

CONSUMERS SURVEY OF WILD FAUNA: CHOICES, USES AND BENEFITS IN DSCHANG, CAMEROON

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ABSTRACT

A survey was carried out in Dschang (Cameroon) to determine the social acceptance of wild fauna between the months of August and September 2000. Eleven species of wild animals were found to be consumed by the people with the highest preference of 45.5% consumption for *Cricetomys gambianus*. *Causus maculatus*, *Francolinus bicalcaratus*, *Canis pallidus* and *Genetta tigrina* were also consumed. This preference and taste have made bush meat to be placed above pock and mutton. Ninety percent of the population is involved in bush meat exploitation. Sixty percent of restaurant operators assert that they earn a considerable amount of income from the sale of bush meat especially in the form of "pepper soup". Bush meat cost between US \$ 0.5 and 9.0 in Dschang City, Cameroon, but when prepared and served cost between US \$ 1.0 and 12. Therefore bush meat in Dschang could provide up to US \$ 13,639.5 per year if the present exploitation is recommended and constant monthly revenue is generated over the year. Bush meat parts (flesh, skin and hooked teeth, fats and bones, skin and horns) are associated with cultural believes

KEYWORDS: Survey, Wildlife, Consumption, Choice, Use, Dschang

INTRODUCTION

African governments have now recognized that bush meat is a priority for protein intake for village communities. International communities are making funds available to address its crisis as concluded recently on their study on the links between wildlife and poverty. Adams (last date of access 21/02/2006) the bush meat campaign's director of the Ministry of Environment and Forest of Cameroon told BBC News online that one hundred and fifty million people, one in eight of the world's poor, depend on wildlife for both protein and income. Over the years, this importance has become increasingly accentuated, not only as a traditional source of protein but also serves as a source of income for a ready game and trophies market. Today a visitor to many Central African cities like Kinshasa (Democratic Republic of Congo), Brazzaville (Congo), Ouesso (Congo), Bangui (Central African Republic), Libreville (Gabon), and Yaoundé (Cameroon) can purchase the meat of virtually any forest animal, endangered or not, whether it be gorilla, chimpanzee, monkey, pangolin, duiker, antelope, forest cat, crocodile, flying fox, eagle, monitor lizard, elephant, turtle, hippo, snake, or civet. Demand for bush meat is driven by the desire for protein, not necessarily the animal source of the protein, the popularity for which varies from market to market. In Gabon, McRae (last date of access 21/02/2006) reports on the expanding African bush meat trade in mongabay. Butler, (1995) has made efforts to raise interest in wildlife and wild lands conservation while promoting environmental issues so as to raise annual per capita consumption of bush meat to eight pounds annually. Oates (1996) concludes that this is due to the shift in human social and economic practices in the forest of Africa.

Seventy-eight percent of animal protein consumed by the local population in Cameroon forest zone is of wild origin (Bahuchet, 1992). Grigg (1995) estimated bush meat to have a 16 % share in Africa's overall protein supply. To the local population of Dschang, wildlife forms a non-negligible source of animal protein (Fonweban and Njiwe, 1990). Ajayi (1974) stated that the giant rat *Cricetomys gambianus* and grass cutter *Thryonomys swinderianus* have a wide social acceptance in West Africa. Even so, it ranks below fish, which in dietary regimes account for more than half of all animal proteins

consumed by populations in most African countries. The by-products of bush meat are important in culture and artistic lives of forest dwellers of Cameroon (Tsi and Ayodele 2004) and Brown (1996). According to Ngandjui and Blanc (2000), excessive hunting is a serious threat to wildlife population. Balinga (1978), a Cameroon wildlife officer, gives statistics demonstrating the rate of consumption of wildlife in Cameroon by stating that consumption rate stands at not less than 200 tons of bush meat every year, contributing about 5 tons of protein consumed per person. In Benin, bush meat production was estimated at 20,000 tons valued at 40 million F CFA in 1989 (Baptist & Mensah 1986). In Liberia, subsistence hunting yielded 105 tons of meat valued at US\$ 42 million (Anstey, 1991). Steel (1994) projected that half the meat sold in Gabon city and the village markets is bush meat with an estimated US\$ 50 million uncontrolled trade. FAO, (1998) stated that a total of 3,682 bush meat carcasses from 31 species weighing 13,884.6 kg were recorded in three bush meat market centers in Kumasi, Ghana over a 27 day period in 1991. The reasons for hunting can be attributed to lack of income generating options for rural and urban communities, the absence of affordable and acceptable substitutes, the opening up of "frontier" forest by logging and mining companies, the low capacity of government to make and enforce wildlife exploitation laws, and the fact that almost anyone can go hunting anywhere without restriction.

