

The Consumption of Bushmeat in Tombel, Southwest Region, Cameroon

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Abstract: Bushmeat is an important source of protein and income to the local inhabitants of Tombel. With the rapid growth in human population in Cameroon, the exploitation of wildlife for bushmeat is becoming unsustainable and is threatening both the existence of wildlife populations and the livelihoods of people depending on it. The aim of this study was to examine some behaviours of the residents of Tombel on bushmeat consumption. In the course of the study about five hundred and fifty questionnaires were administered to the people of Tombel town and its neighbouring villages. The study has shown a significance on Reasons and the Seasonal consumption of bushmeat in Tombel, $X^2 = 24.3$ $df = 2$ at $P < 0.05$, and $R^2 = 0.715$ at $P < 0.05$ respectively. There was more availability of bushmeat in the dry season 51.8% than in the wet season 48.4%. The tradition of trapping and hunting wildlife for bushmeat is facilitated by the dry forest floor of mount Kupe ecological zone. In addition, there was a significance between Profession and the Awareness of wildlife conservation laws $X^2 = 14.5$ $df = 3$ at $P < 0.05$. Furthermore, this study revealed that despite the knowledge on wildlife restriction laws, the people of Tombel 28.3% on office workers, 27.8% on the business class, 26.8% on farmers, and 17.2% on the student population seem not to be affected by the reinforcement of the government wildlife restrictions. A decrease in hunting and trapping rate is going to increase scarcity of wildlife, hence, would discourage bushmeat consumption. Thus, the national government is recommended to create jobs for the youths so that the wildlife management in mount kupe forest should be effective.

Keywords: Bushmeat, hunting, wildlife restrictions, forest, exploitation

1. INTRODUCTION

Wild meat, or bushmeat, provides a major source of protein for tropical forest people around the world (Wilkie and Carpenter 1999; Bennett *et al.* 2007). In the Congo Basin, wild meat has been estimated to contribute between 30 to 80% of the protein intake for forest-dwelling people (Koppert *et al.* 1996). In rural areas with poor access to markets, wild animals often constitute the cheapest and sometimes the only type of animal protein available (Starkey 2004). However, overharvesting can affect the survival of some species, especially large-bodied, slow-reproducing taxa (Bakarr *et al.* 2001; Fa *et al.* 2002). Patterns of species extinctions have been well documented across a wide variety of islands and for a number of taxonomic groups (Sax *et al.* 2002). Although most island extinctions have been attributed to threats such as predation by exotic species (Blackburn *et al.* 2004, Sax and Gaines 2008), hunting is known to have caused the extinction of native fauna on oceanic islands worldwide (Fitzpatrick and Keegan 2007).

Much of the current research on bushmeat in Africa focuses on West and Central Africa, and has shown that many of the findings from other areas also apply in this region, such as: the importance of bushmeat as an income source (De Merode, *et al.* 2004) and protein source (Vega *et al.* 2013); lack of sustainability of harvest rates (Barnes, 2002); the impact of bushmeat on species declines (Brashares *et al.* 2004); and differences in consumption between urban and rural markets (Jenkins *et al.* 2011). Despite the difference in ecosystem between the mainly tropical forests of Western and Central Africa and savannah, studies have shown some similarities, such as urban centres driving commercialisation of bushmeat (Lindsey *et al.* 2013) and reliance of rural people on bushmeat for food and income (Knapp, 2012). However, the migratory nature of many of the larger herbivores found in East Africa means that some findings are unique to

the area, such as peak hunting in the dry season coinciding with arrival of migratory species (Holmern *et al.* 2007). Such fundamental ecological differences mean that it is essential to explore the context of bushmeat in an area before designing interventions to address it, with only some extrapolation of findings possible from studies based in different ecological contexts.

