

Indigenous people conflicts on chimpanzee (*Pan troglodytes ellioti*) crop raiding and natural resource exploitation, case study: Kimbi-Fungum National Park and Kom-Wum Forest Reserve NW, Cameroon

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Abstract—This paper assessed the indigenous people conflicts on *Pan troglodytes ellioti* crop raiding and natural resource exploitation, in the Kimbi-Fungum National Park (K-FNP) and Kom-Wum Forest Reserve (K-WFR) NW, Cameroon. Equally, it examines the type, origin, nature, level, effect and the possible constraints confronting the effective conflict management and propose some recommendations to help curtail conflicts. Data for the study were obtained through interviews administered questionnaires informal, interviewed as well as direct observations. From the result, only 28% of interviewees reported that *Pan troglodytes ellioti* raid crops such as bananas, cocoa, and vegetable. Nevertheless, Olive baboons, Patas monkey and other primates were said to be the highest crops raiders. On the other hand, the indigenous people with the claims of trying to protect their crops, set wire snares or uses guns to hunt down primates in farms. The results equally revealed that structural conflict was the major type of conflict characterizing the conflicts in the study areas. This conflict mainly originated from weak enforcement of natural resource laws, absence of conflict management mechanism, and demographic changes. These together with inadequate sources to improve livelihood of indigenes, couples with the imposition of policy without effective participation of the indigenous people and other stakeholders, have increased illegal activities including hunting and encroachment. The study advocates that all Ministries and stakeholders in charge of natural resources management should established a legislative instrument to put in place a well-structured conflict mechanism to address conflicts in the study areas. Most importantly, regular conservation educational

programmes should be embarked on the indigenous people to appreciate the need for sustainable exploitation of natural resources.

Keywords—Indigenous people, conflicts, chimpanzee, natural resource, K-FNP, K-WFR.

I. INTRODUCTION

The relationship between indigenous people and natural resources are important for both human rights; because natural resources are fundamental to the existence, livelihoods, cultural heritage, identity, and future opportunities (Rights and Resources Initiative. 2015). And to biodiversity conservation; because of the tremendous contributions that Indigenous Peoples continue to make. For instance they exercise their traditional knowledge and management systems, defend against external threats, and govern their lands to meet the long-term needs of current and future generations (Rights and Resources Initiative. 2015). However, people in Africa are now increasingly competing for natural resources as they seek to get access to arable land and pastures, and open land conflicts are becoming more and more common (Quan et al 2004) because other interrelated factors like increased competition between different land utilization patterns for cultivation, pastoralism, hunting and gathering, conservation keep on rising (Effah, et al., 2015). This has led to species habitat destruction, species overexploitation, introduction of exotic species and pollution (Morgan et al., 2011). To halt this in Cameroon, the ministry of forestry and wildlife have boasted the domain of wildlife conservation which has developed a network of protected areas that covers a surface area of about 8138800 hectares and 17

National Parks, all of which covers about 19.2% of the national territory. Other protected areas are grouped into the following categories; 6 wildlife reserves, 1 wildlife sanctuary, 3 Zoological Gardens, 46 hunting concessions and 22 community hunting zones (MINFOF, 2010). However, despite committing more areas under legal protection, pressures on wildlife habitats and species are still growing. Species are increasingly being threatened, endangered, and becoming locally extinct (Morgan *et al.*, 2011).

Indigenous people conflicts on chimpanzee crop raiding occur as a result of the nearness of people to chimpanzee habitats. As more people move into chimpanzee habitat, they are becoming exposed to a variety of human-chimpanzee conflict (Effah, *et al.*, 2015). For instance, in some part of the country, chimpanzees and other primates are reported to raid crops such as banana, maize, and sugar cane, and have been known to attack human infants (Antoine *et al.*, 2012). In response to this, affected persons put out traps, snares, or poison and guns to kill the crop-raiders. Similarly, the K-FNP and K-WFR which harbours the most endangered Nigerian-Cameroon chimpanzee (*Pan troglodytes ellioti*) which is the main subspecies of chimpanzee estimated to be as few as 3,500 and 9,000 individuals living in the wild (Morgan *et al.*, 2011). Listed as endangered on the IUCN Red List of threatened species (Oates *et al.* 2008a) and is classified under Appendix I of CITES and is nationally classified in Class A among the most protected species (MINFOR, 2013) face the same kind of impact. According to IUCN (2005) indigenous people- chimpanzee's conflict occurs when the basic needs of chimpanzees interfere with those of the indigenous people, generating negative consequences for both communities and chimpanzees. This also affects the perceptions of local communities toward conservation in protected areas and therefore the long term survival prospects of primates. On the other hand, indigenous people everywhere competes for natural resources such as forest and non timber forest products (NFTPs), land, and water they need or want to ensure their livelihoods (Anderson *et al.*, 1996). In the same way conservationists seek to effectively protect biodiversity which signify restricted access to livelihood resources for surrounding local communities always result to conflicts (Ayling and Kelly, 1997). Research shows that large proportion of the poorest rural households depends critically on common-pool resources for their food and livelihood (Buckles and Rusnak 2005, Sunderlin *et al.*, 2005). The main causes of conflicts over natural resources have been attributed to lack of clarity in roles, overlapping roles, misfit between formal roles and actual practice, lack of effective feedback mechanisms and inadequate coordination and participation (Nang *et al.*,