1990 was the turning point in the lives of agricultural producers in Cameroon in general, and the peasant coffee producers of the Western Highlands of Cameroon (Dschang) in particular (Ajaga and Hatcheu, 2001). Commodity prices on the world market improved to the satisfaction, albeit short-lived, for producers of primary products such as cocoa and coffee. Devaluation of the FCFA in 1993 provided a new impetus to the economy, particularly the agricultural sector, which is the source of the largest share of Cameroon's foreign earnings. Today the money the people of Dschang earn from the sale of food crops enables them to subsist and finance major projects/schemes (education, business, and agriculture), thereby enhancing family and community development. Probably, government's withdrawal of subsidies from the agricultural sector, and the high price of farm inputs has made

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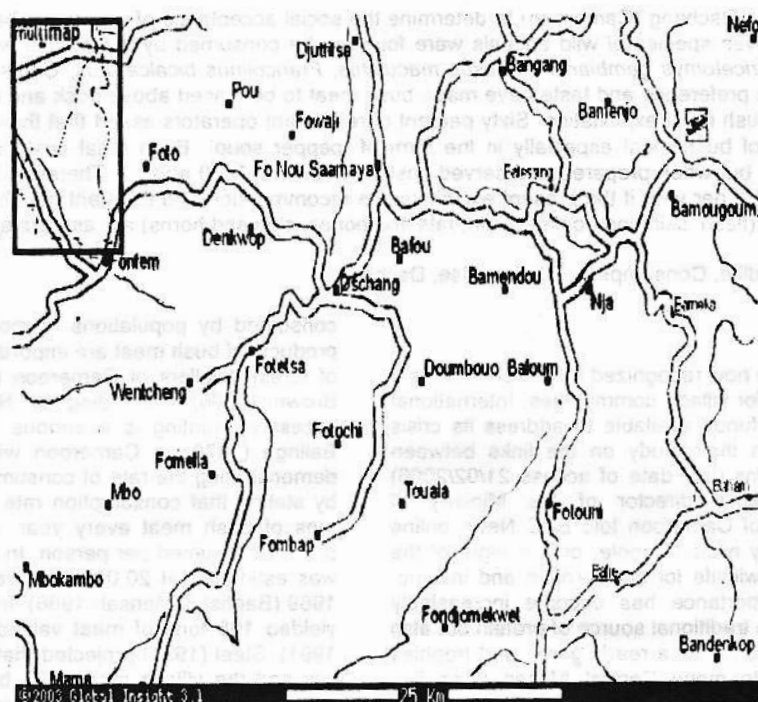
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This research is therefore an attempt to investigate the social acceptance of bush meat in Dschang, the level and reasons for consumption so as to highlight possible control measures. Results of this study will provide the needed information on rodents.

Study Area

Dschang is situated between latitude 5°38' and 5°8' N and longitude 9°33' and 10°20' E in the Western Highlands of Cameroon. Annual precipitation of 1,919 mm, altitude of about 1400 m, and temperature from 19°C – 20°C are characteristics of the region. Dschang is a mountain resort where the temperature is pleasantly cool. The original mountain vegetation has been transformed due to population explosion and intensive bush cutting. The population of Dschang is about 200,000 (KIIS, 2005) and agriculture and commerce are the main economic activities. Figure 1 shows the map of the region. Dschang is surrounded by several smaller villages.



