Chimpanzee in Ethno-Primatological Practices and It Implications for Biodiversity Conservation: Kimbi-Fungom National Park and Kom-Wum Forest Reserve, Cameroon

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Abstract: Chimpanzees (Pan troglodytes ellioti) in ethno-primatological practices among the indigenous people and the implications for biodiversity conservation in the Kimbi-Fungom National Park (K-FNP) and Kom-Wum Forest Reserve (K-WFR), was undertaken to investigate indigenous people perceptions of human-chimpanzee interactions and the effects on wildlife sustainability and biodiversity conservation. Data collections were obtained with the help of interviewer-administered questionnaire, informal interview using unstructured script, palaces/markets gathering discussion and direct field observations of trade. Surveys were carried out in twenty two villages purposefully selected based on their locations and human activities within the proximity of the park and reserve. A total of 288 interviewers were completed during the study. Most of the respondents 94%, 72% and 98% reported that chimpanzee’s body parts/meats are used for medicinal value, rituals and as food in special occasion respectively. About 36 diseases/conditions were randomly reported to be treated by 22 different chimpanzee’s body parts/meat. The usual price of a matured chimpanzee was reported to be in between 75,000-250,000 francs.cfa. Equally, the unsustainable hunting of chimpanzees for body parts/meat was explored to be cause by loss of traditional taboos and totemic beliefs, influx of new cultural practices from Nigeria and within, poverty increment that hinders modern health assurance couple with the fact that protective laws are both less well known and less appreciated. As such, it is imperative that strategies should be put in place to effectively get rid of human activities that negatively impact on biodiversity conservation of chimpanzees in the vicinity of the park and reserve.

Keywords: Chimpanzees, Ethno-Primatology, Biodiversity, Conservation, K-WFR, K-FNP

1. Introduction

Pan troglodytes ellioti, just like all other Chimpanzees and their products constitute essential ingredients in the preparation for traditional medicine (Gaski and Johnson, 1994). In addition, to their significant role in traditional healing practices, they are equally used for fetishes, magic ritual, ceremonial/festivals, religions practices and used as pets, as performing entertainers or in biomedical research of societies all over the world (Redmond, 2010 and Fuentes and Wolfe, 2002). In Africa, the exploitation of chimpanzee and some primate species is largely prohibited because local communities adorned them with ritual meanings, regard them as animal totems, or value them as fetishes or aids to traditional medicine practice as well as to achieve spiritual enlightenment and elevation (Osemeobo, 1991, Adams, and McShane, 1996, Sawandi, 2006, Dedeke et al., 2006). This means that “Ethno-primatology” which studies the complex interactions between humans and non-human primates (Wolfe and Fuentes, 2007) are practices among the indigenous people which existed long before the advent of modern health facilities in Africa (Adeola, 1992). People were especially depended largely on traditional medicine as their only source of health care (Soewu, 2008). Today,
despite the increasing number of western medical practitioners and modern medicine, the availability of traditional medicine invariably outweights that of modern medicine and the number of traditional practitioners in most remote regions of Africa is far greater than the number of western medical practitioners (Soewu, 2008). As such, Chimpanzees and other primates are already becoming very rare in most of their suitable habitats due to indiscriminate killing for their body parts/meat as a result of high demand for traditional practices (Kakati and Doulo, 2002 and Tsi and Chuo, 2016). Equally, increase in human population density combined with increases in agricultural and pastoralist activities, plus increased exploitation of non-humans primates as bush-meat (Peterson and Ammann, 2003 and Fa and Tsi et al. 2002), are major causes for their continuous decline.

In Cameroon, ethno-primatological uses of chimpanzee’s body parts/meat for traditional medicine, rituals and festivals are very common especially in many remote areas of the country (Ekinde et al., 2005). Equally, the use of chimpanzees and other primate’s body parts/meat for traditional medicine continues to actively live side by side with modern medicine (Etiendem, et al., 2011). However, in areas were social facilities such as pharmacies, health clinics, electricity, and piped water are largely absent; people rely heavily on traditional healers for health care (Atem, 2000). As such, many of the traditional practitioners in remote area have made new discoveries, which now cured major ailments in the society (Marshall, 1998). Such discoveries stem from the consistent efforts of traditional healers to eradicate dangerous diseases which are believed to be caused by sorcery and/or loss of ancestral protection (Atem, 2000), and which are apparently incurable through modern medicine (Tsi and Chuo, 2016). Major diseases such as epilepsy, cancer, convolution, paralysis, snake bites, mental illness, and even other ailments having hereditary origins are now being cured using chimpanzee and other primate body parts (Ekinde et al., 2005). This has given room for their unsustainable hunting.

The K-FNP and K-WFR are among the priority sites of the Bamenda Highlands, reported to support high levels of biological diversity and endemic (Doumbé, 2014; CIRMAID, 2015). The Nigerian-Cameroon chimpanzee (Pan troglodytes ellioti), which is the sub-species commonly found in some priority sites of the study areas is the most endangered of the four subspecies of chimpanzee. It has been estimated to have experienced a significant population reduction in the past years due to high levels of exploitation, loss of habitat and habitat quality as a result of human pressure (Morgan et al., 2011). It has the smallest distribution and smallest population size, estimated between 3,500–9,000 individuals (Morgan et al., 2011). As such, the species is classified by IUCN as Endangered (Oates et al. 2008a), and classified in CITES list of Appendix I, and is also strictly protected by the Cameroon wildlife law and place in class A (MINFOR, 2007). The common dilemma facing Pan troglodyte elliotti species in these areas is the soiling demand for their body parts for use in traditional medicine, nutritional, rituals, ceremonies, festivals and “animistic myths”. As such they are becoming very scarce due to indiscriminate killing to achieve spiritual enlightenment and elevation (Ekinde et al., 2005 and Tsi and Chuo, 2016). Poaching and the bush meat trade display of body parts/meat to markets and restaurants and display of chimpanzee and other primate pets is more frequently found near the border of Western Cameroon and Eastern Nigeria (Chuo and Tsi, 2017). Here, protective laws are both less well known and less appreciated. The smuggling of chimpanzees and body parts is so common in this area and it is transported over bushy land on foot, through boats and rarely on motorbikes (Chuo and Tsi, 2017). Anthropogenic disturbances such as habitat loss and fragmentation, the hunting of infant chimpanzees for the pet trade, and casual deaths from crop raiding are the main threats of Pan troglodytes elliotti and other primates in the study areas (Oates et al., 2008b and Morgan et al., 2011).