2011). The study areas is in no exception to this conflict phenomenon as it is evident that the high demand for natural resources commodities have resulted into conflicts among various stakeholders, local communities, and wildlife department. In the past, indigenous people were blessed with relatively abundance natural resources and free access to them. This situation has, however, changed radically in most villages in the study areas. Indigenous people are now increasingly competing to get access to arable land especially for cash crops cultivation and pastures for pastoralism due to the increasing number of cattle commonly practice by the Fulani and Akko (Chuo and Tsi., 2017). Hunting competition to obtain body part/meat of charismatic animals such as chimpanzees, leopard and buffalo continue to increase among the indigenous people due to rush for traditional title, medicine, rituals and for food (Tsi and Chuo, 2016). Equally the illegal gathering of non timber forest product (NFTPs) is of growing interest among the indigenous people around the study areas (Chuo, 2014). As a result of all these, natural resources are becoming scarce. This is further aggravated as a result of demographic changes and the restriction of the indigenous people free access to natural resources in the newly created Kimbi-Fungom National Park (K-FNP) and in the Kom-Wum Forest Reserve (K-WFR) by wildlife officials. In addition, the continue occurrences of fierce confrontation of poachers, loggers and farmers, arrests, evictions and seizure of items, occasionally result in physical, environmental, economic and social damages.

II. MATERIAL AND METHODS

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 Ivin, 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, 2011). The K-FNP is surrounded by the following main villages: Dumbo, Sabon-Gida and Gida-Jukum to the north, Kimbi, Su-Bum, Buabua, Cha and Fungom to the south, Mashi, Mundabili, Munkep Nkang Akum, Nser Badji, Turuwa, Sambali, Lutu, to the west 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.