(Last date of access 21/02/2006)

Questionnaires were issued to a total of 150 persons (hunters, restaurant operators and local inhabitants) involved in the study during the months of August and September 2000. 7 - 10 households in the villages of Dschang (Bafou, Foto, Forike, Mimto, Bamendou, Baleveng) were interviewed with each household head answering 120 questions in the survey. Analysis of the questionnaires was basically oriented to get information on consumption of bush meat and the socioeconomic covariates of consumption, particularly income and price. Dependent variables of the questionnaires were the quantity of bush meat consumed from the different species, the reasons for consumption, the state, the cost per kg and preference. Household and restaurant operators' incomes were also assessed as well as daily intake of protein with regards to bush meat. The authors of this research did comparative assessments of their personal findings from empirical published data. Direct and indirect observations (skins, skulls and horns shown by hunters and carcass seen displayed for sale in the local markets) were also used to examine and identify the wild animal species in a market survey and in the households. The study was conducted in two months and the total findings have been projected to estimate the annual total by multiplying the results by a factor of 6 to attain 12 months of the year.

Animals regarded as delicacies consumed in Dschang range from rodents, reptiles, birds, bats, primates and carnivores. The animals consumed in Dschang were identified as listed in a systematic order on Table 1. When smaller animals like rats, squirrels and bats entering new list of species consumed in Africa including snails, caterpillars and insects in other areas, it is possible to assert when mega species like elephants, drills, apes and gorillas would reach a critical point in the food chain and could serve a warning for conservationists.

The results on Table 1 also show species diversity of wild animals consumed in Dschang area with rodents as the greatest when classified. Relatively, the diversity and abundance of wild animal species consumed in Dschang are limited which is probably due to the difficulty to find. The Sancho game reserve, and the Mimito forest reserve (Cameroon) all situated in the vicinity of Dschang used to have abundant wildlife. Today they exist in reduced number but are not given an adequate attention by the government. Therefore they harbour little or no mega species. In the 1970's when there were virgin forests existing around Dschang, there was species diversity and abundance which used these habitats. The inhabitants had a greater variety of species consumed. As a consequence of habitat destruction, less adapted species

Table 1: List of bush meat hunted and consumed in Dschang area

Order	Class	Scientific names	Common names
Mammalia	Rodentia	<i>Cricetomys gambianus</i> <i>Thryonomys swinderianus</i> <i>Funisciurus sp.</i> <i>Hystrix cristata</i>	Cricetome Grass cutter Squirrel Porcupine
Mammalia	Primates	<i>Cercopithecus aethiops</i>	Green Monkey
Mammalia	Chiroptera	<i>Eidolon helvum</i>	Straw-colour fruit bat
Mammalia	Aves/ galliforms	<i>Francolinus bicalcaratus</i>	Bush fowl
Mammalia	Reptilia/Serpentes	<i>Causus maculatus</i> <i>Eryx conicus</i>	
Mammalia	Carnivora	<i>Canis pallidus</i> <i>Genetta sp</i>	Pale fox Civett
mammalia	Artiodactyla	<i>Sylvicapra grimmia</i>	Common duiker

disappeared and the remaining species (personal experience) became prolific and live within forest patches and farmlands. Even with this outcome it seems that virtually every wild animal of every kind and size is edible but the preference for some species is based on taste, size and availability or scarcity. The trend of consumption of bush meat in Dschang may be in a steady increase as FAO (1998) shows the general consumption of bush meat in Cameroon to have been in a steady increase from 1980-1994 (Figure 2).

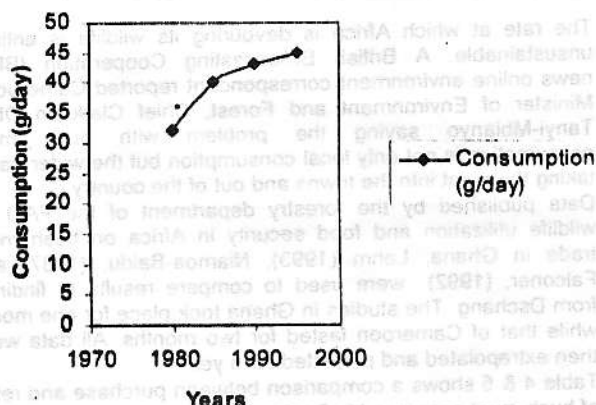


Figure 2: Bush meat production and consumption in Cameroon from 1980-1994
Adapted from FAO, (1998)