2. Method

2.1. The Location of the Study Area

2.1.1. Location of Site I: (Kimbi-Fungom National Park)

The K-FNP is situated in the North West region of Cameroon where it covers a total area of 95380 hectares. It is located between latitude 6° N and 7° N and longitude 9° E and 10°E. It has an altitude of about 900m to 2140m above sea level in the mountains and about 200m to 600m in the valleys (COMAID, 2014). It was created by prime ministerial decree number 2015/0024/PM of 3 February, 2015 and spreads within 3 divisions of the region as follows;

- Donga Mantum within Misaje Sub-Division and Ako Sub-Division
- Boyo Division within the Sub-Division of Bum
- And Menchum Division within Fungom and Furu Awa Sub-Divisions

The northern section of the park runs along the Cameroon-Nigeria border, while the Eastern, southern and Western parts of the park are within Cameroon territory (Tata, 2015). It equally share boundary with the Dumbo Cattle Ranch in the north eastward site. The main rivers flowing through this area are the rivers Ivim, Menchum, and Kimbi. All of these join the Kasina-la, which flows into Kasina-la State, Nigeria.

This national park was realized after the merging of two reserves; the Fungom Forest Reserve (created in 1936) and the Kimbi Game Reserve (created in 1964 and situated in the Western High Plateau region of Cameroon and falls within the Mount Cameroon chain of volcanic mountains range that extends from Mount Cameroon (4,095 metres altitude) on the coast, through Mount Oku (3,011 metres altitude) to the Adamoua plateau, (Tata, 2015). The K-FNP is surrounded by the following main villages: Dumbo, Sabon-Gida and Gidajukum to the north, Kimbi, Su-Bum, Buabua, Cha and Fungom to the south, Mushal, Mundabili, Munkep, Nkang, Akum, Nser, Badji, Turuwa, Sambali, Lu, to the east and Esu, Kwept, Gayama to the east. Figure 1 shows the map of the Kimbi-Fungom National Park in then North West Region of Cameroon.
2.1.2. Location of Site II: (Kom-Wum Forest Reserve)

The K-WFR is situated in the North West region of Cameroon where it covers a total area of 17000 hectares. It is located between latitude 6° N and 7° N and longitude 9° E and 10°E. It has an altitude of about 500 and 1,500m above sea level in the mountains and about 200m to 600m in the valleys (Morgan et al., 2011). It was created in 1951 and was followed by reforestation initiatives that were implemented (but later neglected) by the National Forestry Fund. It spreads within 2 divisions of the region as follows:

- Boyo Division within the Funding Sub-division
- And Menchum Division within Wum Sub-Divisions

The K-WFR extends towards the western boundary of the region which stretches along the international border between Cameroon and eastern Nigeria. The main rivers that flow through this area are the rivers Ivin, Menchum, Nzele and Kimbi. All of these join the Kasina-la, which flows into Kasina-la State, Nigeria. It is presently manage by the Fundong and Wum councils. The K-WFR is surrounded by the following main villages: Maholm, Mbengkas, Biaso, Mentang, Mbongkesu and Bu. Figure 2, shows the map allocation of the Kom-Wum Forest Reserve in Boyo and Menchum Divisions, North West Region of Cameroon.
2.2. Data Collection and Data Analysis

Data collections for *Pan troglodytes ellioti* in ethno-primatological practices among the indigenous people and the implications for biodiversity conservation in the K-FNP and K-WFR, were carried out with the help of interviewer-administered questionnaire survey, informal interview using unstructured script, palaces/market gathering discussion and direct field observations of trade. To bring out the knowledge and awareness of ethno-primatological practices of the indigenous people, questions were especially formulated as to which body part/meat are used for traditional medicine/rituals/food, if they exist traditional beliefs/taboo, folklore/myths and practices that can determine the conservation of this species. More again, questions were link to the geographical origin of Chimpanzee body parts/meat, the prices and the scale of the trade (i.e. whether at a national, regional, or transnational level) and if they are still being hunted. Direct observations of the trade and practices were conducted in the market and borders and field notes taken. Every observation heard and/or seen was noted. Surveys were carried out in twenty two villages, in which
sixteen villages (Gida-Jikum, Sabon-Gida, Kimbi, Su-Bum, Cha, Fungom, Mashi, Mundabil, Nkang, Nser, Badjj, Turuwa, Sambali, Lutu, Kwept and Esu) were from K-FNP and six (Moghom, Mbengkas, Biaso, Mentang, Mbongkesu and Bu) from the K-WFR. Purposefully selected based on their locations and activities within the proximity of the Park. A total of 384 interviews were attempted and up to 288 valid household heads responded to complete interviewed administered questionnaires. Households along village paths were randomized by sampling every second household encountered as the interviewers moved through the village. The track log on the GPS was activated to avoid interrogating the household twice and the coordinate of each household interviewed taken. Adult men, women, youths, hunters, traditional practitioners and vendors, were targeted. In sampling the population of each household, the interviewed was attributed to the older family member and any other contribution from family members were considered same for that interview. But the sex, age, educational level and occupation of the same household interviewed were recorded separately to ease data analysis. Furthermore, the morphological identification of the specimens viewed was made and with the help of a digital camera, photographs were taken where possible. Equally information on other animal body parts encountered during the surveys was noted. At the beginning of each interview, informants were briefed on the subject and objectives of the research and assured that the purpose of the work was not to condemn or report their practices to the legal authorities. During field inventory, two research assistants chosen by the chief of each village, were recruited and further trained on the principle of the research to assist the senior author in conducting the survey. Interviews were conducted in Pidgin English (a language similar to English and used in English-speaking regions of Cameroon) and took approximately 25-30 minutes. But in cases were informants could not understand or interpretation was difficult, a translator chosen by the chief who could speak or understand the local dialects, assisted in the process. and the old (60+) constituted 13%. The educational status of the interviewees was also computed for the survey. Result indicates that 35.5% of the respondents did not have any form of formal education. While 48.5%, 18.5% and 2.5% had elementary, secondary and tertiary level of education respectively. The main sources of livelihood activities of the interviewees in the study areas were grouped into farming, hunting, logging, traditional healing, gathering NTFP and others. Farming (94%) was the major occupation as most of the other activities; hunting (74%), logging (24%), traditional healing (24.5%) gathering NTFP (35.5%) and others (10.5%) like artisan works and constructions were reported being undertaken alongside farming. Income levels of the informants were investigated and about 34.5% of interviewees were earning income between 20.000-50.000cfa per month while 15.75 were earning income level below 2000.00cfa per month. This indicates that the income levels of the household’s livelihood sources are not enough to support their basic needs thus the reason they undertake more than one kind of occupation.