Lack of domestic animals and fish stock is widespread in West and Central Africa. An investigation on impact of wealth and prices on bushmeat and alternative protein consumption in Gabon revealed that rising prices of bushmeat led to less bushmeat consumption and increased consumption of fish, implying that both were dietary substitutes (Wilkie *et al.*, 2005). Greater wealth was a significant predictor of meat consumption, though this was most pronounced when poor households experienced small increases in wealth. Households can be seen to decide whether to sell or consume a particular species, where a balance is reached between the marginal utility from consumption and the foregone net payoffs that would have resulted from a sale (Damania *et al.*, 2005). Many of the poorest inhabitants routinely keep only the heads and intestines of meat for family consumption, but sell the more desirable meats to maximize profits. Bushmeat is often a critical component of livelihood, especially during the lean season (De Merode *et al.*, 2004). The bushmeat commodity chain may involve professional, semi professional hunters, bushmeat as an additional source of income, and subsistence hunters who hunt for personal use (Cowlshaw *et al.*, 2005). If not consumed by the hunter's household or given as a gift, the urban commodity chain of the bushmeat trade may involve people who transport the meat, wholesalers, people who sell the meat at market, and chopbar (café) and restaurant owners along with their employees who serve bushmeat to customers. Women are heavily involved in the transportation and sale of bushmeat. Farming of domestic animals, wildlife and fish needs to be economically feasible to represent an attractive option; even then it needs to be part of a multifaceted approach if the goal is to significantly reduce pressure on wildlife populations (Mockrin *et al.*, 2005). The introduction of protein alternatives to diminish demand for bushmeat needs to factor in local taste preferences, cultural traditions, and political circumstances. Before advocating for protein alternatives as bushmeat alternatives in a region, household surveys can determine whether alternative sources of protein may be substitutable for bushmeat.

Among the bushmeat species consumed in Cameroon, some are on the IUCN Red List of Threatened Species (Anonyme, 2010), due to the level of uncontrolled killing in the Congo Basin. At risk mammals include, *Pan paniscus*, *Pan t. troglodytes*, *Gorilla g. gorilla*, diverse small monkeys of the genus *Cercopithecus* species complexes, and *Loxodonta cyclotis*. The reptile most threatened by the bushmeat trade is the dwarf crocodile, *Osteolaemus tetraspis* (Bene-Bene *et al.* 2007; Wright & Priston 2010). This also stems from other illegal practices such as traditional and commercial use of crocodile skin and elephant ivory (Chardonnet, 1995). However, the meat of these animals is also consumed when available. This situation is due to the emergence of commercial hunting which aims at satisfying the demand of urban markets but also to the lack of personnel and the inadequacy of financial and material means for those in charge of wildlife management (De Merode *et al.* 2007, Bennett *et al.* 2007). In order to reduce the pressure of hunting on the fauna, the control and management of hunting measures should be investigated, taking the season of reproduction into account. It should effectively involve local and native populations in the sustainable management of protected areas.

Bushmeat derives mainly from wildlife species, essentially mammals including species less sensitive to pressure, which should, however, be rationally exploited. In Cameroon, consumption of the three most prized orders, artiodactyls, rodents, and primates, was motivated essentially by its organic qualities and the social habits of the consumers (Mbete *et al.* 2010). If inhabitants of Brazzaville are allowed to consume bushmeat at the current levels, wildlife is likely to decrease and eventually to disappear. Conservation measures should take into account the interest of the population in bushmeat, and thus promote the breeding of domestic species and the breeding of animals whose meat products could be considered as "wild" by the population (blue duiker, forest buffalo, red river hog, African brush-tailed porcupine and cane rat). Such game farming already exists in the Congo Basin where cane rat, is sold at very competitive prices.

The Guineo-Congolian forests of western and central Africa are currently experiencing a 'boom' in bushmeat hunting (Barnes 2002). This traditional practice has evolved into a large-scale commercial activity due to rapid human population growth, socioeconomic change, infrastructure development and technological improvements (Bennett & Robinson 2000). A wide variety of terrestrial vertebrates

nictitans), Red Eared Monkey (*Cercopithecus erythrotis*), Tantalus (*Cercopithecus tantalus*), Cane Rat (*Thryonomys swinderianus*), Giant Rat (*Criceetomys spp.*), Porcupine (*Antherurus africanus*), African Civet (*Civettictis civetta*), Pangolin (*Manis spp.*), Red River Hog (*Potamochoerus porcus*), Red Duikers (*Cephalophus spp.*), Blue Duiker (*Cephalophus monticola*), Black Snake (*Naja spp.*), Monitor Lizard (*Veranus niloticus*), Python (*Python sebae*), and Viper (*Bitis gabonica*) (T.C 2010).