Figure 2 shows bush meat consumption over a time from 1980-1994. Total protein consumed (g/day) is 52.3 with 11.1 coming from animal protein of which 0.2 is bush meat. Gartlan, (1987) stated that 8.8% of the estimated 33.1 kg of meat consumed annually by each Cameroonian was contributed by bush meat. As years go by, there is an increase demand for bush meat, probably because of population increase, insufficient animal protein, high cost of domestication and farming the conventional domestic animals. There is also the lack of skillful manpower

Nuwanyakpa et al. (1997) conducted comparative studies on the preference and consumption of animal protein in a similar grassland region (Bamanda). Bush meat was identified to be above mutton and pork in terms of preference by farmers and Heifer Project International (HPI) staff respectively (Table 2). Eight conventional livestock products (chicken, beef, rabbit, fish, goat, pork, mutton and Guinea pigs) were ranked in order of preference by farmers and HPI staff chosen due to their availability. Farmers and HPI staff were used because of the assumption that they have easy access to all three animal protein sources (pork, mutton and bush meat) and could only

be left with the option of making a choice for what they prefer. This also shows some preference for bush meat to some conventional domestic stock in the region (western highlands of Cameroon) as a whole where Dschang is also situated. It is believed that, the worsening economic crisis in Cameroon and the high cost of chicken and beef (species of high preference Table 2 about US \$ 1.00 and 2.00 per kilogram at the village and urban levels respectively Nuwanyakpa et al. 1997) makes people go for bush meat. HPI is one of many non governmental organizations involved in rural development around the world. It works at the grass-root by providing animals and training to organized local groups that request for assistance.

Table 2: Priority order for meat available in the northwest province of Cameroon

Preference by Farmers	Preference by HPI Staff
Chicken	Chicken
Beef	Rabbit
Rabbit	Fish
Fish	Beef
Goat	Goat
Pork	Sheep (mutton)
Bush meat (Wildlife)	Bush meat (Wildlife)
Sheep (Mutton)	Pork
Guinea pig	Guinea pig

Sources: Nuwanyakpa et al. 1997

Table 3 shows the number of individuals of a species caught and the cost of fresh and prepared bush meat in Dschang in the months of August and September 2000. A well organized bush meat trade provides a considerable income to bush meat traders. Wholesaling and retailing of bush meat is at an often high demand especially from restaurant operators. Respondents from restaurant operators in Dschang show that bush meat costs between US\$ 0.5 and 9.0 per kg. When prepared and served it costs between US \$ 1 and 12. In Dschang a total of 1,147 animal casasses belonging to 12 species and contributing bushmeat valued at US\$ 1,292.45 fresh and US\$ 2,2739.25 prepared were recorded over a 60 days period in 2000. Studies carried out by Nkwatoh, (1997) observed an annual bushmeat sale of US \$ 5,000. In Dschang, hunters, a market woman or petit bush meat trader « buyam sellam » make US\$ 7,764.7 and restaurant operators make US\$ 13,639.5. Table 3 showed that prepared and served bush meat in restaurants makes a profit of 43.15%. However we can draw an analogy from it that the figures from Dschang are less because of obvious reasons (habitat destruction, overpopulation and disappearance or scarcity of wild animal species). Human factors, a high population, as well as socio-cultural and traditional believe account for the high income in Ejagham forest. The availability of abundant forest reserves

also account for the predominance of the bushmeat. However, at a global rating, the extent of bush meat consumed in Cameroon with a forest area of 155,330 km² harbouring a forest and urban population of 1,424,000 and 2,214,620 people respectively is 78,077,172 kg annually. This makes 503 kg/km² per year and 21 kg/person (Inamdar et al. 1999). Bush meat, however, is not easily available for urban communities to access. Of those living in urban environments, 43% consume bush meat once or several times a month, while one-quarter consume it less than once a month. As bush meat is becoming a foodstuff of

luxury in urban centers, its price is comparable to that of the meat from livestock. The majority (81.3%) of rural people consume bush meat at least once a month. From a comprehensive viewpoint, the main reason for bush meat consumption is certainly the easy access to wildlife resources (farmlands or forest). Consumption by preference ranks second, followed by consumption based on tradition, and, finally, on the moderate price of bush meat (Caspary, 1999). Table 3 below shows results which the authors obtained during a two months survey in Dschang 2000.