3. Results

3.1. Demographic Factors of the Interviewees

Computing for the age, sex, education and livelihood activities of interviewee’s shows that about 52.3% of the respondents surveyed were males while 47.9% were females. With respect to the age structure, majority 87% of the respondents were within the economic active group (20-59)
3.3. Primate’s Species Reported Used in Ethno-Primatological Practices

During interviews surveys, many of the respondents pointed out other species of monkeys whose body parts/meat were equally used in ethno-primatological practices within the study areas. Even though much attention was not paid to these monkey species since they were not species of interest. Figure 5 shows the other primate’s species identified to be commonly used in ethno-primatological practices around the study areas.

From figure 5, most of the respondents 33% reported *Papio anubis* bones for the treatment of fractures, head, skulls, skins toes and fingers for treatment of diseases/conditions and in rituals practices. In addition, 24%, 13%, 11%, 9%, 6%, and 4% respondents respectively reported *Erythrocebus patas*, *Chlorocebus tantalus*, *Cercopithecus mona*, *Cercopithecus nictitans*, *Cercopithecus preussi*, and *Cercopithecus erythrotis* body parts/meat used for medicinal, rituals and as special food in some traditional celebration or festivals. However they were reported as feasible substitute species for the same kind of disease/condition mostly handle with chimpanzees body parts/meat.

3.4. Ethno-Primatological Practices of *Pan troglodytes ellioti* Body Part/Meat

3.4.1. Traditional Medicine Practices

The escalations of spiritual diseases or illnesses that are difficult to handle through modern medicine or detected in modern laboratories have greatly evolved in recent time. This has led to rush for traditional medicine whose combination demands the use of chimpanzee, gorilla, primates and other animal’s body parts/meat for their treatment. As such, interviewees were interrogated on the different body parts/meat of chimpanzees used for traditional medicine in their villages. Most of the respondents (94%) accepted that chimpanzees body parts/meat were used in traditional treatment practices.
medicine while the rest (96%) of the respondents doubted the used of chimpanzees body parts/meat in their villages. The table 1 shows some identified disease/condition for which traditional treatment is commonly sought with chimpanzee’s body parts/meat in the K-FNP.

Table 1. Identified Disease/condition for which traditional treatment is commonly sought with Chimpanzees body parts/meat in the study sites.

| Some Diseases/Conditions for which is treatment commonly sought | Preferred Chimpanzee Body Parts/Meat |
|---------------------------------------------------------------|--------------------------------------|
| Bone fractures/sprains,                                       | Bones, skull                         |
| Body strengthening,                                            | Bones, skull                         |
| Calcium deficiency,                                            | Soft bones, meat                     |
| Cell rebuilding,                                               | Marrow bones, meat                   |
| Joint pains,                                                   | Bones, skull                         |
| Side pain,                                                     | Warm bones                           |
| Swollen limbs/parts,                                           | Liquor of cooked bones               |
| Tooth ache,                                                    | Grind bones                          |
| Waist pain,                                                    | Warm bone, grind burnt bones applied to cuts |
| Diarrhea/dysentery,                                            | Bones, skull, head, furs, when burnt |
| Poisoning,                                                     | Bones, gall bladder, liver, skin, furs, nails |
| Stomach ache,                                                  | Grind burn bone mix with other substance |
| Swollen Belly,                                                 | Boil suck bones                      |
| Intestinal problems,                                           | Liver, tower, intestines, bones skulls |
| Frontal headache, nerves,                                      | Skull, head bones                    |
| Rheumatism, spleen trouble,                                    | Bones, fats, fore and hind limbs     |
| Antibiotic,                                                    | Bones, furs, skin                    |
| Asthma,                                                        | Bones, jaws                          |
| Epilepsies,                                                    | Fore and hind limbs                  |
| Heart Diseases,                                                | Internal organs, heart, liver, chest bones, |
| Hypertension,                                                  | Bones,                               |
| Paralysis/stroke,                                              | Veins of limbs and Hinds             |
| Tuberculosis/cough,                                            | Bones, skin, furs                    |
| Eczema,                                                       | Furs, bones                          |
| Scabies/rashes,                                                | Bones and furs                       |
| elephantiasis,                                                 | Fore and hind limbs, skull, head     |
| Sore throat/goitre,                                            | Bones, furs                          |
| Convulsion,                                                    | Anus, furs                           |
| Sleeping sickness,                                             | Fore and hind limbs, head,           |
| Wounds /sores, heart attack,                                   | Bones, furs, skull                   |
| Bed wetting,                                                   | Bones, skull, skin, carcass, head    |
| Bewitchment,                                                   | Bones, skull, skin, carcass, head    |
| Divination,                                                    | Bones, skull, skin, carcass, head and whole |
| Night mares/demons,                                            | Bones, skin, carcass, head           |
| Wed dreams, unstable,                                          | Bones, skin, carcass, head           |
| Marriage, protection,                                          | Bones, skull, skin, carcass, head    |
| Deliverance evil,                                              | Nails, bones, skull, skin, head, fore &hinds limb |
| Fertility for women,                                           | Internal organ of female, placenta, meat, fur bones |
| Menstrual problems,                                            | Bones, skin, meat                    |
| Miscarriage/bleedings,                                         | Placenta, bones, furs                |
| Sexual weakness,                                               | Testes, male organ, furs             |
| Potency for men,                                               | Male organs, testes, meat            |
| During child delivery,                                         | Skin, bones                          |
| Appeasing gods,                                                | Skull, hind and limb bones           |
| Fortune rousers,                                               | Skulls                               |
| Prevention of accidents,                                       | Limbs and hind bones                 |
| To produce charms,                                             | Burnt hinds, limbs, skulls and other concussion |
| For incantation,                                               | Skull, head, fore and hind limbs     |
| Madness/mental problems,                                       | Bones, skull, head, fore hind arms   |