Data collection and analysis

Data were collected in the month May 2017, just after a pilot survey was conducted to test this method, questionnaires administration was done alongside the oral interview to five hundred and fifty inhabitants of Tombel. These instruments were used to collect both quantitative and qualitative data to safeguard the purpose of triangulation and complementation. Since the issue of bushmeat is becoming more sensitive to the wildlife management authorities in Cameroon, a mixed method approach was used to triangulate findings, as recommended by Gavin *et al.* (2010). The work was done with the help of two local field assistants. The field assistants helped in the local dialect communication translation between the researcher and the respondents whenever necessary. The administration of questionnaires and the oral interview was done in five different areas chosen by sampling and deemed to potentially have more variation in opinions, and more participant availability. Quantitative and qualitative data collected from the respondents was coded according to various variables and organized for computer analysis using SPSS Version 20.0. Analysis of this data included running of descriptive statistics such as frequency distribution and results presented in tables and pie charts, while the inferential statistical analysis done used chi-square and correlation models.

3. RESULTS

The study has shown in figure 2 and figure 3 a significance on Reasons and the Seasonal consumption of bushmeat in Tombel, $X^2 = 24.3$ $df= 2$ at $P= 0.000$, and $R^2 = 0.715$ at $P< 0.05$ respectively. In addition, there was a significance between Profession and the Awareness of wildlife conservation laws $X^2 = 14.5$ $df= 3$ at $P < 0.05$ (fig.4). There was more availability of bushmeat in the dry season 51.8% than in the wet season 48.4%. The tradition of trapping and hunting wildlife for bushmeat seems to have been facilitated by the dry forest floor of mount Kupe ecological zone. During this period the wildlife concentrate more on their trails towards the rivers, streams, and springs, a behaviour well understood by the trappers and the poachers. The hunting and trapping of wildlife is focused more on these areas where the animals are easily preyed upon. This is the main reason of the increase of bushmeat availability in Tombel area. But during the rainy season the wildlife seems not to have a specific target area for hunting and trapping, secondly, the rain prevents many hunters and trappers from exploiting the forest to maximum. This seems to reduce the population of wildlife killed for bushmeat consumers.