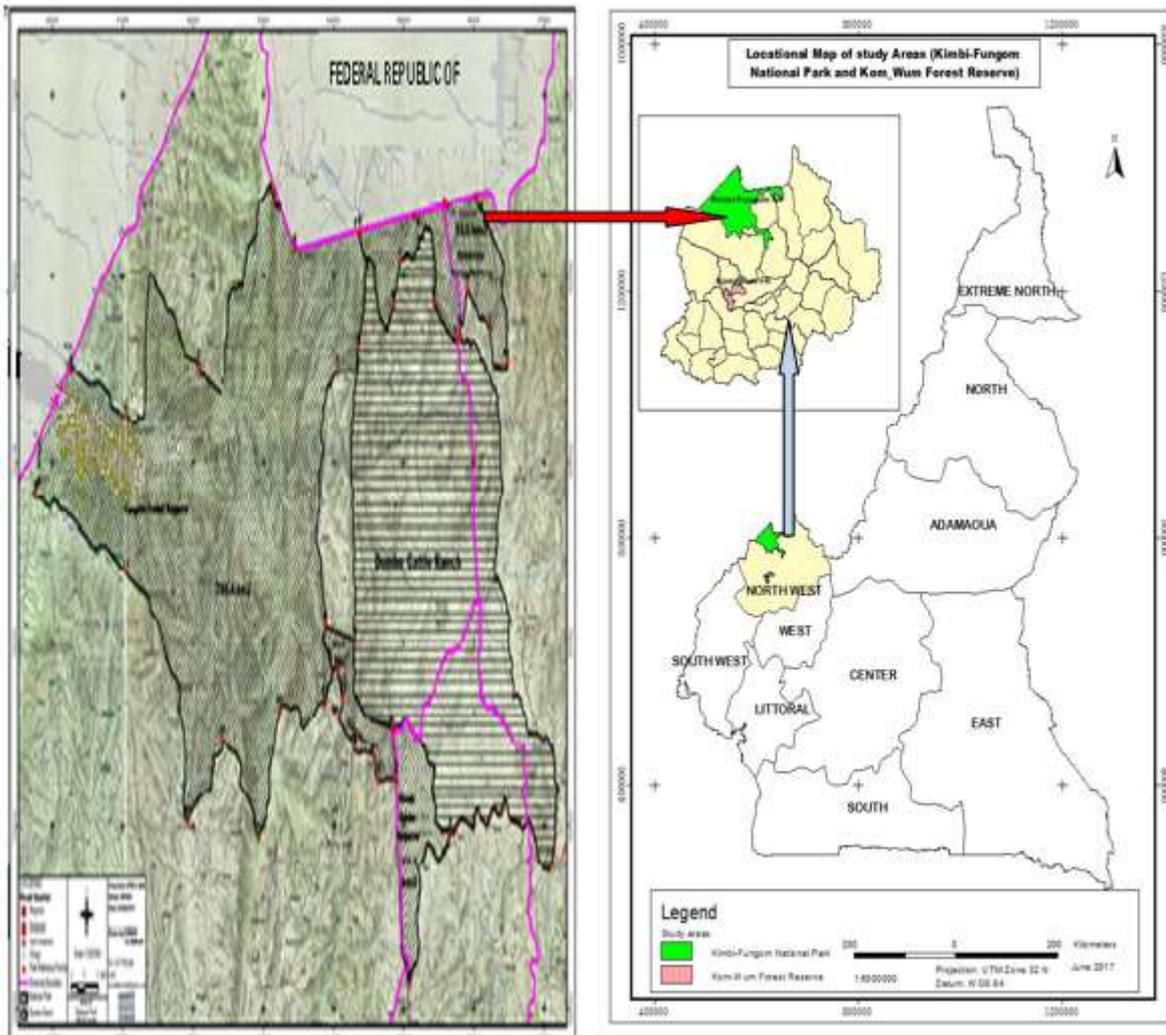


Fig.1: Map of Cameroon showing location of the K-FNP in the NW Region of Cameroon. Source: Adapted from COMAID map drawn for MINFOF, (2014)

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 managed 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.

