

**WILDLIFE MANAGEMENT WORKING PAPER**

Number 5

---

**Sustainable use of wildlife resources:  
The bushmeat crisis**

Julius Mbotiji  
2002

---

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
ROME, 2002



## **Abstract**

Idyllically, it is assumed that the harvesting of bushmeat for subsistence consumption (only surplus are sold at rural markets to procure those items that could not be produced) using crude weapon supports sustainability. The same goes for the social role of bushmeat hunting in integrating young men into traditional societies. Ultimately, some taboos and cultural practices also favour sustainability. Conversely, it is assumed that increasing urbanisation, growing preferences, growing road construction, forest fragmentation associated with selective logging, improvement in hunting technology reduce sustainability. West and Central Africa are the hardest hit of this growing phenomenon that is considered a “crisis”. However, the basis of this assumption is not quite clear. Given this mix, conservationists are faced with the problem of identifying the level of harvest that would ensure the ecological balance, meet the food security, nutritional, health, and economic and cultural needs of the people and still be considered sustainable.

## **Sustainable Use of Wildlife Resources: The Bushmeat Crisis.**

### **Introduction**

Hunting of wildlife meat referred hereto, as «Bushmeat» has been an integral part of the African culture since the first man inhabited this continent. Wildlife has extensively been used as a coping and survival strategy at different intensities in many parts of the continent. Amongst the coping and survival strategy include food, security, and nutritional balance, employment and cash income, inflow of foreign earnings, medicinal and health remedies, drug development, ceremonial and spiritual cleansing, and cultural and religious practices. However, the intensity of these uses has increased over time. This is due to changing technology, increasing population, increasing urbanisation associated with increased income and standard of living, growing preference for bushmeat, declining economies, increasing fragmentation of forest associated with selective logging and the opening up of logging roads. This poses the problem of whether this rate of hunt, would allow the animals to continue playing their ecological role of maintaining a balanced ecosystem. Though all of Africa is affected by this new crisis, West and Central Africa are most hard hit. The ecological, social, nutritional, health and cultural ramification of this crisis calls for concerted local and international action if the trend must be halted to ensure sustainability.

“Achieving ecological sustainability is crucial if the long-term goal of conserving tropical forests systems and biodiversity is to be attained. It is also vital from a social perspective, given the central role of hunting and wildlife for human nutrition, health and welfare of rain forest peoples. Either we manage the resources now, while wild species still exist or we shall be forced to address the nutritional needs of people when the wildlife resources are no longer available. By then, the wider implications for both humans and tropical forest biodiversity will be much more serious and much less manageable”.

*Bennett and Robinson, 2000*

The most puzzling issue in the use of bushmeat is the level of harvest that could be considered sustainable. This is as complex as the complexities surrounding the bushmeat issue and no matter how important bushmeat is to people if the rate of extraction surpasses the natural regeneration rate there is bound to be depletion. Implicitly, not only would hunters have to travel long distances and use more time and energy in chasing animals, the wild meat population would become extinct resulting in what conservationists call “the empty forest syndrome”. To this end, there is need for a better understanding of the concept of sustainability in the use of bushmeat.

This paper therefore takes a look at the concept of sustainability in the use of bushmeat including the factors that reduce or enhance its uses. The paper also provides a review of the bushmeat situation at national and international level and ultimately ends with a discussion on how the issue could be addressed.

The paper has drawn extensively from Ape alliance, TRAFFIC, FAO and WWF publications, the works of Bennett and Robinson, Adeola, Asibey, Balinga, Blake, Benneth, Gadsby, Hart and Padwe, Infield, McShane, Noss, Ntiamoa-Baidu, Pearce and Ammann, Steel, Steine, Stromayer and Ekobo, Usongo and Curran, Vanwijnsberghe, White, Wilkie and Wilkie et al. The work has also drawn from various publications at the Bushmeat Crisis Task Force (BCTF) website including presentations made by Heads of Wildlife Division in West and Central Africa at a meeting organised by BCTF in May 2001.

## **Part 1**

### **The Sustainable use of Wildlife Resources**

Sustainability in the use of wildlife assumes that there is a threshold limit above or below which harvesting would be unsustainable. This threshold limit is the equilibrium point. At this point harvest equates production (Bennett and Robinson 2000). It is also assumed at this point that maximum benefit would be reaped from the use of wildlife without adversely impacting on the wild population. Of course this is highly theoretical concept and does not exist in nature. Sustainability would be attained if harvesting of wildlife for economic, health, social and cultural purposes do not adversely affect the animal population, their habitat and the ecological function they perform. There are however, conditions under which wildlife harvesting for both subsistence and commercial use could have little impact on the population of affected species. But these conditions are what are difficult to ascertain and even when ascertained are difficult to implement.

