and *ex situ* collaboration in South East Asia. *Int. Zoo Yearbook* 50, 34–48. doi: 10.1111/izy.12120
- Dayer, A. A., Stinchfield, H. M., and Manfredo, M. J. (2007). Stories about wildlife: Developing an instrument for identifying wildlife value orientations cross-culturally. *Hum. Dimen. Wildlife* 12, 307–315. doi: 10.1080/10871200701555410
- Dickman, A. J. (2010). Complexities of conflict: the importance of considering social factors for effectively resolving human-wildlife conflict. *Anim. Conserv.* 13, 458–466. doi: 10.1111/j.1469-1795.2010.00368.x
- Dickman, A., Johnson, P. J., van Kesteren, F., and Macdonald, D. W. (2015). The moral basis for conservation: how is it affected by culture? *Front. Ecol. Environ.* 13, 325–331. doi: 10.1890/140056
- Dirzo, R., Young, H. S., Galetti, M., Ceballos, G., Isaac, N. J., and Collen, B. (2014). Defaunation in the Anthropocene. *Science* 345, 401–406. doi: 10.1126/science.1251817
- Dounias, E., and Froment, A. (2011). From foraging to farming among presentday forest hunter-gatherers: consequences on diet and health. *Int. Forest. Rev.* 13, 294–304. doi: 10.1505/146554811798293818
- Dounias, E., and Ichikawa, M. (2017). Seasonal Bushmeat Hunger in the Congo Basin. *Eco. Health* 14, 575–590. doi: 10.1007/s10393-017-1252-y
- Eilperin, J. (2013). Polar Bear Trade Ban Rejected at Global Meeting. The Washington Post. Available online at: https://www.washingtonpost.com/ national/health-science/polar-bear-trade-ban-rejected-at-global-meeting/ 2013/03/07/a966b604-873d-11e2-98a3b3db6b9ac586\_story.html?noredirect= on&utm\_term=.b4c9d7464451 (Accessed in May 2018)
- El Bizri, H. R., Morcatty, T. Q., Lima, J. J., and Valsecchi, J. (2015). The thrill of the chase: uncovering illegal sport hunting in Brazil through YouTube<sup>TM</sup> posts. *Ecol. Soc.* 20:30. doi: 10.5751/ES-07882-200330
- Fischer, A., Kereži, V., Arroyo, B., Mateos-Delibes, M., Tadie, D., Lowassa, A., et al. (2013). (De) legitimising hunting–Discourses over the morality of hunting in Europe and eastern Africa. *Land Use Policy* 32, 261–270. doi: 10.1016/j.landusepol.2012. 11.002

- Golden, C. D., and Comaroff, J. (2015). The human health and conservation relevance of food taboos in northeastern Madagascar. *Ecol. Soc.* 20:42. doi: 10.5751/ES-07590-200242
- Government of the UK. (2013). *Meeting on the Illegal Wildlife Trade. Clarence House, 21 May 2013. Chair's Summary.* Available online at: https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/207710/Illegal-wildlife-trafficking-chairs-summary.pdf (accessed June 2015).
- Hazzah, L., Mulder, M. B., and Frank, L. (2009). Lions and warriors: social factors underlying declining African lion populations and the effect of incentive-based management in Kenya. *Biol. Conserv.* 142, 2428–2437. doi: 10.1016/j.biocon.2009.06.006
- Hoover, C., Parker, C., Hornby, C., Ostertag, S., Hansen-Craik, K., Pearce, T., et al. (2017). Cultural relevance in Arctic food security initiatives. *Sustain. Food Futures* 2, 17–18.
- Hovorka, A. J. (2017). Animal geographies I: globalizing and decolonizing. Prog. Hum. Geogr. 41, 382–394. doi: 10.1177/0309132516646291
- Ichikawa, M., Hattori, S., and Yasuoka, H. (2016). "Bushmeat crisis, forestry reforms and contemporary hunting among central african forest hunters," in *Hunter-Gatherers in a Changing World*, eds V. Reyes-García and A. Pyhälä (Cham: Springer), 59–75.