Table 3: Cost of bush meat in Dschang in the months of August and September 2000

Animal Species	N° killed (August & September, 2000)	UP per kg fresh (US\$)	Total cost fresh (US\$)	UP per kg prepared (US\$)	Total Cost prepared (US\$)
<i>Cricetomys gambianus</i>	17	1.25	21.25	4	68
<i>Thryonomys swinderianus</i>	11	6.50	71.5	12	132
<i>Funisciurus sp.</i>	21	4.25	89.25	10.5	220.5
<i>Hystrix cristata</i>	41	7.00	287.00	12	492
<i>Cercopithecus aethiops</i>	24	6.00	144.00	8.5	325
<i>Eryx conicus</i>	1	7.50	7.50	8.25	8.25
<i>Sylvicapra grimmia</i>	4	5.75	23.00	7	28
<i>Edolon helvum</i>	1,000	0.5	500	1	1,000
<i>Francolinus bicalcaratus</i>	9	9.00	81.00	11.5	103.5
<i>Cassus maculatus</i>	10	5.80	58.00	12	120
<i>Canis pallidus</i>	7	1.25	8.75	9	63
<i>Genetta sp.</i>	2	0.60	1.2	3	6
Two months Total	1,147		1,292.45		2,273.25
Projected annual total	6,882		7,764.70		13,639.50

From Table 3, animal abundance was determined numerically. The order chiroptera was abundant numerically with one species *Edolon helvum* having 1,000 animals. The order rodentia was abundant species-wise with 4 species (*Cricetomys gambianus*, *Thryonomys swinderianus*, *Funisciurus sp.*, *Hystrix cristata*) having 17, 11, 21 and 41 animals respectively. This fact coincides with reports of Robinson and Redford, (1994) and Hoffman and Roth, (1999) that rodents are widely and socially accepted as a source of animal protein in West and Central Africa. Price wise, US \$ 1.00 and 2.00 per kilogram was at least generated at the village and urban levels respectively.

From the questionnaire analysis, all hunting is done by men of average age 30 years. In Dschang 90% of the population carry out hunting as a secondary activity, 69% of whom are men and 21% women earning a direct income from processing and selling bush meat in the form of "pepper soup". Tlotsop, (2000) after studies of the population of Kelle Mpeck in the Littoral Province of Cameroon says 90% of the population is involved in bush meat exploitation. Brown, (1996) reported in the Kurop project area (Cameroon) that 90% of household cook bush meat throughout the year, 55% of men practice hunting and 28% of women earned a direct income from processing and selling bush meat.

The rate at which Africa is devouring its wildlife is entirely unsustainable. A British Broadcasting Cooperation (BBC) news online environment correspondent reported Cameroon's Minister of Environment and Forest, Chief Clarkson Oben Tanyi-Mbianyo saying the problem with bush meat consumption is not only local consumption but the wider trade, taking the meat into the towns and out of the country.

Data published by the forestry department of the FAO on wildlife utilization and food security in Africa on bush meat trade in Ghana, Lahm (1993), Niamoa-Baidu, (1987) and Falconer, (1992) were used to compare results of findings from Dschang. The studies in Ghana took place for one month while that of Cameroon lasted for two months. All data were then extrapolated and projected for a year.

Table 4 & 5 shows a comparison between purchase and retail of bush meat consumed in Dschang (a distant town) with other African countries Accra and Kumasi (Ghana). The demand is higher for *Cricetomys gambianus* in Dschang while in Accra and Kumasi, the demand is higher for *Thryonomys swinderianus* than in Dschang. Purchase is higher in the district towns than the capital town while retail is higher in the capital town than the district towns. A lot of people leave the

Table 4: Purchase of bush meat in three African towns Dschang (author's fieldwork) compared with Accra and Kumasi (secondary data adapted from Lahm, 1993, Niamoa-Baidu, 1987 & Falconer, 1992)

Animal species	Dschang (Cameroon) in \$US	Accra (Ghana) in \$US	Kumasi (Ghana) in \$US
<i>Thryonomys swinderianus</i>	17.88	19.22	53.34
<i>Cricetomys gambianus</i>	5.31	01.02	01.36
<i>Canis pallidus</i>	17.75	01.23	00.62
<i>Genetta sp.</i>	1.88	00.13	00.17
<i>Francolinus bicalcaratus</i>	20.25	00.07	00.66
<i>Cercopithecus aethiops</i>	36	00.22	00.39

NB This cost is dependent on the size of the animal in question.