Bennett and Robinson (2000) sees harvest as a function of the following: demand for wildlife which is influenced by economic, social, cultural (taboos) and health motives in some cases facilitated by concession companies; control over the supply which is influenced by taboos (e.g. totems) government rules and regulation, enforcement and incentive and proximity between sources and sink areas.

Conversely, production is a function of the number of animals, reproductive rate and biogeographical location. Obviously, sustainability would be attained when two equations are balanced (harvest equal production). This situation is flawed in that harvest can always equate production even when some populations are in danger of extinction or at different densities. Similarly, the situation would not be considered as sustainable if the food security, nutritional, health, economic and cultural needs of the people can not be met by current production rate.

For sustainability to be ensured the following should be considered:

- ❖ Population of wildlife harvested should not show signs of decline in numbers. In many countries particularly in hunting seasons, population densities have showed persistent decline – meaning harvest outweighs production
- ❖ Population of wildlife harvested should not reduce to low numbers that it would be difficult for them to recover
- ❖ Population of juveniles should not show signs of decline
- ❖ Population of breeding mothers should not show signs of decline otherwise this would adversely affect the rate of juvenile recruitment which could have serious repercussions on wildlife population

Interplay of physical, geographical, biological, economic, social, cultural, religious and factors affect the sustainability of wildlife resources.

## Physical Factors

- ❖ **“Source” and “sinks”** – National Parks, Protected Areas, Nature Reserves are net producers and therefore considered “sources” areas that supply the buffer or support zones of these areas. And the buffer or support zones are “sinks” for the wildlife because their lives more or less end there. The proximity of sources to sink areas greatly affect wildlife sustainability. The closer the proximity for easy replenishment the more sustainable wildlife hunting could be. The risk here is that more and more animals will continue to leave to sink areas that may result in the “empty forest syndrome” (Hart and Padwe 2000)
- ❖ **Accessibility** – Easy terrain and greater accessibility to forested areas have reduced the sustainable harvesting of wildlife. Timber companies are major contributors to these growing phenomena.

Road construction associated with selective logging has increased bushmeat hunting by more than 10 folds. Road construction has increased hunters access to isolated sectors of the forest, fragmented forest, decreases the cost of transporting bushmeat to urban markets and has substantially increased the supply to and profitability of bushmeat trade. Hunting trips that could take days to complete have been reduced to a few hours when the hunter can hitch a ride on a company vehicle.

Low wages of logging workers and immigration to logging areas have fuelled up this situation. In Moloundou – the Southeast Cameroon road has facilitated the trade in wildlife. Logging trucks transport 90% of meat to Douala and Yaounde. In Gabon road and railway transport have facilitated the transportation of wildlife to markets in Libreville.

Summarily road construction has the following impact:

- Facilitates supply of wildlife to urban markets
- Increases the profitability of the trade
- Encourages influx of migrants into forested areas
- Increases accessibility of inaccessible areas
- Facilitates access to more markets

*Sources: Stromayer and Ekobo 1991, Pearce and Amman 1995, Benneth 1995.*

## Biological factor

- **Rate of Reproduction** – Hunting will not be sustainable if the rate of harvest through hunting, by far exceeds the rate of production. Also, some species as ungulates have relatively high reproduction potential, rapid growth and early maturity compared with others. This group can sustain hunting to a particular threshold level
- **Ecosystem productivity** – Generally, tropical rainforests have a low rate of animal productivity compared to grassland and savannah. Implicitly, even low rate of harvest in tropical rainforest could affect sustainability which might not be the case in grassland and savannah ecosystems
- **Types of forests** – Some secondary forest have higher biomass of wildlife than primary forests – secondary forests support a reasonable level of extraction more than primary forest.

- **Species vulnerability to harvest** - Some species are more vulnerable to harvesting than others. Some species have a low rate of population increase and are thus less resilient to hunting. Primates and carnivores fall under this class. Similarly, the mating, nesting and social behaviours of most primates and other species like birds predisposes and makes them vulnerable to hunters (Bennett and Robinson, 2000).