- Jacobs, M. H. (2009). Why do we like or dislike animals? *Hum. Dimen. Wildlife* 14, 1–11. doi: 10.1080/10871200802545765
- Jepson, P., and Canney, S. (2003). Values-led conservation. *Global Ecol. Biogeogr.* 12, 271–274. doi: 10.1046/j.1466-822X.2003.00019.x
- Jimoh, S. O., Ikyaagba, E. T., Alarape, A. A., Obioha, E. E., and Adeyemi, A. A. (2012). The role of traditional laws and taboos in wildlife conservation in the Oban Hill Sector of Cross River National Park (CRNP), Nigeria. J. Hum. Ecol. 39, 209–219. doi: 10.1080/09709274.2012.11906513
- Kingston, L. (2015). The destruction of identity: cultural genocide and indigenous peoples. J. Hum. Rights 14, 63–83. doi: 10.1080/14754835.2014.886951
- Lupo, K. D., and Schmitt, D. N. (2017). How do meat scarcity and bushmeat commodification influence sharing and giving among forest foragers? A view from the central African Republic. *Hum. Ecol.* 45, 627–641. doi: 10.1007/s10745-017-9933-2
- Manfredo, M. J. (ed.) (2008). "Who cares about wildlife?" in Who Cares About Wildlife? Social Science Concepts for Exploring Human-Wildlife Relationships and Conservation Issues (New York, NY: Springer), 1–27.
- Manfredo, M. J., Bruskotter, J. T., Teel, T. L., Fulton, D., Schwartz, S. H., Arlinghaus, R., et al. (2017). Why social values cannot be changed for the sake of conservation. *Conserv. Biol.* 31, 772–780. doi: 10.1111/cobi.12855
- Manfredo, M. J., Teel, T. L., and Henry, K. L. (2009). Linking society and environment: a multilevel model of shifting wildlife value orientations in the western United States. Soc. Sci. Quart. 90, 407–427. doi: 10.1111/j.1540-6237.2009.00624.x
- McGregor, J. (2005). Crocodile crimes: people versus wildlife and the politics of postcolonial conservation on Lake Kariba, Zimbabwe. *Geoforum* 36, 353–369. doi: 10.1016/j.geoforum.2004.06.007
- Miller, K. K. (2003). Public and stakeholder values of wildlife in Victoria, Australia. Wildlife Res. 30, 465–476. doi: 10.1071/WR02007
- Morsello, C., Yagüe, B., Beltreschi, L., Van Vliet, N., Adams, C., Schor, T., et al. (2015). Cultural attitudes are stronger predictors of bushmeat consumption and preference than economic factors among urban Amazonians from Brazil and Colombia. *Ecol. Soc.* 20:21. doi: 10.5751/ES-07771-200421
- Naro, E., Mero, E. L., Naro, E., Kapfo, K. U., Wezah, K., Thopi, K., et al. (2015). Project hunt: an assessment of wildlife hunting practices by local community in Chizami, Nagaland, India. J. Threaten. Taxa 7, 7729–7743. doi: 10.11609/JoTT.04219.7729-43
- Nasi, R., Brown, D., Wilkie, D., Bennett, E., Tutin, C., Van Tol, G., et al. (2008). Conservation and use of wildlife-based resources: the bushmeat crisis. secretariat of the Convention on Biological Diversity, Montreal. and Center for International Forestry Research (CIFOR), Bogor. *Technical Series*, 50.