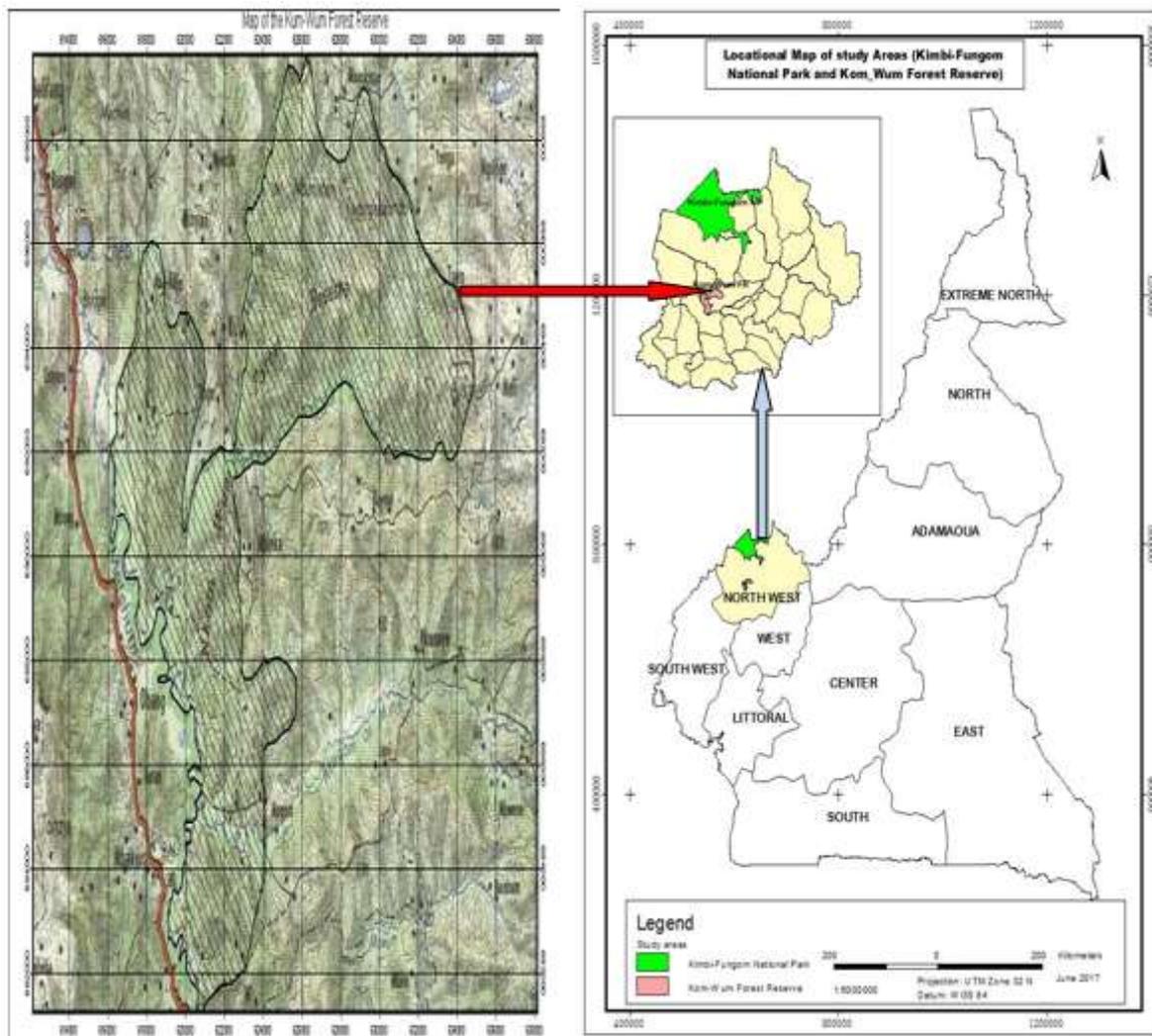


Fig.2: Map of Cameroon showing location of the K-WFR in the NW Region of Cameroon.

Source: Adapted from COMAID map drawn for MINFOF, (2014)

2.1.2. Data Collection and Analysis

Data collection for the indigenous people conflicts on *Pan troglodytes ellioti* crop raiding and natural resource exploitation, was carried out in the Kimbi-Fungom National Park and Kom-Wum Forest Reserve between September to November, 2016. It was aimed to assess if chimpanzees do destroy crops and if the right of indigenous people to natural resources is taken into consideration within these protected areas. To do this, data were collected from multiple units of enquiry for this study through interviewed administered questionnaires, interview guide and direct observations. Interviews were carried out in twenty two villages, in which sixteen villages (Gida-Jikum, Sabon-Gida, Kimbi, Su-Bum, Cha, Fungom, Mashi, Mundabili, Nkang, Nser, Badji, Turuwa,

Sambali, Lutu, Kwept and Esu) from K-FNP and six (Moghom, Mbengkas, Biaso, Mentang, Mbongkesu and Bu) for the K-WFR. Purposively selected based on their closeness and high levels of dependence by the household for livelihood. Altogether, there were about 1300 households in the sample areas as reported by the traditional community chairmen. A total of 384 questionnaires were attempted and only 288 valid household heads responded to complete interviewed administered questionnaires. In each village, a systematic random sampling technique was used to select participants to be interviewed. That is, households along village paths were randomized by sampling every second household encountered. The track log on the GPS was activated to avoid interrogating the household twice and

the coordinate of each household interviewed taken. Mean while, traditional authority/community chairmen, district Security Council officials, agricultural development unit, non-government organizations, eco-guard, and wildlife officers were informally interviewed using unstructured script. To establish the effects of conflicts on livelihoods, environment and on the conservation *P. t. ellioti*, questionnaires were designed to provide insight into the origin, levels, types, nature and effects of the conflicts that links indigenous people and *P. t. ellioti*. For instance, if chimpanzees do destroy crops and if the right of indigenous people to natural resources is taken into consideration within these protected areas. To facilitate data collection, interviews were done with the help of two research assistants employed and trained to assist the senior researcher. Interviews were conducted in Pidgin English (a language similar to English and used in English-speaking regions of Cameroon). In cases were interpretation was difficult, a translator who could speak or understand the local dialects was chosen by the chief to lead the group around the village.