### **Economic factor**

- **Commercialisation of wildlife** – At the Korup National Park in Cameroon, a majority of households earn cash income from the sales of wildlife. Similarly, wildlife is the main source of income to some market women, chopbars and restraint operators in Accra and Kumasi, Ghana (Asibey, 1977; Infield, 1988). Steel (1994) observed that women in Gabon earn substantial amount of income from the sales of wildlife. The increased commercialisation of wildlife has made it a lucrative business attracting people from various walks of life. This has been further aggravated by the dwindling economies of African countries. Also the commercialisation of wildlife has greatly affected the sustainability of hunting through the intensification of hunting activities. Wilkie (2000) observed that commercialisation of wildlife attracts non-resident commercial hunters to areas rich with wildlife who often contravene local taboos.

Ultimately, preference for wild meat by wealthy individuals has also increased its commercialisation that invariably reduces sustainability.

- **Value of wildlife** – Animals like the grey parrot and tiger have very high market value and therefore subject to overexploitation. This thus reduces the sustainability of these species of animals.
- **Opportunity Cost** – Hunting of wildlife has gained more grounds because of high opportunity cost compared to other activities. FAO (1997) observed that earnings of hunters in Ghana were in excess of what entry level graduates earn. This means that people out of school can earn as much, if not better compared to those who went to school. Given this trade off, many people have moved into trading of wildlife with high turn over.
- **Burgeoning demand for wildlife** – Growing demand for wildlife in most cities provides new economic opportunities for people whose traditional sources of income have ebbed with falling agricultural prices and increasing scarcity of jobs. The growing demand calls for increased hunting – rendering hunting of wildlife unsustainable (BCTF, 2002).
- **Globalisation, polarisation and growing poverty** – As the industrialised nations turn more and more toward globalising the world economies – accumulating the world's wealth - the African economies are collapsing with more and more people becoming jobless. Similarly, income levels in most African countries are at their lowest ebb since independence. These have forced more and more people to return to their villages and revert to subsistence living. Of course this puts a stress on rural resources such as wildlife use to increase protein intake and cash (Hart, 2001).

## Social factors

- **Burgeoning human population** – Increased human population with corresponding increase in the number of mouths to feed in Africa due to improvement in the health sector, influence wildlife sustainability. As more people depend on wildlife for their protein intake, the less sustainable is harvesting likely to be particularly as reproduction in tropical forest is low
- **Changing lifestyle of Africans** – Over the past decades, human population in the tropics have increasingly become sedentary. Invariably, increased sedentarism with its concomitant increase in human population increases reliance on agriculture and wildlife and reduces hunting sustainability

A regional over view of Eastern and Southern Africa indicates that most of the communities have evolved from hunting/gathering rural communities to more serious, agro-pastoralist and agricultural communities with heavy reliance on bushmeat. Among them include: Western Serengeti, Meatu District and Kilimanjaro Region in Tanzania; Samburu District and Kitui District in Kenya; Lupane/Chivhu and Dande in Zimbabwe; Central Region and Dzalanyama in Mawai and Kweneng District in Botswana. Though most members of these communities' own livestock, the livestock are considered and preserved as household capital and cultural assets to be use during lean periods. The same applies to communities living in the support zone of the Korup National Park - domestic livestock is often reserved for important ceremonies like marriages and end of year celebrations.

*Sources: TRAFFIC survey data, 1998.*

- **Rapid immigration** – Ease of accessibility has facilitated immigration into tropical forests and other savannah areas. The immigrant population not only increases the share number of people who depend on wildlife for basic livelihood, some have taken to commercial hunting thereby reducing hunting sustainability. Similarly, immigrants often violate traditional taboos and have been known to convert large expanses of reserve land for agriculture. Sikod et al (working paper) have observed that there are many resident and non-resident immigrants at the foot of Mount Cameroon from other parts of the country who without any land depend to a large extent on hunting and trapping thereby decreasing hunting sustainability.

## Cultural and Religious Factors

- **Totem species** – Some animals are regarded as symbols of power, respect and therefore considered sacred and may not be hunted. Cultural values like this increase sustainability. Similarly, there are some tabooed species that are only used for sacrificial or ceremonial purposes and connect people with their ancestors. Such species tend to be highly protected and therefore promote sustainability
- **Indigenous hunting** – Subsistence hunting such as that practised by the Pygmies in South-East Cameroon, Gabon and Congo Democratic for the purpose of supplementing family diet is not harmful and can ensure sustainability

- **Religious practices** – Religion such as Islam, Hinduism and Christianity affect sustainability of wildlife harvest. While the former restricts the killing and eating of wildlife, the latter is indifferent. More wildlife species would be found in Islamic and Hindu communities than in Christian communities
- **Advances in hunting technology** - There is a gradual shift from the use of dogs with traditional bow and arrows and spears, to wire snares, shotguns, traps and sophisticated rifles. Similarly, the increased use of batteries and flashlights has allowed for the hunting of nocturnal species. All these factors have greatly reduced hunting sustainability in many parts of Africa. Wire snares, which are not regularly checked, have been known to cause loss of catch to scavengers (Noss, 2001). Some snares leave injuries on animals that escape them and they hardly survive.