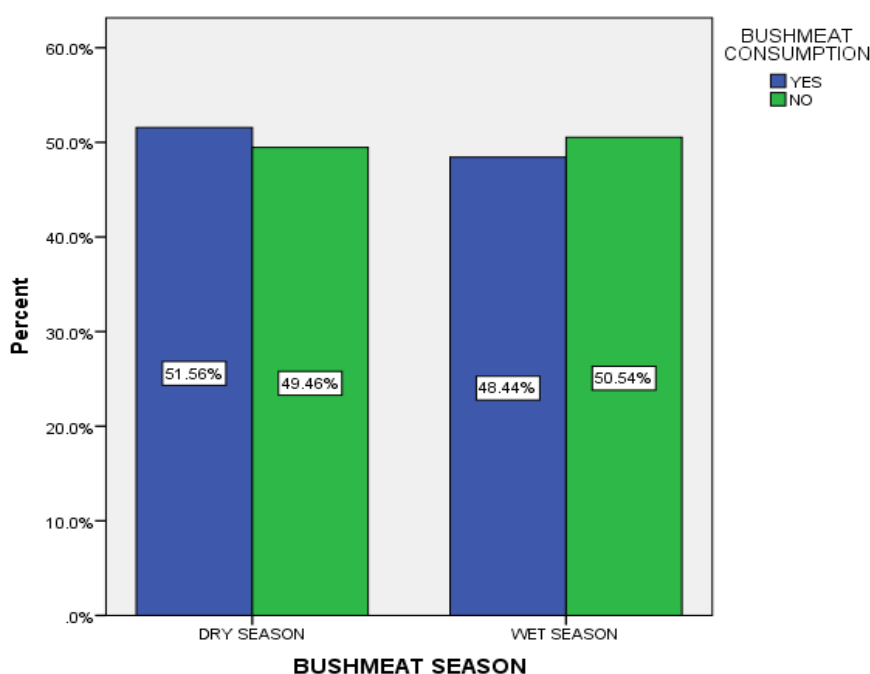


Fig 2. Bushmeat consumption season

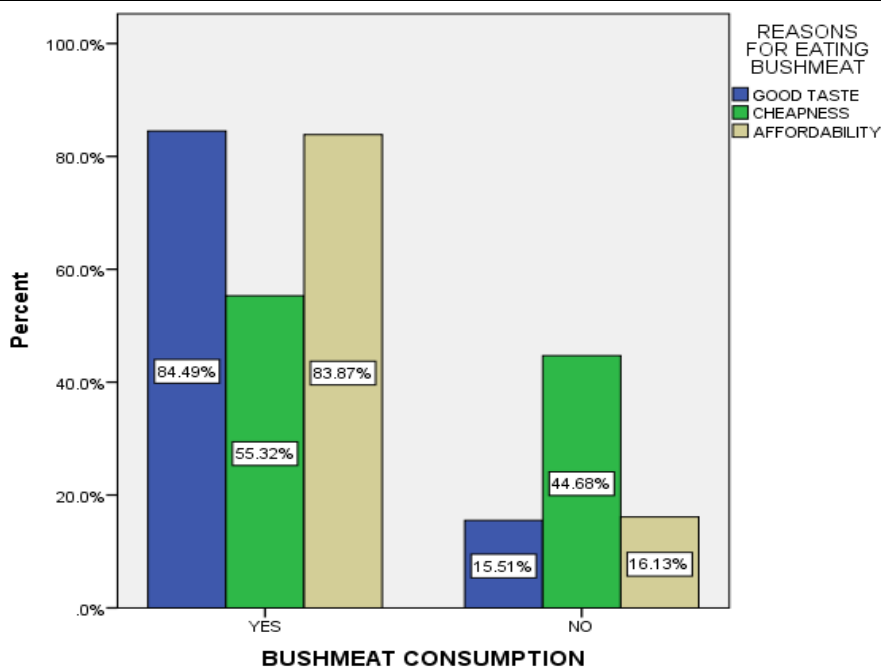


Fig 3: Bushmeat consumption reasons

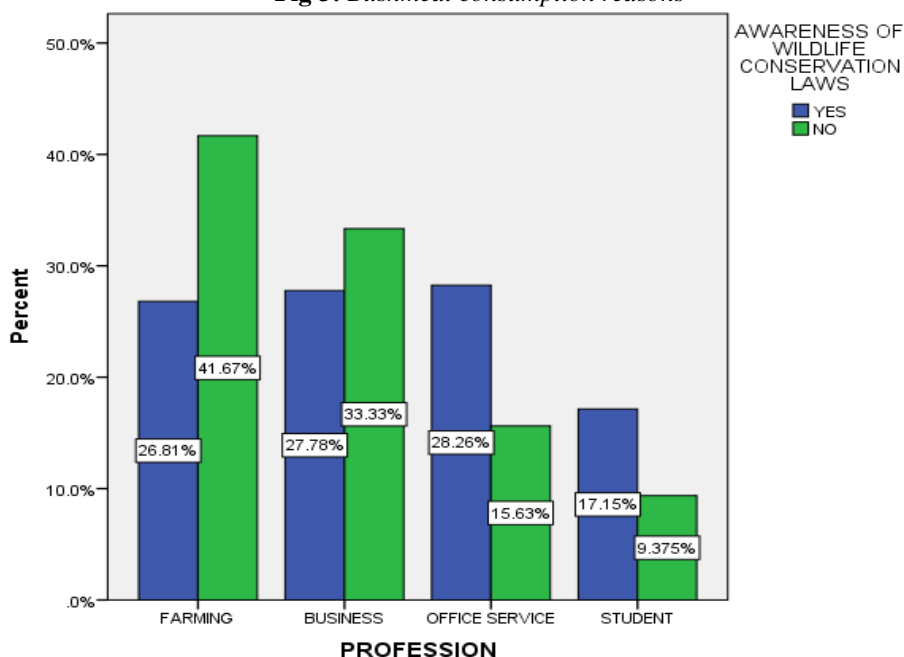


Fig 4: Profession and the awareness of wildlife conservation laws

The office workers in Tombel are educated and seem to have a reading behaviour more than any other professional inhabitants of the area. Their ability to have a higher knowledge background on wildlife conservation laws 28.26% is because they have more access to news papers and books where they read about wildlife conservation laws (fig.4). Tombel is known to have a relatively high population of teachers from Primary to High Schools forming the bulk of the professional workers in the area.