Source: Field Survey, March, 2015-November, 2016.

From the table 1, up to 36 kinds of diseases/condition were reported treated directly or in combination with over 22 chimpanzee’s body parts/meat. Most of the respondents reported that illnesses afflicted by witches, wizards and occultism manipulations cannot be treated through modern medical technology as it is easily handle by traditional
practitioner.

3.4.2. Rituals Practices

Many traditional culture in Menchum, have fast change from humanitarian sacrifices in appeasing the gods to animal sacrifices especially gorilla, chimpanzee and primate’s species (Tsi and Chuo, 2016). Their body parts/meat are interestingly used for different kinds of rituals. As such, questions were also designed to find out chimpanzees ritual practices associated to their body parts/meat around the villages of the study area. The figure 6 shows the percentage of respondents to rituals practices associated with chimpanzees around the villages of the study areas.

![Figure 6. Percentage of respondents to rituals practices associated with chimpanzees.](image)

From the figures 6, about 72% of the respondents accepted the used of chimpanzees and it body parts/meat for rituals sacrifices within the villages closer to the national park. While 28% of the informal had little idea or doubted the performance of chimpanzee rituals sacrifices. Many of the respondents accepted rituals practices with chimpanzees said, they are sacrifice to the gods, use to produce charms for protection, obtain traditional title, during power transition after the death of a chief, as totems in medicinal harvesting/hunting of other animals, for fortune tellers, to initiate new associates into certain traditional dances, to destroy the power of witches and wizards, to obtain spiritual power from the spirit of the forest, to invoke the spirit of the death, to release attack against human enemy especially during war, during festivals and celebrations.

3.4.3. Nutritional Practices

In ancient days, as lamented by one of the responder it was hardly heard of that somebody eat the meat of any monkey species not to talk of chimpanzees meat. This is because they were considered human-like. There were many bush meat with very better taste as compare to primate species which no one belief they could be eatable except in the cure of certain illnesses where traditional medicine demand the individual to consume it. But today, villagers do not more have bush meat preference they eat everything, it is terrible as he concluded. The figure 7 below shows the percentages of respondents to the consumption of chimpanzee meat around the study area.

![Figure 7. Percentage of respondents to the consumption of chimpanzee meat.](image)

From the figure 7, out of the 98% of respondents who accepted that chimpanzees are eaten, 74% reported that people do eat chimpanzee’s meat while 24% said they have eaten chimpanzee’s meat and only 2% said they had no idea if chimpanzee’s meat were eaten. Reasons given for the consummation of chimpanzee meat is presently base on the belief that they are medicinal, help in blood regeneration, strengthen pregnant women and their children and ease delivery, wash the stomach from all infections, gladdens the heart among initiate as they feel honoured to the expense of non initiate, sharpens the mind especially for young children.

Many of the respondents reported chimpanzee’s meat to have been nicknamed as “fine boy”, “law beaf” and “tailless man” to hide it identity from wildlife officials. Many other species of primates were reported eatable around the study area. Even though most of the respondents confirmed that chimpanzees are eaten by people, monkey’s species were reported to be frequently eaten due to their abundant than chimpanzee. The consumption of chimpanzees meat were reported to be common near bushes in the Cameroon-Nigeria borders and in big restaurants in the cities as compare to the villages near the national park and local market.
3.5. The Implications Ethno-Primatological Practices of P. t. ellioti for Biodiversity Conservation

3.5.1. Hunting of Pan troglodytes ellioti

Informants responding to questions relating to the hunting of chimpanzee gave convincing evidence of weekly or monthly or yearly illegal trafficking of chimpanzee’s body parts and other monkey’s species. Hunting of chimpanzees was confirmed by 98% of respondents and a majority of respondents (78%) had seen carcass/body part of chimpanzee in less than a year. In fact, two hunters in Lutu showing prove of recent chimpanzees skins (picture 1) confirmed that 7 and 4 chimpanzees were killed in 2015 and 2016 respectively. Another hunter presented an old skull (Figure 8). Many of the respondents refused taking of photographs of some chimp’s body parts seen with the claim that they have inserted charms in them as well as some well afraid of being betray. It is evident because most of the respondents who responded sincerely to these questions lives in border villages of Cameroon- Nigeria were hunting is optimal and law enforcement are almost absent or inapplicable.