### **Importance of Sustainability**

Sustainable utilisation of wildlife is desired for the following reasons:

#### **Nutritional importance**

- Ensures food security to a large part of African communities that have been dehumanised and barely struggling to survive in the midst of abject poverty
- Ensures nutritional balance to poorer segments of the Africans that feed more on carbohydrates

#### **Economic importance**

- Ensures continuous cash income to a cross section of people including: hunters, middlemen, law enforcement officers, market women, chopbars, and restaurant owners.
- Ensures employment to the above named group of people
- Ensures continuous inflow of Foreign earnings through the export trade in live animals, skin, hides and trophies
- Ensures continuous income for sport hunting and game viewing

#### **Health importance**

- Ensures continuous supply of wildlife parts/products for medicines
- Ensures continuous use of wildlife in drug development
- Ensures the continuous supply of wildlife for spiritual and ceremonial purposes

#### **Cultural and Religious importance**

- Ensures that the dignity, respect and secrecy accorded traditional rulers and symbolised by some wildlife species are maintained
- Ensures that cultural values be passed down generations
- Ensures ancestral guidance by safeguarding particular species (FAO, 1997)

#### **Ecological importance**

- Guarantees continuous existence of seed predators such as ground squirrels and pigs. By feeding on seeds from large seeds trees, predators ensure that there is a balance between trees with smaller seeds with large seeds counterparts

- Guarantees pollination of some particular plants
- Guarantees the spread of fruit trees through feeding habits. Frugivores and granivores such as monkeys, ground squirrels and bats are noted for that
- Guarantees continuous enrichment of the soil through their droppings
- Guarantees the continuous existence of predators to control the population of prey which if in excess could adversely affect the ecosystem
- Guarantees pest control
- Guarantees the continuous availability of food for predators. (McShane, 1990; Bennett and Robinson, 2000)

## **PART 2.**

### **A Review of the Bushmeat Situation**

This section takes a look at the issues governing the use of bushmeat. They include: economic, logging and road, health, legal and policy, cultural and conservation issues.

#### **Economic issues**

##### ➤ **Market dynamics:**

- Subsistence consumption of wildlife by local people does not affect bushmeat sustainability
- Struggle for survival amidst abject poverty and the lack of economic options have spiralled bushmeat consumption
- population increase in many parts of Africa have been matched by growing demand for meat from wildlife
- Bushmeat is less expensive compared to domestic meat and thus results in considerable savings
- Bushmeat is cheap, affordable and relatively available
- Preferences for bushmeat over domestic meat particularly in urban areas based on the perception that bush meat is a superior product to domestic meat, makes people willing to pay considerably higher prices
- High cash earning associated with bushmeat drives demand and over utilisation
- Relative cost of bushmeat production to other economic activities is low
- High profit in the bushmeat trade attract non-local commercial dealers
- Inadequate production of and marketing of alternative sources of protein
- Poor performance of third world economies associated with falling income and loss or scarcity of jobs affect trade in wildlife
- High value of some species due to their perceived superior taste
- International demand for bushmeat has increased due increasing population of African expatriate in Europe and North America (Infield, 1988; Anstey, 1991; Wilky et al., 1992; Vanwijnsberghe, 1996; BCTF, 2000; and TRAFFIC, 2000).

##### ➤ **Seasonality**

- Hunting is generally less during the Annual Close Session though this varies from country to country
- Hunting with the use of snares are more effective in the wet season because it is possible to identify the animals path in the thick undergrowth
- Hunting using short and other guns is carried throughout the year
- Hunting by shooting is higher in wet seasons due to the ability of wet leaf litter to deaden the sound of the approaching hunter
- Hunting also increases in the dry season due to burning considered as an “economiser of hunting energy” that flushes out animals
- Hunting which all too often is secondary to agricultural activities is determined by different agricultural practices