4. DISCUSSION

Bushmeat is known as an important protein source and income in so many areas in the tropics, where there are often few alternatives. However, due to the human population increase, such exploitation is becoming unsustainable and is threatening both the existence of wildlife populations and the livelihoods of people depending on it. Though, the causes of wildlife population reduction is very well understood, acting upon this understanding is often difficult, due to the complex range of interacting factors. Biodiversity concentration is found in the tropics, an area which home many of the world’s poorest people. This juxtaposition means that many in the tropics are directly

reliant on natural resources for their survival (USAID, 2006; Kalaba & Dougill, 2013) and, with growing populations (World Bank, 2014a), resources are being exploited unsustainably. The results of this survey have shown that bushmeat is a source of food, 84.5% on taste, 83.9% on affordability, and 55.3% on cheapness (fig.2). All the Tombel inhabitants seem to be having a craving love for bushmeat despite the national Government illegal hunting and poaching restrictions. The growing scarcity of bushmeat in Tombel market might not only be based on the Government restrictions and ban on endangered wildlife species but might also be because of the high demand for its consumption. Bushmeat is an important food source for people in developing countries (Fa & Meeuwig, 2002; Rentsch & Damon, 2013) and a valuable source of protein and fats in many rural diets (Bennett & Robinson, 2000); estimates of bushmeat consumption for the Amazon and Congo basins lie at over 5 million tons of meat annually, or 282.3g/person/day. The importance of bushmeat as a food source for rural people is matched by its importance as an income source (De Merode, *et al*, 2004; Brown & Marks, 2005), with hunting of bushmeat often a major proportion of income generation for the poorest households (Kümpel *et al*, 2010). Conversely, in some situations bushmeat consumption increases with household income, because it is preferred over domestic livestock protein (Jenkins *et al*, 2011). This has been attributed to an “inverted U pattern” of demand in relation to income, with a peak in demand for bushmeat at middle income range, then a decrease when more expensive domestic meats become affordable with higher income (Wilkie & Godoy, 2001). Another explanation for this apparent contradiction is proximity to urban centres, with households closer to urban areas increasing bushmeat consumption with income, and vice versa (Brashares *et al*, 2011).

Bushmeat consumption in Sub-saharan African Region is an old tradition, very difficult to overcome by wildlife conservation regulations at all governmental levels. The management of wildlife in the conserved areas has faced a lot of challenges over many decades. Majority of the inhabitants in these conservation areas are poor. Thus, wildlife meat is considered as a source of livelihood to these people. In addition, the bushmeat consumption long standing tradition of Tombel people in particular is recently focused on the good taste by its consumers (fig.3). Even those who can afford the alternative source of protein or domestic meat still count so much on the bushmeat for its good taste. According to Schenck *et al*, (2006) rural participants in a taste test in Gabon showed consistent preference for bushmeat compared to urban participants. Urban consumers in Equatorial Guinea (East *et al*, 2005), Zambia and Mozambique (Rob Barnett, 1997) prefer the taste of bushmeat to domestic meat. Conversely, in rural areas the lower price of bushmeat drives demand, rather than taste (Barnett, 1997; Lindsey *et al*, 2010; Lindsey *et al*, 2011). Bushmeat hunting and consumption can also have a cultural aspect, such differences in bushmeat consumption between different ethnic groups (Ceppi & Nielsen, 2014). However, it should be noted that some differences which are initially perceived as due to cultural factors may instead be explained by proximity to infrastructure such as roads, or the distance to areas of wildlife. Other cultural aspects can include use in traditional ceremonies, such as male circumcision ceremonies in Gabon (Van Vliet & Nasi, 2008).