- Neves-Graça, K. (2010) Cashing in on cetourism: a critical ecological engagement with dominant E-NGO discourses on whaling, cetacean conservation, and whalewatching. *Antipode* 42, 719–741. doi: 10.1111/j.1467-8330.2010. 00770.x
- Novelli, M., Barnes, J. I., and Humavindu, M. (2006). The other side of the ecotourism coin: consumptive tourism in Southern Africa. *J. Ecotour.* 5, 62–79. doi: 10.1080/14724040608668447

- O'Neill, K. (2018). Traditional beneficiaries: trade bans, exemptions, and morality embodied in diets. Agric. Hum. Values 35, 1–13. doi: 10.1007/s10460-017-9846-0
- Parry, L., Barlow, J., and Pereira, H. (2014). Wildlife harvest and consumption in Amazonia's urbanized wilderness. *Conserv. Lett.* 7, 565–574. doi: 10.1111/conl.12151
- Rickenbach, O., Reyes-García, V., Moser, G., and García, C. (2017). What explains wildlife value orientations? A study among Central African forest dwellers. *Hum. Ecol.* 45, 293–306. doi: 10.1007/s10745-016-9860-7
- Ripple, W. J., Abernethy, K., Betts, M. G., Chapron, G., Dirzo, R., Galetti, M., et al. (2016). Bushmeat hunting and extinction risk to the world's mammals. *R. Soc. Open Sci.* 3:160498. doi: 10.1098/rsos.160498
- Rose, A. L. (2001). Social change and social values in mitigating bushmeat commerce. Hunting and Bushmeat Utilization in the African Rain Forest. *Perspect. Toward Blueprint Conserv. Action* 59–74. Available online at: http:// goldray.com/bushmeat/pdf/csc/social-change-values.pdf
- Samson, C., and Pretty, J. (2006). Environmental and health benefits of hunting lifestyles and diets for the Innu of Labrador. *Food Policy* 31, 528–553. doi: 10.1016/j.foodpol.2006.02.001
- Schweitzer, P., Biesele, M., and Hitchcock, R. (2000). Hunters and Gatherers in the Modern World: Conflict, Resistance, and Self-Determination. Berghahn Books. Available online at: http://www.jstor.org/stable/j.ctt1c0gm2f
- Searles (2016). To sell or not to sell: country food markets and Inuit identity in Nunavut. Food and foodways. *Explor. Hist. Cult. Hum. Nourish.* 24, 194–212. doi: 10.1080/07409710.2016.1210899
- Shairp, R., Veríssimo, D., Fraser, I., Challender, D., and MacMillan, D. (2016). Understanding urban demand for wild meat in Vietnam: implications for conservation actions. *PLoS ONE* 11:e0134787. doi: 10.1371/journal.pone.0134787
- Sirén, A. (2012). Festival hunting by the kichwa people in the Ecuadorian amazon. *J. Ethnobiol.* 32, 30–50. doi: 10.2993/0278-0771-32.1.30
- Soga, M., and Gaston, K. J. (2016). Extinction of experience: the loss of humannature interactions. *Front. Ecol. Environ.* 14, 94–101. doi: 10.1002/fee.1225
- Survival International (2016). Survival International Accuses wwf of Involvement in Violence and Abuse. Available online at: https://www.survivalinternational.org/ news/11107 (Accessed in May 2018)
- Tanakanjana, N., and Saranet, S. (2007). Wildlife value orientations in Thailand: preliminary findings. *Hum. Dimen. Wildlife* 12, 339–345. doi: 10.1080/10871200701555519
- Teel, T. L., Manfredo, M. J., Stinchfield, H. M. (2007). The need and theoretical basis for exploring wildlife value orientations cross-culturally. *Hum. Dimen. Wildlife* 12, 297–305. doi: 10.1080/10871200701555857
- USAID (2016). Annual Report. Biodiversity, Conservation and Forestry Programs. Available online at: https://www.usaid.gov/sites/default/files/documents/1865/ USAID\_FAB\_FY2016\_Annual\_Report\_FINAL.pdf (Accessed April 2018).