The analysis of data proceeded in three stages: identification of themes, descriptive accounts and interpretative analyses. Based on the research questions, themes were identified from the data and derived inductively from the theoretical framework. The identified themes were given meaning through descriptive account and interpretative analyses. The themes were analyzed and presented in the words of the households and in some cases; direct quotes were used to embody the voices of all identified and interviewed stakeholders. This assisted to ensure a more reliable and credible research findings. Results were presented in the form of tables and graphs, frequencies, and percentages. Furthermore all the GPS coordinates of the household recorded during field inventory were exported to ArcView GIS computer program version 3.3 and geo-referenced to produce a representative sample of household interviewed in the 22 villages that surround the study areas. Figure 3 and 4 shows a representative sample of households interviewed in surrounding villages of the K-FNP and K-WFR respectively.

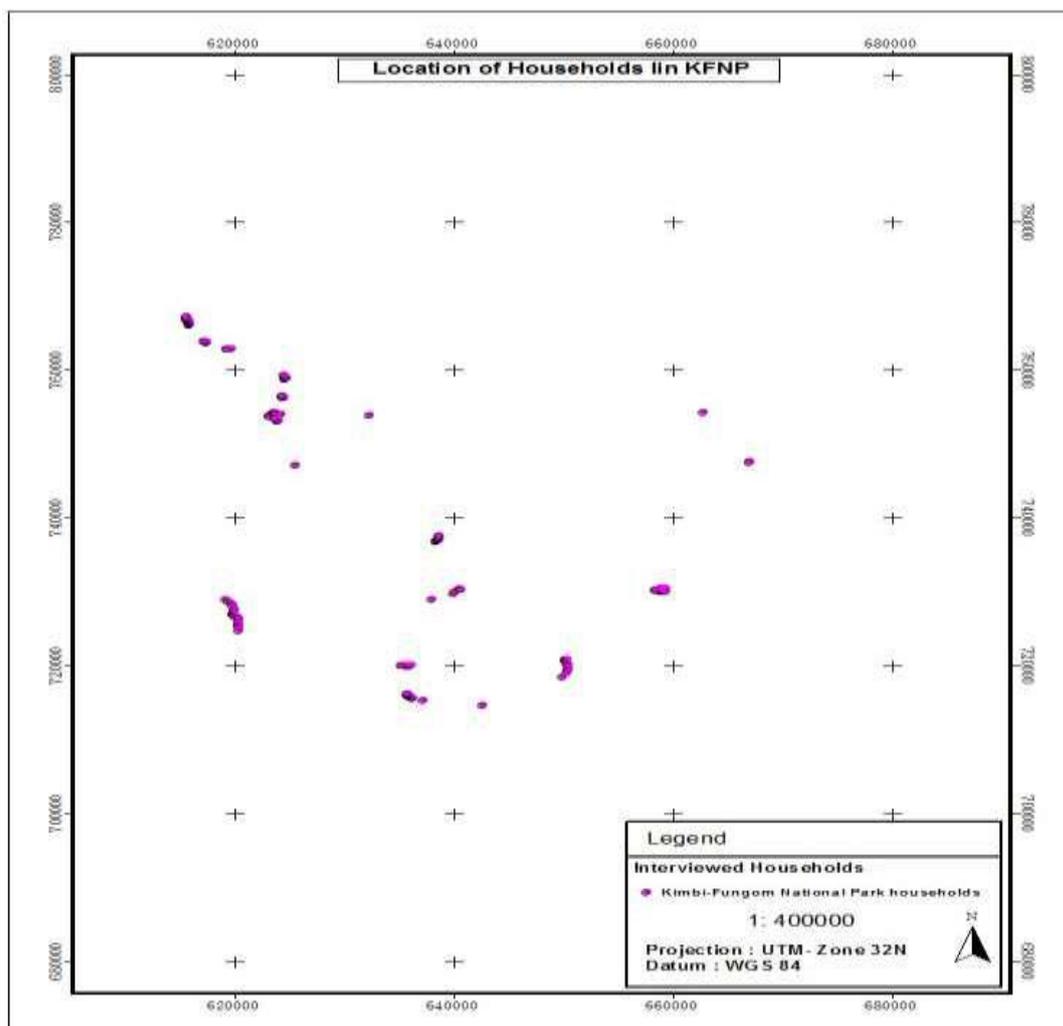


Fig.3: Representative sample of household interviewed in the K-FNP
Source: Field Survey, March, 2015-November 2016.