Figure 8. Skin and old skull of chimpanzee.

Here, hunting equipments are being exchanged at very low cost along the Cameroon-Nigeria borders and are commonly used. Figure 9 shows the percentage of respondents to equipments commonly used in the hunting of chimpanzees in the study sites.

Table 2. Trade of Pan troglodytes ellioti with respect to varying prices.

| Body parts     | Ranges of prices francs.cfa |
|----------------|-----------------------------|
| Fresh head     | 10,000-25,000               |
| Hind/fingers   | 10,000-25,000               |
| Limb/toes      | 10,000-25,000               |
| Skull          | 20,000-50,000               |
| Skull          | 20,000-50,000               |
| Skin           | 10,000-30,000               |
| Bones          | 7,500-25,000                |
| Infant live/death | 35,000-150000             |
| Adult chimpanzee live/death | 75000-250,000             |

Source: Field Survey, March, 2015-November, 2016.

From table 2, an adult chimpanzee when hunted cost 75,000-250,000 francs.cfa and its enfant 35,000-150,000 francs.cfa. The amount can rise more than this especially when the chimpanzee/enfant is caught alive. The prices of the head, toes, fingers, skull, skins and bone equally vary
depending on the duration of time (old/fresh), size, demand from traders and if they are already possessed with charms. The amount for the meat and other body parts ranges from 500-5,000+ francs.cfa/slice/part. The average price of a matured chimpanzee which was estimated to be in between 75,000-250,000 francs.cfa which is an equivalent amount for the salaries of a wildlife official. When compare to other monkey species such as Colobus, baboons, mona, putty-nosed, tantalus and patas monkeys in which prices for their body parts/meat ranges from 7,500-50,000 francs.cfa shows that the prices for chimpanzee body parts/meat are relatively high.

Equally, respondents reported that the scale of the trade for chimpanzee’s body parts/meat occurs both at local, national and transnational level. Figure 10 show the scale of trade of chimpanzee’s body parts/meat in the study areas.

From figure 10, most of the respondents (55%) reported the scale of trade of chimp’s body parts at local level. Equally, 22% and 38% reported the scale of trade at national and regional levels respectively especially in big towns like Wum, Mesaje, Bamenda, Buea and eastern part of Nigeria. Despite the level of trade, high demand for body parts/meat by traditional practitioners for traditional medicine and rituals around the neighboring villages, nationwide and internationally couples to the fast acquisition of hunting equipments coming up from Nigeria and at times offer to hunters in a kind of business known as “Trade by Bata” remains a greater trade to biodiversity conservation in the study areas.

3.5.3. Pan troglodytes ellioti as Pets

The smuggling of chimpanzee was reported common along the Cameroon-Nigeria borders. During interview surveys about 35% of the indigenous people reported chimpanzees to be more demanded on sale as pets. This is not really because people want to keep them at home or in private zoos or hotel but because most buyers want to grow them up for rituals sacrifices or for special traditional occasions. Equally, up to (57%) of respondents had seen pet chimpanzees. Baby chimpanzees are usually transported from Lutu, Nser, Nkang, Kwept and other rural areas to big towns like Bamenda, Bafoussam, and Douala and especially and frequently to Nigeria cities. The method of transportation involves cunning bushy roads, through river banks or carefully tied in cargo or on the individual inside large worn dresses. During transportation, the pet’s chimpanzees are injected or given a tablet, which weakens them and makes them sleep on transportation without causing problems on the road or notice by eco-guards.

3.6. Attitudes of Indigenous People Towards Protection of Pan troglodytes ellioti

Open acceptances of indigenous people in conservation projects usually facilitate the task of management (Tsi et al., 2006) of natural resources as objectives are easily attained. While the indisposition of local people, frustrates conservation efforts. Figure 11 shows the Attitudes of indigenous people towards the Protection of Pan troglodytes ellioti in the study site.

From figure 11, up to 54% of respondents in the survey areas accepted that chimpanzees were legally protected to
46% who seems to be ignorance to the legal protection of chimpanzees by the state. This gives reasons while constant and continuous sensitization campaign is necessary within the study areas to build up positive attitude toward the conservation of chimpanzees. Furthermore, informants were again interrogated if they agree to the conservation of chimpanzees in the study areas. Figure 12 show the percentages of respondents to the conservation of chimpanzees in the K-FNP and K-WFR.

![Conservation of chimpanzees](image)

Source: Field Survey, March, 2015-November 2016.

Figure 12. Percentages of respondents to the conservation of chimpanzees in the study areas.

Figure 12 illustrate that about 58% of the informants agreed that chimpanzees should be protected in all their habitat range, 29% were those who accepted the conservation of chimpanzees only inside the national park but not outside the park and 13% were of those who did not response to the question or didn’t support the ideal to protect chimpanzees in their areas. Informants were almost ignorance to the question suggested if chimpanzees transmit diseases. Figure 13 shows the percentages of respondents to the perception of disease transmission by *Pan troglodytes ellioti*.

![Disease transmission](image)

Source: Field Survey, March, 2015-November 2016.

Figure 13. Percentages of respondents to the perception of disease transmission by *P. t ellioti*.

Although majority (71%) of respondents said that do not transmit diseases or did not know. A few (29) however believed that chimpanzees could transmit diseases such as Ebola and AIDS as they said they have heard of it but it has never been notice in their villages. A lesser proportion (24%) of respondent’s perceived chimpanzees as crop raiders. The kind of crops reported to raided by chimpanzees and other primates included: cocoa, maize, vegetables, maize, guinea corn, ground nut, orange, mango, palm nut and cola nut. This is one of the reasons that push respondents to be less interested, to the protection of chimpanzees because they raid crops. However, questions were further designed to investigate indigenous people attitude toward *Pan troglodytes ellioti* crop raiding and assess to natural resources exploitation in the K-FNP and K-WFR.