This study has shown that despite the knowledge on wildlife restriction laws the people of Tombel 28.3% on office workers, 27.8% on the business class, 26.8% on farmers, and 17.2% on the student population, there seems to be no sign of compliance to the restrictions (fig.3). Unfortunately, the killing of wild animals has been restricted in many areas in Cameroon but already prepared bushmeat sold in restaurants and individual homes is still far from facing restrictions. Bushmeat is widely recognised as an important source of protein in the Congo Basin (Fa *et al*. 2003). It is usually the most available in rural communities and often the most preferred (Schenck *et al*. 2006). On average in Cameroon, bushmeat supplies 26 g of daily protein intake per person, equivalent to half the recommended daily protein requirement (Fa *et al*. 2003). Based on average weekly consumption estimates provided by interviewees rather than actual protein intake data, bushmeat appears to be the animal protein consumed most frequently by harvesters in Lebialem in Cameroon.

5. CONCLUSION

The hunting and trapping of wildlife for bushmeat consumption in Tombel area has very much increase in the recent years. This increase is believed to be due to the high unemployment rate in the entire country. The middle age population in this area is known to be very educated, but due to unemployment, these youth are returning home from urban cities after their university education for

less professional jobs like hunting and trapping of the wildlife, a source of livelihood. The national government regulations preventing the hunting and trapping of wildlife seems to yield very little success, since it has to do with poverty of the local inhabitants of Tombel. This study strongly recommends that the national government should create jobs for the youths in Tombel in order to distract them from the illegal hunting and trapping of wildlife for bushmeat marketing. Though, the government wildlife authorities might be claiming that the wildlife population is increasing in the forest of mount kupe, however, any comprehensive wildlife population inventory carried out might discover that the wildlife species have reduced in population and some even extirpated.

REFERENCES

- Anonyme, 2010. Carte d'Afrique avec pays, capitales d'Afrique www.afriqueindex.com/.../carte-afrique.htm. Consulté le 16/07/2010.
- Bakarr, M., W. Oduro, and E. Odomako. 2001. West Africa: regional overview of the bushmeat crisis. Pages 110-114 in N. D. Bailey, H. E. Eves, A. Stefan, and J. T. Stein, editors. Bushmeat crisis task force collaborative action planning meeting proceedings. Bushmeat Crisis Task Force, Silver Spring, Maryland, USA.:
- Barnes, R.F.W. 2002. The bushmeat boom and bust in West and Central Africa. *Oryx* 36(3), 236-242.
- Bene-Bene L., De Semboli B., Mbenzo V., S'hwa D., Bayogo R., Williamson L., Fay M., Hart J. and Maisels F. 2007. Forest Elephant Crisis in the Congo Basin. *Plos Biology* 4 (5): 945–953.
- Bennett, E.L. (2002) Is there a link between wild meat and food security? *Conservation Biology*. 16 (3), 590–592.
- Bennett, E. L., and J. G. Robinson. 2000. Hunting of wildlife in tropical forests: implications for biodiversity and forest peoples. World Bank, Washington, D.C., USA
- Bennett, E.L., Blencowe, E., Brandon, K., Brown, D., Burn, R.W., Cowlshaw, G., Davies, G., Dublin, H., Fa, J.E., Milner-Gulland, E.J., Robinson, J.G., Rowcliffe, J.M., Underwood, F.M., and Wilkie, D.S. 2007. Hunting for Consensus: reconciling bushmeat harvest, conservation, and development policy in West and Central Africa. *Conservation Biology* 21(3): 884- 887.
- Blackburn, T. M., P. Cassey, R. P. Duncan, K. L. Evans, and K.J. Gaston. 2004. Avian extinction and mammalian introductions on oceanic islands. *Science* 305:1955-1958.
- Brashares, J. S., C. D. Golden, K. Z. Weinbaum, C. B. Barrett, and G. V. Okello. 2011. Economic and geographic drivers of wildlife consumption in rural Africa. *Proceedings of the National Academy of Sciences* 108:13931-13936
- Brashares, J.S. Arcese P. Sam M.K. Coppolillo, P.B. Sinclair A.R.E. & Balmford, A. (2004) Bushmeat Hunting, Wildlife Declines, and Fish Supply in West Africa. *Science*, 306, 1180–1183.
- Brown, T. & Marks, S.A. (2007) Livelihoods, Hunting and the Game Meat Trade in Northern Zambia. In: Glyn Davies & David Brown (eds.). *Bushmeat and Livelihoods: Wildlife Management and Poverty Reduction*. [Online]. Oxford, UK, Blackwell Publishing Ltd. pp. 92 – 105.
- Ceppi, S.L. & Nielsen, M.R. (2014) A comparative study on bushmeat consumption patterns in ten tribes in Tanzania. *Tropical Conservation Science*. 7 (2), 272–287.
- Chardonnet P. 1995. Faune sauvage africaine. La ressource oubliée. Luxembourg: Commission européenne 1: 416p
- Cowlshaw, G., Mendelson, S., and Rowcliffe, J.M. 2005. Structure and operation of a bushmeat commodity chain in southwestern Ghana. *Conservation Biology* 19(1): 139-149.
- Damania, R., Milner-Gulland, E.J., and Crookes, D.J. 2005. A bioeconomic analysis of bushmeat hunting. *Proc. R. Soc. B* 272: 259-266.
- De Merode, E., Homewood, K., and Cowlshaw, G. 2004. The value of bushmeat and other wild foods to rural households living in extreme poverty in Democratic Republic of Congo. *Biological Conservation* 118: 573-581.
- De Merode E., Smith K.H., Homewood K., Pettifor R., Rowcliffe J.M. and Cowlshaw G. 2007. The impact of armed conflict on protected-area efficacy in Central Africa. *Biology Letters* 3 (3): 299–301. Google Scholar *Conservation* 118: 573-581.
- East, T., N. F. Kümpel, E. J. Milner-Gulland, and J. M. Rowcliffe. 2005. Determinants of urban bushmeat consumption in Río Muni, Equatorial Guinea. *Biological Conservation* 126:206-215
- Fa, J.F. and Bell, D.J. 2005. Hunting vulnerability, ecological characteristics and harvest rates of bushmeat species in afro-tropical forests. *Biological Conservation* 121: 167-176.