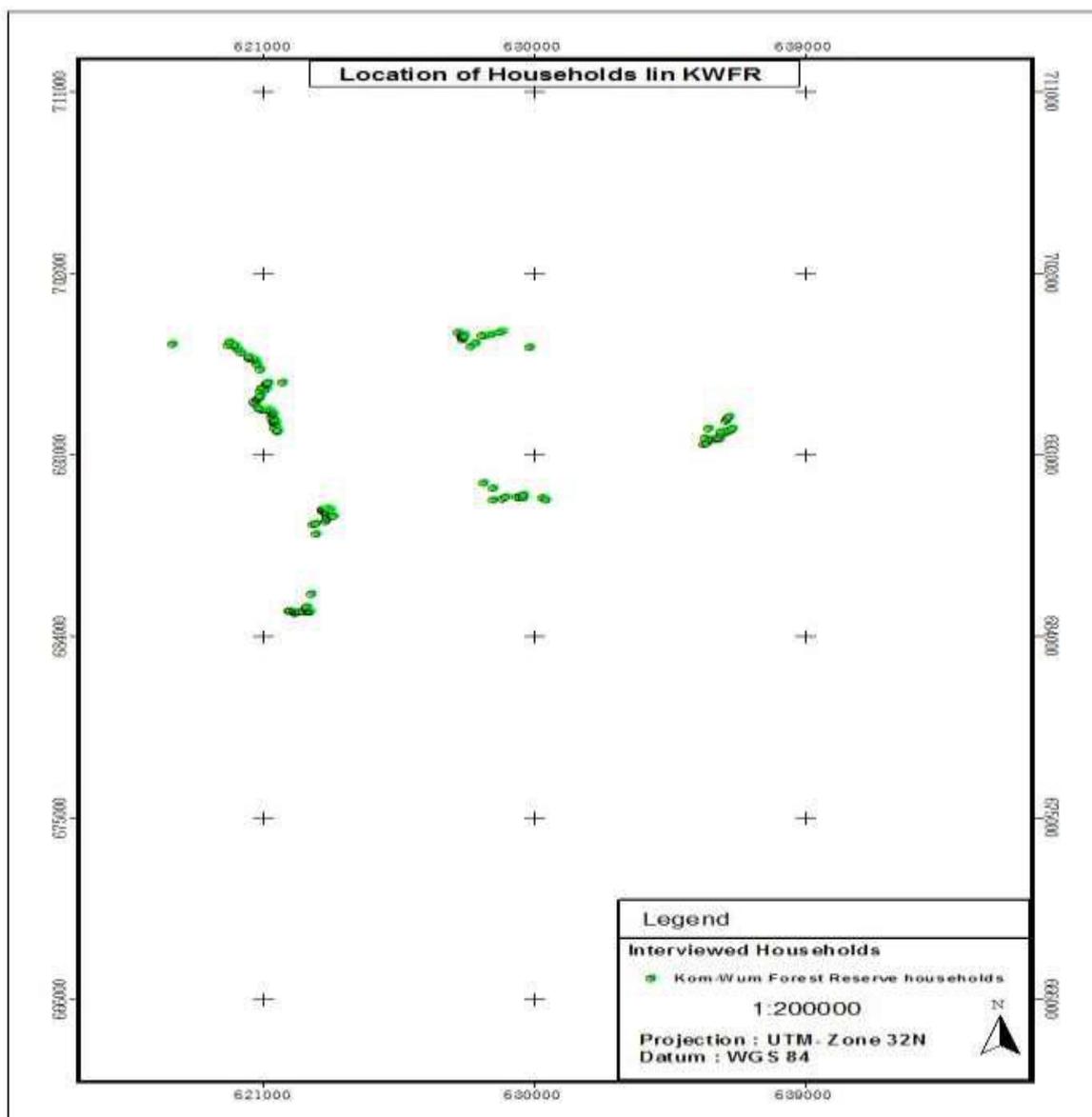


Fig.4: Representative sample of household interviewed in the K-WFR
Source: Field Survey, March, 2015-November 2016.