4. Discussion

Due to the damaging of traditional taboos and totemic beliefs, hunting of chimpanzees have become a common practice as chimps are hunted for their body parts/meat for used in traditional medicine, rituals and as food for special occasion.

4.1. Used of Chimpanzee Body Parts/Meat for Medicinal Purposes

The escalations of spiritual diseases or illnesses that are difficult to handle through modern medicine or detected in modern laboratories have greatly evolved in recent time around the study sites. This is making the indigenous people to rush for traditional medicine whose combination demands the use of chimpanzee and other primate’s body parts/meat for their treatment (Tsi and Chuo, 2016). For instance:

4.1.1. Healings with Chimpanzee Bones

Bones were reported to treat humans with bone fractures. The bone is tied to the area affected with other traditional concussion and is belief to reduce healing time and less costly Back bones help to relief west pains in human when warm and place on the paining side. There also existed a strong belief that the bones of chimpanzee are very useful as an antibiotic to make children strong. Equally, medicines were reported to be produced from chimpanzee bones. For instance, pregnant women and new born children, were advice to constantly drink the liquor of soaked chimpanzee’s bones which is slightly boil alongside other substances with water on daily basis to develop the bones of the child in the womb and to reduce the effect of calcium deficiency in newly born. Moreover, to ease fast walking ability in children and to further strengthen the bones harder as they grow older chimps bones were reported to be tied on children foot during the night. Chest bones were used to heal people suffering with asthma. Furthermore, bones when boil and mix with other concussion were reported to treat joints, strengthen children with weak walking abilities and empower fertility rate in women.

4.1.2. The Used of Male and Female Chimpanzee Organs

The placenta, ovaries and womb of a female chimpanzee when removed and prepare with other concoction were reported to treat infertility in barren women and to strengthen fertility in young girls. It was equally said used to relief women suffering with menstrual problem, miscarriage and bleeding. The testis and scrotum of killed male chimpanzees
were said to heal men suffering with impotence sexual weakness.

4.1.3. Healing with Chimpanzee Skull/Head

Skulls when warmed on fire, rubbed with herbs help to relief human suffering with chronic frontal headache. The cooked head of a chimpanzee was reported to hold the traditional belief that it gives intelligence and wisdom to young growing children. After eating the fleshy parts of the head, the skull is sucked in water couple with some herbs and the liquid is given to school children in the morning to improve their brilliance.

4.1.4. Healing with Chimpanzee Meat

The eating of chimpanzee meat was a matter of choice as reported by one of the respondents but in cases of illnesses, patients are recommended to eat the meat witch ids usually accompany with other concussion. For instance fresh chimpanzee’s meat was reported to greatly assist in blood regeneration. Childless mothers are often recommended to eat and drink the soup of chimpanzee cooked meat to cleanse their wombs. The soup from the boil meat was given to pregnant women to strengthen the child in the womb. Others held the belief that women of child bearing age shouldn’t eat chimpanzee because they will give birth to chimpanzee-like babies. Chimpanzee’s meat was said to play a good role in treating poisoning, stomach ache, swollen belly and intestinal problems in humans.

4.1.5. Healing with Chimpanzee Fur and Hair

Chimpanzee’s hair/fur was reported very valuable in treating many kinds of illnesses. Their used demand that the hair/fur should be burnt grind and the mix with many other substances such as “kasi” oil, “kenet” oil, and “palm” oil. The hairs gotten from the belly of female chimpanzees, when burn with other herbs and made to be inhale by a pregnant woman on labour, was reported to ease child bearing. Hairs when burnt and mix with other leaves treat burn areas on human body. The substance produce with hair/fur, were reported to treat people suffering with diarrhea/dysentery, eczema, scabies/rashes. It was used to produce charm for protection. It was applied to cuts, treat poisons, just to name a few.

4.2. Used of Chimpanzee Body Parts/Meat for Rituals

Being a remote area, it was noticed that most of the cultural practices observed in the villages was base on rituals. As compare to ancient generation, said by one of the respondents many the cultural practices around the village have fast change from humanitarian sacrifices in appeasing the gods to animal sacrifices especially chimpanzees, gorilla and primate’s species whose body parts/meat are interestingly used for different kinds of rituals (Tsi and Chuo, 2016). For instance:

4.2.1. Sacrificing Chimpanzees to the Gods

Chimpanzees were reported used for sacrifices on village gods or individual shrines. One of the respondents in Lutu, reporting on this said in ancient times, healthy human beings especially stranger or stubborn fellows were being slaughtered on village gods or by some powerful shrine owner to appease the gods during particular festival seasons. But today, this inhuman tradition have been replace by sacrificing chimpanzees due to the fear of law couples with the fact that many of these practitioners are dead.

4.2.2. Sacrificing Chimpanzees to Obtain Traditional Title

Some of the interviewees gave facts that, due to the extinction/rareness of lion, elephant, leopard and other large mammal’s species in some of their suitable habitats around their forest which were used to award the “Red Feather” cap title to any hunter who successfully hunt one, is now being awarded to someone who shot a common chimpanzee. In awarding this title, the killed chimpanzee or interestingly if it is hunted alive or half dead, it is slaughtered then pass three times over the spiritual pot allowing the blood to drop into the pot three times, it is then place near the shrine were the pot is place, starting with the chiefs then the elites will pass through the chimpanzees touching it as they sing songs of victory. Finally the hunter’s legs are place on the chimpanzee and the red feather from the pot is removed, inserted in the cap and place in his head with powerful words of blessing. He is then welcome into the “Ngomba” house and given authority to enter any juju house in the village.