- Fa, J.E., Peres, C.A. & Meeuwig, J. (2002) Bushmeat Exploitation in Tropical Forests: an Intercontinental Comparison. *Conservation Biology*, 16, 232–237.
- Fa, J.E., Currie, D., and Meeuwig, J. 2003. Bushmeat and food security in the Congo Basin: linkages between wildlife and people's future. *Environmental Conservation* 30(1): 71-78
- Fitzpatrick, S. M., and W. F. Keegan. 2007. Human impacts and adaptations in the Caribbean islands: an historical ecology approach. *Earth and Environmental Science Transactions of the*
- Gavin, M.C., Solomon, J.N. & Blank, S.G. (2010) Measuring and monitoring illegal use of natural resources. *Conservation Biology*. [Online] 24 (1), 89–100.
- Holmern, T., Muya, J. & Røskoft, E. (2007) Local law enforcement and illegal bushmeat hunting outside the Serengeti National Park, Tanzania. *Environmental Conservation*. [Online] 34 (01), 55–63.
- Jenkins, R. K. B., A. Keane, A. R. Rakotoarivelo, V. Rakotomboavonjy, F. H. Randrianandrianina, H. J. Razafimanahaka, S. R. Ralaiarimalala, and J. P. G. Jones. 2011. Analysis of patterns of bushmeat consumption reveals extensive exploitation of protected species in eastern Madagascar.
- Kalaba, F.K., Quinn, C.H. & Dougill, A.J. (2013) The role of forest provisioning ecosystem services in coping with household stresses and shocks in Miombo woodlands, Zambia. *Ecosystem Services*. [Online] 5143–148. Available from: doi:10.1016/j.ecoser.2013.07.008.
- Koppert, G., E. Dounias, A. Froment, and P. Pasquet. 1996. Consommation alimentaire dans trois populations forestières de la région côtière du Cameroun: Yassa, Mvae et Bakola. Pages 477-495 in C. M. Hladik, A. Hladik, H. Pagezy, O. F. Linares, G. J. A. Koppert, and A. Froment, editors. *L'alimentation en forêt tropicale, interactions bioculturelles et perspectives de développement*. Volume I, Les ressources alimentaires : production et consommation, UNESCO, Paris, France.
- Knapp, E.J. (2012) Why poaching pays : A summary of risks and benefits illegal hunters face in Western Serengeti, Tanzania. *Tropical Conservation Science*. 5 (4), 434–445.
- Kümpel N.F., Milner-Gulland E.J., Cowlshaw G. and Rowcliffe J.M. 2010. Incentives for Hunting: The Role of Bushmeat in the Household Economy in Rural Equatorial Guinea. *Human Ecology* 38 (2):251–264.
- Lindsey, P.A., Románach, S.S., Matema, S., Matema, C., et al. (2011) Dynamics and underlying causes of illegal bushmeat trade in Zimbabwe. *Oryx*. [Online] 45 (01), 84–95.
- Lindsey, P.A., Balme, G., Becker, M., Begg, C., et al. (2013) The bushmeat trade in African savannas: Impacts, drivers, and possible solutions. *Biological Conservation*. [Online] 16080–96.
- Mbete P., Ngokaka C., Akouango F., Bonazebi N. and Voudibio J. 2010. Evaluation des quantités de gibiers prélevées autour du Parc National d'Odzala-Kokoua et leurs impacts sur la dégradation de la biodiversité. *Journal of Animal & Plant Sciences*. 8 (3): 1061–1069.
- Mockrin, M.H., Bennett, E.L., LaBruna, D.T. 2005. Wildlife farming: a viable alternative to hunting in tropical forests? WCS Working Paper 23.
- Rentsch, D. & Damon, A. (2013) Prices, poaching, and protein alternatives: An analysis of bushmeat consumption around Serengeti National Park, Tanzania. *Ecological Economics*.
- Rob Barnett (ed.) (1997) *Food for Thought: The Utilisation of Wild Meat in Eastern and Southern Africa*. Nairobi, TRAFFIC
- Sax, D. F., S. D. Gaines, and J. H Brown. 2002. Species invasions exceed extinctions on islands worldwide: a comparative study of plants and birds. *American Naturalist* 160:766-783.
- Schenck M., Effa-Nsame E., Starkey M., Wilkie D., Abernethy K., Telfer P., Godoy R. and Treves A. 2006. *Why People Eat Bushmeat: Results From Two-Choice, Taste Tests in Gabon, C*
- Tombel Council (2010). *The Tombel Council Report*
- USAID (2006) *Issues in Poverty Reduction and Natural Resource Management* . Washington DC, USAID
- Van Vliet, N. & Nasi, R. (2008) Hunting for livelihood in Northeast Gabon: Patterns , evolution , and sustainability. *Ecology and Society*. 13 (2), 33.
- Vega, M.G., Carpinetti, B., Duarte, J. & Fa, J.E. (2013) Contrasts in livelihoods and protein intake between commercial and subsistence bushmeat hunters in two villages on Bioko Island, Equatorial Guinea. *Conservation Biology*. [Online] 27 (3), 576–587.
- Wilkie, D. S., and J. F. Carpenter. 1999. Bushmeat hunting in the Congo Basin: an assessment of impacts and options for mitigation. *Biodiversity and Conservation* 8:927-955. <http://dx>.

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- Wilkie, D.S. & Godoy, R.A. (2001) Income and Price Elasticities of Bushmeat Demand in Lowland Amerindian Societies. *Conservation Biology*, 15, 761–769.
- Wilkie, D.S., Starkey, M., Abernethy, K., Effa, E.N., Telfer, P., and Godoy, R. 2005. Role of prices and wealth in consumer demand for bushmeat in Gabon, Central Africa. *Conservation Biology* 19(1): 268-274.
- World Bank (2014a) Fertility rate, total (births per woman). [Online]. 2014. Available from: <http://data.worldbank.org/indicator/SP.DYN.TFRT.IN/countries?display=map>
- Wright J.H. and Priston N.E.C. 2010. Hunting and trapping in Lebiallem Division, Cameroon: bushmeat harvesting practices and human reliance. *Endangered Species Research* 11: 1–12.

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