Table 5: Retail of bush meat in some African towns Dschang (author's fieldwork) compared with Accra and Kumasi (secondary data adapted from Lahn, 1993, Niamoa-Baidu, 1987 & Falconer, 1992)

Animal species	Dschang (Cameroon) in \$US	Accra (Ghana) in \$US	Kumasi (Ghana) in \$US
<i>Thryonomys swinderianus</i>	33	272.29	83.64
<i>Cricetomys gambianus</i>	17	03.09	01.90
<i>Canis pallidus</i>	123	03.36	-
<i>Genetta sp</i>	02.06	00.34	-
<i>Francolinus bicalcaratus</i>	25.875	00.16	01.45
<i>Cercopithecus aethiops</i>	81.25	00.34	00.73

urban centers to buy at the district towns and in turn retail in the urban centers making a significant profit margin. There exist a number of differences with respect to purchase and retail between countries (Cameroon and Ghana) and within the country (Accra and Kumasi, Ghana). Authors fieldwork reported on Table 6 below could be an added explanation which shows bush meat as associated with cultural beliefs. Factors which determine which species are sold or consumed

include the size of the animal, cultural taboos as well as personal or public appeal and demand. It was asserted in Dschang area that pregnant women consume the flesh of *Cricetomys gambianus* and *Cercopithecus aethiops* with the believe that their offspring will be skillful. While trophies of *Causus maculatus* (skin and hooked teeth) were used for decorations and traditional medicines. Other species used for traditional medicines were the fats and bones of *Eryx conicus*.

Table 6: Other uses of wild animals in Dschang identified by authors

Animals	Part used	Utility
<i>Cricetomys gambianus</i> <i>Cercopithecus aethiops</i>	Flesh	Pregnant women consume them for their children to be skillful.
<i>Causus maculatus</i>	Skin and hooked teeth	For construction, decoration and medicine Indigenous medicine
<i>Eryx conicus</i>	Fats and bones	Indigenous trophies
<i>Canis pallidus</i>	Skin	Trumpets and decorations
<i>Genetta sp.</i>	Horns	

The uses of animal parts for decoration (King, 1994) and for other cultural purposes (Young, 1995 Tsi and Ayodele, 2004) have been reported in the forest and grass land (South West, North West and western provinces) of Cameroon. Due to the shortage of medical facilities (hospitals and health centers), there is a rush for traditional-practitioners leading to a high exploitation rate of wildlife resources for medicinal purposes. Animal skin, flesh, teeth, fats, horn and bone (Wild, 1993) have different utility either by combination with other herbs or not. There is a high social acceptance of bush meat in Dschang as a source of protein and for cultural and traditional uses. However, the rapid conversion of animal habitat is gradually having an influence on the disappearance of most wildlife. Bush meat is still a wanted commodity in the market and restaurants, hence the increase prices of survival or prolific species.

CONCLUSION

Chardonnette et al, (2002) have given the historical trend of wildlife in Cameroon as linked to our ancestors, pre-historical men, who relied entirely on wildlife for survival during the first 2.5 million years, a period when humanity is believed to have survived by "hand to mouth". The population of these hunter-gatherers decreased progressively by half at the beginning of the Christian era, and now restricted to a few "refuges". Even with the reduction, wildlife numbers are in a constant decline. Wildlife still appears today in the craft, sculpture, paintings, dance, tales, customs and beliefs of the population. Therefore, Africans have a long socio-cultural history linked to bush meat. The wanton destruction of biodiversity in the pretext of consumption of protein is a call for concern for all. International organizations and non-governmental organizations have and are doing their part. There should be a reawakening from slumber otherwise the future of our most cherished wildlife is at stake. Dschang wildlife is almost gone but it is better late than never. There are high hopes for the survival and recolonization of habitats if conservation knowledge is put into usefulness. Unfortunately the trade of bush meat will continue to flourish until hunters are provided with other viable option to make a living.

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