4.2.3. Sacrifice of Chimpanzees for Oath Bearing

Chimpanzees were equally said to be used in ancient time during alliances between neighbouring villages for oath bearing. During such event, a live chimpanzee will be hunt and after invocation of the spirit, the chimpanzee is killed at the boundaries and each Fon backing the opponent and facing his people will leak the blood of the chimps on the boundaries three times under oath to the terms of the treaty the boundaries limit.

4.2.4. Used of Chimpanzee for Power Transition

Chimpanzees skin, bones of the head, toes and fingers were reported used as symbols of power transition which usually occurs when a chief dies, his successor is taken into the “Ngomba” house were rituals are performed. He is made to sit on the chimpanzee skin; the skull is then put on his head, the toes bones on his feet and the hand bones on his hands couples with other items. This is followed by powerful enchantment as he is given authority and power above villager and animals with the strength to defend the land.

4.2.5. Used of Chimpanzee for Traditional Celebration of Festivals

Some traditional festivals/celebrations such as male child circumcision and some “Nkoh”, “Muambouh”, “Foubuh” and other juju dances, were reported to use chimpanzee’s body parts/meat for the preparation of rituals linked to these practices. For instance, Chimpanzee’s black skins were reported sacred because they are used to perform ritual in “Nkoh” dance the skin is folded in the form of a baby toy and the “Nkoh” carries it on his back. Chimpanzees pink skin
faces, hinds and toes were reported to be place in some shrines linked to these juju which symbolizes powerful meanings in these traditional sects and are use to initiate others new members.

4.2.6. Used of Chimpanzee Body Parts to Produce Charms

Most commonly, respondents reported that the skins of chimpanzees were used to make important trophies such as medicine bags used for the storage of powerful traditional medicine. Traditional handbags with symbolic designs, mostly use by elite or given to important traditional strangers as symbol of fruitful relationship. Equally, Chimpanzee’s skull and bones were reported used to form protective charms. The openings in the skull/bones are used to put in charm. Other bones without openings were reported to be possess with spiritual materials and distributed to associates who place them on their door poles, window, roofs, farm and other properties to protect them and their families as well as properties from witches and wizards.

4.3. Used of Chimpanzee’s Meat in Special Occasion

One of the respondents said in ancient days, chimpanzees were special meals in some particular ceremonies. For instance, as he continue in ancient days when ever a chief priest in a family that were practicing totemic belief with chimpanzees dies, a chimpanzee was killed to prepare for his funeral as well as to introduce his successor. The occasion is spies up with a special dish of chimpanzee meat meant only for associate. One of the respondents reported that in ancient days in their chiefdom, when a new chief was to be crown, a chimpanzee was killed. After performing the rituals require, the chimpanzee is skin off preserving the important parts necessary for the palace, the rest of the meat is cooked and eaten only by elites. However, as said by one of the respondents, that it was hardly heard of that somebody eat the meat of any monkey species not to talk of chimpanzee’s meat which was considered sacred and human-like. Couple to fact there were many bush meat with better taste as compare to primate species which no one belief they could be eatable except in the cure of certain illnesses were traditional medicine demand the individual to consume it. But today, villagers do not more have bush meat preference they eat everything it is terrible as he concluded. Viewing from the respondents, many do not considered traditional beliefs valid in this present time. As such the eating of chimpanzee is as normal as eating any other meat. Even though eating of chimpanzee’s meat in the villages near the park and local markets is very rare, their meats are consumed greatly in hidings especially in the bushes of Cameroon- Nigeria borders and also in big restaurants in the cities as well as in “Ngumba” houses. Only a few of the respondents said chimpanzees are not eaten. They were mostly the old who still holds ancients beliefs about chimpanzees. Equally, chimpanzee’s meat from the survey areas was reported not only for local consumption but also transported to Nigeria cities and some big towns nationwide such as Bamenda, Bafoussam, Douala and Yaounde.

4.4. Ancient Indigenous Beliefs That Aided in the Conservation of Chimpanzees

4.4.1. Traditional Taboos

Most of the ancient traditional practices such as taboos/beliefs reported around the study areas were shown to be valuable tools that aided chimpanzee’s conservation. For instance, one of the respondents in Nkang said in the days of old, chimpanzees were considered as human being. As such, it was a taboo to kill chimpanzees because they behave like human beings, the way they eat, feed their young, cry and shout like human, imitate human, carry their young and play about. So shutting at them is like during it to a human being. In Fungom, chimpanzees were greatly forbidden to be killed because they were among the animals that belong to the palace which signify power, protection and guidance they held the belief that chimpanzees are strong and will help them during war when their enemies attack them. Chimpanzee in the olden days, were highly respected and feared by all because they foretold mysterious event likely to happen in the community as reported by one person in Sabon-Gida. For instance, the death or birth of a Fon, sudden attack of enemies and other calamities were usually announced by the way they cry or drum. This alert were interpreted by the elites who prepares the minds of the villagers either to gather enough food or weapons or perform rituals base on the kind of mysteries. Now our days, these signals are very rare due to over hunting of chimpanzees and most of those who were expert in this are dead he ended.

In Nkang, one of the respondents said at first, their tradition and culture did not permit the hunting and eating of chimpanzees because in the early days, they were reported to cause miscarriage in women if hunted. They were reported to be devils that move with masquerade in the night. They were belief to be witches and wizards and anyone who had a nightmare in which a chimpanzee touches the person died the following day. In the days of old added by one of the interviewees, when ever chimpanzees came into the village, all the villagers will lock themselves indoors as on the chief priest, the king and high ranking elites will sit in the village shrine and communicate with the chimpanzees. During this period, no one goes out or comes into the village until after three days where the ritual sacrifices are over and chimpanzees most have gone back to the forest. But these traditional practices have completely disappeared.