- Hunting is carried out throughout the year ensuring continuous supply of bushmeat to markets (Infield, 1998; Wilkie et al., 1992; Gadsby and Jenkins, 1992; and Vanwinjbsberghe, 1996)
- **Actors involved in the hunting and users of wildlife**
  - Hunting is predominately a male activity. Thus men from early ages as well as those in their late fifties are involved in hunting
  - Hunting is not only limited to indigenous hunters, local and commercial hunters who are often resident immigrant and visiting professional full time hunters are also involved
  - Hunting of bushmeat and use of resultant products is an integral part of the culture of and survival strategies of some communities
  - Selling of hunts is carried out by both men and women
  - Brokering is a common practice in the harvest and trade in bushmeat
  - Selling on roadside is performed by both males and females
  - Selling in open-air market is predominantly a female issue. The same applies to selling in market stalls
  - Cooking and selling in chopbars and restraints are females issues
  - Hunting and trading are carried with a level of secrecy (Usongo and Curran, 1996; Ape Alliance, 1998; FAO 2000)

#### **Hunting methods and advances in technology that facilitates hunting**

- **Use of traps** – Traps deployed for animals vary depending on the animal being targeted. Examples of traps used in the Korup Project Areas in Cameroon include neck traps (for small animals), waist traps (medium size animals) and foot traps such as shallow pits (for larger animals as buffalos). Trapping with the use of wire snare is widely practised in many parts of Africa because of its affordability and reliability. The problem with the use of snare is that it is indiscriminate in the nature of its catch. Similarly, a huge number of snares catch are lost to decomposers (Infield, 1988; Usongo and Curran, 1996; Bennett and Robinson, 2000; Noss 2001)
- **Use of poison** – Hunters for easy catch use DDT and other forms of poison in some areas. Animals caught this way are very harmful to their consumers
- **Use of shotguns and rifles** – Shotguns and in recent times rifles have increasingly been used in killing larger species of animals -*macro-fauna species* (Barnett, 2000). The use of guns has improved the ease of hunting especially canopy-dwelling species. Similarly, shotguns and rifles can kill over greater range. This has contributed to an increased in the rate of wild animals caught (Messer, 2000; Steiner, 2000; Bennett and Robinson, 2000)
- **Use of nets** – Nets are also used in catching animals. Net is much better because it facilitates selective killing
- **Use of spears** – The traditional use of spears along with dogs though fast disappearing is still being practised in my parts of Africa
- **Use of batteries and flash lights** – Batteries and flashlight have increased the efficiency of hunting of night dwelling animals (Bennett and Robinson, 2000)

- **Access to bikes, motorcycles and motors** – Easy access to bikes, motorcycles and motors have eased the movement to and from hunting areas. As well, they have eased the transportation of hunts to their end destinations.
- **Species affected**
  - **Mini-fauna species** – These include small games as rodents, reptiles, birds and insects. Mini-fauna constitute an important source of protein contributing substantially to many household protein intake (FAO, 1997; Barnett, 2000)
  - **Macro-fauna species** - This includes big games as elephants, buffalo and semi-big games as duikers, monkeys, baboons and bushbuck (Adeola, 1992; FAO, 1997; Barnett, 2000).

### **Logging and Road issue**

Logging companies and road construction affects wildlife through:

- **Increased fragmentation of forest** – Selective logging increases access to isolated forest through road construction that is associated with it
- **Decreased cost of transportation** – Road construction that goes with selective logging increase the ease of transporting bushmeat to, and the acquisition of firearms and ammunitions from urban markets
- **Increased access to outsiders** – Outsiders, from towns and other areas gain easy access to forested areas as a result of road construction associated with selective logging
- **Increased migration to forested areas** – Road is a vehicle for development. Invariably, road construction in forested areas attracts migrants from far and wide to for sedentary settlement (Bennett and Robinson, 2000; White, 2000; BCTF, 2000).

### ➤ **Health issues**

- **Disease transmission** – Wildlife such as primates harbour AIDS and zoonotic disease such as rabies, Ebola and anthrax, which can attack and spread easily between human and non-human primates. Human vulnerability to animal disease has increased, with increased hunting, butchering and eating of bushmeat (BCTF, 2000)
- **Spiritual, mental and physical healing** – For ages in Africa, Asia and Latin America, wildlife is noted for its spiritual healing powers. Also, traditional healers of Africa use different animal parts including meat, hair, skin, tail, bones, teeth, fats, glands and faecal pellets for the treatment of a wide range of mental, physical and pre- and post-natal illnesses ( Balinga, 1978; Ntiamoa-Baidu, 1992; Adeola, 1992; FAO, 1997 and 2000)
- **Death or injury to people** – It is not uncommon that hunters particularly night hunters have suffered severed injury and in some cases, death resulting from attacks by wild animals.

### **Cultural and religious issue**

- **Totem animals** – These are species that symbolise existence or unseen relationship. These species equally symbolise power, respect and secrecy. The power and respect of most African chiefs come from the animals from which they gain their power.