- van Velden, J., Wilson, K., and Biggs, D. (2018). The evidence for the bushmeat crisis in African savannas: A systematic quantitative literature review. *Biological Conservation*, 221, 345–356. doi: 10.1016/j.biocon.2018.03.022
- Van Velsor, S. W., and Nilon, C. H. (2006). A qualitative investigation of the urban African-American and Latino adolescent experience with wildlife. *Hum. Dimen. Wildlife* 11, 359–370. doi: 10.1080/10871200600894944
- van Vliet, N., Cornelis, D., Nguinguiri, J. C., Le Bel, S., Nasi, R., and Ratiarison, S. (2017a). "Les piliers d'avenir pour la gestion durable de la chasse villageoise en Afrique central," in *Communautés Locales et Utilisation Durable de la Faune en Afrique centrale*. eds N. van Vliet, J.-C. Nguinguiri, D. Cornelis and S. et Le Bel (Bogor: CIFOR), 169–171.
- van Vliet, N., Cruz, D., Quiceno-Mesa, M. P., Jonhson Neves de Aquino, L., Moreno, J., Ribeiro, R., et al. (2015a). Ride, shoot, and call: wildlife use among contemporary urban hunters in Três Fronteiras, Brazilian Amazon. *Ecol. Soc.* 20:8. doi: 10.5751/ES-07506-200308
- van Vliet, N., Fa, J., and Nasi, R. (2015b). Managing hunting under uncertainty: from one-off ecological indicators to resilience approaches in assessing the sustainability of bushmeat hunting. *Ecol. Soc.* 20:7. doi: 10.5751/ES-07669-200307
- van Vliet, N., and Mbazza, P. (2011). Recognizing the multiple reasons for bushmeat consumption in urban areas: a necessary step toward the sustainable use of wildlife for food in Central Africa. *Hum. Dimensions Wildlife* 16, 45–54. doi: 10.1080/10871209.2010.523924

- van Vliet, N., Moreno, J., Gomez, J., Zhou, W., Fa, J. E., Golden, C., et al. (2017b). Bushmeat and human health: Assessing the Evidence in tropical and sub-tropical forests. *Ethnobiol. Conserv.* 6, 1–45. doi: 10.15451/ec2017-04-6. 3-1-45
- van Vliet, N., Quiceno, M. P., Cruz, D., de Aquino, L. J. N., Yagüe, B., Schor, T., et al. (2015c). Bushmeat networks link the forest to urban areas in the trifrontier region between Brazil, Colombia, and Peru. *Ecol. Soc.* 20:21. doi: 10.5751/ES-07782-200321
- Vaske, J. J., and Manfredo, M. J. (2011). "Social psychological aspects of wildlife management (chapter 5)," in *Human Dimensions of Wildlife Management*, eds D. J. Decker, S. Riley, and W. F. Siemer (Baltimore: The JohnsHopkins University Press), 43–58.
- Verweijen, J., and Marijnen, E. (2018). The counterinsurgency/conservation nexus: guerrilla livelihoods and the dynamics of conflict and violence in the Virunga National Park, Democratic Republic of the Congo. J. Peasant Stud. 45, 300–320. doi: 10.1080/03066150.2016. 1203307
- Wellsmith, M. (2011). Wildlife crime: the problems of enforcement. Eur. J. Crim. Pol. Res. 17, 125–148. doi: 10.1007/s10610-011-9140-4

- Wicander, S., and Coad, L. (2015). Learning our lessons: a review of alternative livelihood projects in Central Africa. *IUCN*, 118. doi: 10.2305/IUCN.CH.2015.01.en
- Wilkie, D. S., Wieland, M., Boulet, H., Le Bel, S., Vliet, N., Cornelis, D., et al. (2016). Eating and conserving bushmeat in Africa. *Afr. J. Ecol.* 54, 402–414. doi: 10.1111/aje.12392
- World Health Organization Centre for Health Development (2010). *Hidden Cities: Unmasking and Overcoming Health Inequities in Urban Settings*. Geneva: World Health Organization.

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