In the ancient time, chimpanzees were considered as gods as said in Nser, and no one had the courage to kill them or wound them. Whenever they was an outbreak of any dangerous illness, or a disease without cure, powerful traditional herbalist consult chimpanzees, and any grass that the chimpanzee cut and eat help in the curing of such disease. So it was a taboo for someone to hunt or eat chimpanzees because they aided in traditional medicine findings. Equally one of the respondents said whenever a dead body of chimpanzee was found in the bush, it was traditionally buried in an identify area and the previous day was declare to mourn with the perception that the god has loss one of its members.
Food and drinks were offered to the god as a sign of appeasing the god and after some months, the bones were removed wash and rubbed with camp wood and placed beside the village god. But this tradition is far forgotten.

In Turuwa, a man reported that chimpanzees were hunted in ancient time in their village but after some time, a group of hunter went to the forest and one of them found a chimpanzee nursing it young, it pleaded with the man not to shut but the man fired at it unfortunately he miss it and before he notice, the chimpanzee grab him and gave him a serious slap below the armpit. The man cried out and pleaded with the chimpanzee that had sympathy on him but seize his bag, gun and cutlass and send him away. From that day, news spread round the village that chimpanzees are more merciful than human and it became a taboo to hunt chimpanzees. In Kwept, one of the respondents said that a hunter meets a nursing chimpanzee and when it pleaded him to spare it life the hunter was merciful and did not shut it. On his way to his hunting hut, he saw the nursing chimpanzee pointing to him two killed duikers and a bush buck as gift for it kindness when the information reach the village, no hunter dare to killed a chimpanzee because they held the belief that chimpanzees gives good luck especially the nursing mothers. Many respondents said it was a taboo to kill chimpanzees because it was not eaten by the villagers. Those who ate it complain of nausea, running stomach, general body weakness as they had the feelings that they have eaten a human being. Some even when further to say that the meat when eaten by women, it causes infertility and miscarriages in pregnant women.

4.4.2. Totemic Beliefs

Decade of years ago totemic belief associated with chimpanzees were very common and the roles governing them effective. The value relating to totem shows it important in chimpanzees conservation. For instance, one of the respondents in Nser village said in ancient day, some individual transform into chimpanzees for the benefit of the village. Thus anyone who willfully or accidentally killed a chimpanzee was considered as an unlucky man. Not only did he received automatic sanction from the gods that led to incurable illnesses or dead if the gods are not appease, his chances in shutting himself was look upon as curse people. Even though most of the respondents knew little about totemic beliefs relating to chimpanzees existing in their village, a few however said they have heard stories of their forefathers saying their chief usually transform into chimpanzees to escape from the enemies during war. Equally, that traditional medicine men usually turn into chimpanzees to harvest medicinal plant and that village warriors turn into chimpanzees to guide, frighten and fight enemies during times of wars. As such any hunter, who dares to kill a chimpanzee, was considered to be a wicked and laziest hunter thus his hunting materials will be seize and he will never be given any traditional title within the village.

Conservation priority
Cameroon Forestry and Wildlife law (No.04/01 of 20/01/1994), section 101 states any person found at any time or place with part of live or dead of a protected animal shall be considered to have captured or killed it. For sanction, sanction 158 states: a fine of, from 3,000,000 to 10,000,000 and of imprisonment of one to three years shall be imposed on whoever kills or captures a protected animal. This is pertinent and can effectively assist to remove or reduce the human activities of chimpanzees that have negative impact on the preservation of biodiversity around the park and reserve if MINFOR and NGOs Wildlife Managers applied conservational strategies. For instance, create and strengthen community conservation programmes including conservation education, park advisory committees, and support for local livelihoods and conservation plans for surrounding community forests. Improve awareness on wildlife laws governing chimpanzee’s protection in all surrounding villages. Investigate and develop opportunities for community engagement, including employment, boundary clearance, livelihood improvement, monitoring, and eco-tourism. Establish a chimpanzee survey and monitoring programmes with greater involvement of local communities. Support ancient and build new traditional taboos that are environmentally friendly regarding chimpanzee hunting. Organize frequent campaign as means to stop the live trade of infant chimpanzees and the sale of chimpanzee body parts/meat for rituals, medicine, and celebrations by diverting indigenous people minds on the use of domestic animals such as fowls, goats and by providing beautiful and well equipped health centers in all the surrounding villages.

5. Conclusion

The escalations of spiritual diseases or illnesses that are difficult to handle through modern medicine or detected in modern laboratories have greatly evolved in recent time. Equally, population growth and poverty increment makes it more complex for the indigenous people to meet up with modern medical treatments. This has led the indigenous people to rush for traditional medicine which combination demands the use of chimpanzee’s body parts/meat believed to be cheapest and fastest. Furthermore, the evolution of old and new cultural practices whose rituals demands the sacrifice of chimpanzees or used of its body parts is very rampant around the villages. The eating of chimpanzees which were anciently a taboo in a whole community either because they were considered human-like, ghosts, gods, protectors, ancestors and totems by villagers around the surveyed area, is now an individual issue to choose whether to eat it or not. They are also eaten in special ceremonies/festivals such as during male child circumcision, in “Ngumba” houses during titles and juju initiation. The continue augment in prices of chimps body parts has become so competitive among local people than their engagement in traditional custodians as they seek to grace themselves with praises. As such, attempts to conserve chimps around the study areas are resulting to conflicting bargain between the local people and wildlife officers. All this have eventually led to the continued decline or extinction of chimpanzees in some of their
suitable habitats. Therefore, there is need to bring all the stakeholders involve in conservation processes for an effective dialogue to implant management and alternative livelihood strategies for the conservation of the remaining chimps and other wildlife species.

**Conflict of Interest Statement**

We declare that there is no conflict of interest regarding the publication of this paper.

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**Appendix**
From top left, the pictures shows side view of the forest, chimpanzee nests observation to the bottom right showing the senior researcher and his team members during interview inventory in the study areas.

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