Invariably these animals are protected from hunting. This culture is fast dying out due to cultural invasion

- **Tabooed animals** - These include species used for ritual and spiritual cleansing and that help link present generation with their ancestors. Conversely, it also includes unclean species hated because of some type of misfortune associated (FAO, 1997)

➤ **Wildlife Regulations and Policy frameworks**

- **Good wildlife Laws** – Most countries have good wildlife laws which are all too often contravened or circumvented by those responsible for their enforcement including government staff, logging companies, law enforcement officials, poachers etc., (WWF International, 1991; Blake 1994; Koulagna, Ngongba-Ngouadakpa and Mamfoumbi, 2001),
- **Outdated wildlife laws** – Wildlife laws in some countries are colonial laws that are increasingly being denounced as obsolete, ill conceived and alien
- **Annual Close Session on hunting** – Hunters in most countries are aware of the annual close session on hunting but deliberately flout it
- **Poor land tenure system** – Poor land tenure system particularly in West and Central Africa where all lands including protected areas are state properties provides less incentive for people to invest on lands and wildlife management. On the contrary resources found on these land are considered “free gift of nature” that should be harvested in any way possible
- **Inadequate institutional reforms** – Institutional reforms in most countries to improve on the capacity and effectiveness of administrative and other institutions involved in the wildlife sector are yet to be carried out (Koulagna, Ngongba-Ngouadakpa and Mamfoumbi, 2001)
- **Inadequate research institutions** – But for the Wildlife School in Garoua – Cameroon, there is no other wildlife school for Central Countries. Nigeria and Ghana on the other hand have Forestry schools that also train wildlife specialists. However, these institutions are poorly equipped.

➤ **Conservation issue**

- **Loss of habitat** – Increased logging is invariably causing the loss of many animal habitat and their species
- **Inadequate management of protected areas** – Most protected areas are under staffed rendering management difficult. Game guards are always very few and often underpaid
- **Human wildlife conflict** – Conflict between human and wildlife abound in communities that share common boundaries with protected areas. Not only do animals destroy crops but also some are very hostile to man. The result is that many rural communities have become very hostile to wildlife and protected area authorities

### **PART 3**

#### **DISCUSSION ON HOW BUSHMEAT ISSUE CAN BE ADDRESSED**

This part contains discussions on how the bushmeat issue can be addressed by national governments, local communities, timber companies, NGOs and academic institutions and international donor.

##### **Discussion on how national governments should address the issue:**

- Establish more protected areas as well as extend existing ones. These areas will act as “sources” supplying “sinks” – areas adjacent to protected areas
- Establish permanent extractive forest that allows for hunting
- Ensure the existences of administrative, legal and technical mechanisms and trained personnel for the enforcement of regulations governing protected areas
- Ensure adequate staffing of protected areas
- Provide incentive to park guards
- Establish a legal system that allows for local communities involvement in decision making and management of wildlife resources including hunting
- Promulgate laws to protect hunting of vulnerable species
- Regulate the ammunition available to people and ensure strict compliance with existing laws on arms acquisition
- Promulgate laws to prevent commercial trade in wildlife and ensure their strict enforcement
- Ensure that laws exist to limit road construction through protected areas. If the roads must be built, establish mechanisms that limits hunting
- Establish laws preventing hunting by logging workers
- Establish laws that require logging companies to provide their workers with fresh meat from domestic animals
- Ensure that laws exist to prevent logging companies using their vehicles in transporting hunters and wild meat
- Ensure companies compliance with the law and prosecute defaulters
- Promulgate laws requiring logging companies to pay for wildlife enforcement
- Promulgate laws banning and/or limiting the use of snares in concession areas
- Promote national and local research on the impact of hunting for better management
- Create a conducive environment to promote education and awareness program in schools, churches, local communities organisations and among decision makers and the general public

##### **Discussion on how local communities should address the issue**

- Establish and promote land use practices that support protected areas and forest reserves
- Promote local systems that ensure effective protection of protected areas
- Promote awareness creation at community levels
- Promote the participation of community members in monitoring and decision making regarding wildlife harvest

- Promote local community production of alternative sources of protein
- Strengthen alternative sources of livelihood among local community members
- Identify and promote the special role of women in community conservation and get them involved in decision making
- Encourage the formation of hunters associations a community levels that would act as vigilant groups against immigrant and commercial hunters
- Encourage practices that reduce and/or stop uses of ammunition, poison and other sophisticated weapons in hunting
- Revoke traditional practices such as taboos that restrict the hunting of totem and vulnerable species
- Promote laws banning the sale of wild meat out of hunting areas

#### **Discussion on how logging companies could address the issue**

- Ensure that employees, their families and others present at concession sites and camps abide by the laws governing their operations
- Ensure that species protected by national laws are not hunted in concession areas
- Ensure that timber vehicles are not used in transporting hunters and wildlife
- Ensure that bushmeat are not exported from concession areas
- Ensure that laws enacted that logging companies supply their workers with domestic sources of protein are strictly followed
- Ensure that workers in campers do not possess ammunitions, firearms and others for bushmeat hunting
- Prohibit the use of snares in concession areas
- Disseminate information on national wildlife issues to company staff and communities in the concession area
- Close non-usable roads after logging – though this is highly controversial as most governments use these roads in reaching enclave populations
- Prohibit logging in key wildlife areas in concession areas
- Create refuge areas in concession areas
- Support government wildlife and forestry staff to pay regular patrol visits to concession areas

#### **Discussion on how NGOs and academic institutions could address the issue**

- Ensure the putting in place of better systems of wildlife management that are flexible and achievable for biodiversity conservation
- Conduct ecological and socio-economic research as they relate to hunting
- Promote in collaboration with local communities both short and long-term monitoring of vulnerable wildlife population
- Ensure dissemination of research results to decision makers, local communities and the general public at large
- Promote awareness creation on bushmeat in particular and biodiversity in general
- Promote local community effort in their quest for alternative sources of livelihood
- Promote domestication of wildlife at local community level
- Provide training to local communities and staff engaged in natural resources management

**Discussion on how international organisations/donors could address the issue**

- Include bushmeat issues in all development project and programs
- Carry out adequate EIA of development projects to identify issues related to bushmeat
- Ensure that projects are based on what is ecologically, socially and economically feasible
- Promote the establishment and management of protected areas
- Promote the replication of good models in other areas

**Conclusion**

The problem of identifying the level of harvest that would ensure ecological balance, meet the food security, nutritional, health, and economic and cultural needs of the people and still be considered sustainable is quite difficult to ascertain. It is however evident that increasing urbanisation, increasing preferences, growing income for some families, declining third world economies, increasing proliferation of arms and technology, opening of forests associated with selective logging and declining culture have fuelled up the rate of extraction of wildlife for meat that is considered unsustainable. The situation calls for a concerted action at community, national and international level if the trend must be reversed. As Bennett and Robinson (2000) put it “it is imperative that we act now to ensure future sustainability of hunting in tropical forests if we are to address social needs, poverty alleviation and conservation of forests and their wildlife”.

## ***Bibliographies***

Adeola, M. O. 1992. *Importance of wild animals and their parts in the culture, religious festivals and traditional medicine, of Nigeria*. Environmental Conservation 19, no. 2:125-134.

Ape Alliance 1998. *The African Bushmeat Trade – A Recipe for Extinction* by WSPA and Ammann K.

Asibey, E. O. A. 1977. *Expected Effects of Land-Use Patterns on Future Supplies of Bushmeat in Africa South of the Sahara*. Environmental Conservation 4, no. 1:43-49.

Auzel, P. 1996. *Evaluation de l'impact de la chasse sur la faune des forêts d'Afrique Centrale, nord Congo*. Mise au point de méthodes basées sur l'analyse des pratiques et les résultats des chasseurs locaux. Bomassa, Republic of Congo, Wildlife Conservation Society/GEF Congo.

Balinga, V. S. 1978. *Competitive uses of wildlife*. Unasylva 29, no. 116:22-25.

BCTF. 2001. *Eco-Economics* [http://www.bushmeat.org/r\\_a.html](http://www.bushmeat.org/r_a.html). (30/01/02 at 10.15am)

Benneth Hennessey A. 1995. *A Study of the Meat Trade in Ouessou, Republic of Congo*. WCS/GTZ New York. USA

Blake, S. 1994. *A reconnaissance survey of the Kabo logging concession south of the Nouabale-Ndoki National Park northern Congo*. Bronx, NY, Wildlife Conservation Society.

Bennett E. L. & Robinson J. G. 2000. *Hunting of Wildlife in Tropical Forests. Implications for Biodiversity Forest Peoples*. Biodiversity Series – Impact Studies Paper No 76. EU, WCS. New York. USA

FAO. 1997. *Wildlife and Food Security in Africa*, by Yaa Ntiamoah-Baidu. FAO Conservation Guide No 33. Rome

FAO. 2000. *Bushmeat Consumption and Trade in West Africa* by F.S.A. Molade.

Gadsby E.L & Jenkins P.D. 1992. *Report on hunting in the proposed Etinde Forest Reserve*. Limbe Botanic Garden and Rainforest Genetic Conservation Report. Cameroon.

Hart, J. A. 2001. *Impact and sustainability of indigenous hunting in the Ituri Forest, Congo Zaire: A comparison of un hunted and hunted duiker populations*. In *Hunting for sustainability in tropical forests*, edited by Robinson, J. G. and E. Bennett (New York: Columbia University Press).

Infield, M. 1988. *Hunting, trapping and fishing in villages within and on the periphery of the Korup National Park*. Gland, WWF.

Koulagna Koutou D. 2001. *The Issue of Bushmeat in Cameroon*. In: BCTF Collaborative Action Planning Meeting Proceeding. Edited by N.D. Bailey, H.E. Eves, A. Stephan and J.T. Stein. Bushmeat Crisis Task Force. Silver Spring, Maryland. Available at [<http://www.bushmeat.org/may 20001>].

Mamfoumbi, E. 2001. *Central Africa Bushmeat Perspective – Gabon Country Report*. In: BCTF Collaborative Action Planning Meeting Proceeding. Edited by N.D. Bailey, H.E. Eves, A. Stephan and J.T. Stein. Bushmeat Crisis Task Force. Silver Spring, Maryland. Available at [<http://www.bushmeat.org/may 20001>].

McShane, T. O. 1990. *Conservation before the crisis - an opportunity in Gabon*. Oryx 24, no. 1:9-14.

Ngongba-Ngouadakpa, D. 2001. *The Bushmeat Network in the Large Cities of the Central Africa Republic, Country Report*. In: BCTF Collaborative Action Planning Meeting Proceeding. Edited by N.D. Bailey, H.E. Eves, A. Stephan and J.T. Stein. Bushmeat Crisis Task Force. Silver Spring, Maryland. Available at [<http://www.bushmeat.org/may 20001>].

Noss, A. 2001. *Conservation, development, and "the forest people": the Aka of the Central African Republic*. In *African Rain Forest Ecology and Conservation*, edited by Weber, W., L.J.T. White, A. Vedder, and L. Naughton-Treves (New Haven: Yale University Press).

Noss, A. J. 1998. *The impacts of cable snare hunting on wildlife populations in the forests of the Central African Republic*. Conservation Biology 12, no. 2:390-398.

Ntiama-Baidu Y. 1992. *Local Perception and Value of Wildlife Reserves to Communities in the Vicinity of Forest National Parks in Western Ghana*. In *Protected Area Development in South-West Ghana*. Ghana, Report by the Oxford Environment and Development Group, UK.

Pearce J. & Ammann K. 1995. *Slaughter of the Apes: How the Tropical Timber Industry is Devouring Africa's Great Apes*. World Society for the Protection of Animals, London. UK

Steel E. A. 1994. *Study of the value and volume of bushmeat commerce in Gabon. Libreville*. World Wildlife Fund.

Steiner, C. 2000. *The Drill, Mandrillus leucophaeus: an endangered species and national resource in Korup Protected Area-Cameroon*. Master's The Drill, Mandrillus leucophaeus: an endangered species and national resource in Korup Protected Area-Cameroon, University of Göttingen.

Stromayer K. A. K. & Ekobo A. 1991. *Biological Surveys of South-Eastern Cameroon*  
TRAFFIC/WWF/IUCN. 2000. *Food for thought: the utilization of wild meat in eastern  
and southern Africa*, by Barnett, R, Nairobi, Kenya

Usongo, L. and B. Curran. 1996. *Bushmeat commerce in the trinational area of  
southeastern Cameroon*. African Primates 2, no. 1:2-5.

Vanwijnsberghe, S. 1996. *Etude sur la chasse villageoise aux environs du Parc national  
d'Odzala*. -169. Brazzaville, ECOFAC.

White, L. 2000. The African Rain Forest: *Climate and Vegetation*. In *African Rain Forest  
Ecology and Conservation*, edited by Weber, B., L. White, A. Vedder, and H. Simons  
Morland 1 ed. (New Haven: Yale University Press).

Wilkie et al. 1992. *Mechanised logging, market hunting, and a bank loan in Congo*.  
Conservation Biology: 6(4) 570-580.

Wilkie, D. S. 2000. *Should we and can we manage the bushmeat trade in the Congo Basin?* In press.

WWF International. 1991. *Wildlife utilisation in Liberia*, by Anstey. Gland, Switzerland