III. RESULTS

3.1 Demographic factors of the household interviewed in the study areas

During interview surveys, the demographic factors of the household heads were obtained to facilitate interpretation of result. From the result, age-sex characteristics of household's shows that about 52.3% of the respondents surveyed were females while 47.9% were males. With respect to the age structure, majority of the respondents were within the economic active group (20-59). This constituted 87% of the respondents while the aged constituted 13%. Majority (41.4%) of the households surveyed had household size of between 6-9 members, 29% had 1-5 members, and 18% had 10-14 member and 11.6% above 15 members. The educational status of the

households was also computed for the survey. Result indicates that 35.5% of the households 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. Those without any form of formal education (35.5%) gave reasons for their non-completion and non-attendance of any stage of their educational life as basically financial, poor academic performance and lack of encouragement. Household heads were interviewed on the main sources of livelihood activities in the study areas and all responses were grouped into six main aspects; farming, hunting, logging, traditional healing, gathering NTFP and others. Figure 5 shows the livelihood activities of households in the study areas.

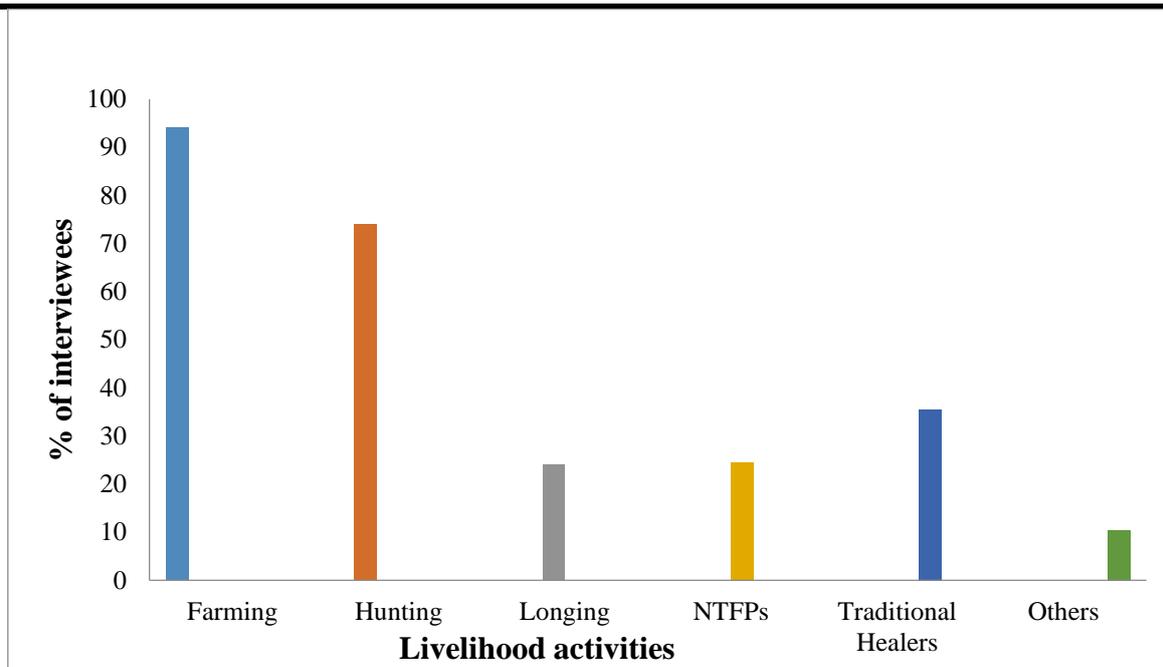


Fig.5: Livelihood activities of households in the study areas
 Source: Field Survey, March, 2015-November 2016.

From the figure 5, it is evident that the major occupation of the respondents within the study areas is farming (94%) 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 are being undertaken alongside farming. Percentages were presented over 100 since respondents could give more than two activities during the survey. Household income levels even though difficult to assess due to dishonesty, informants gave a clue of what they could get from their various activities either base on monthly bases or during specific seasons of great harvest or demand. From the result, about 34.5% of households were earning income between 20.000-50.000cfa per

month while 15.75 were earning income level below 2000.00cfa per month. The average monthly income level of households computed was 25000cfa. This indicates that the income levels of the household’s livelihood sources are not enough to support their basic needs.

3.2. Indigenous people conflicts on *Pan troglodytes ellioti* crop raiding in the study areas

During interview administered questionnaires, informants were interviewed if *Pan troglodytes ellioti* raid crops within the study areas. Figure 6 show the percentages of crop raiding in the K-FNP and K-WFR.

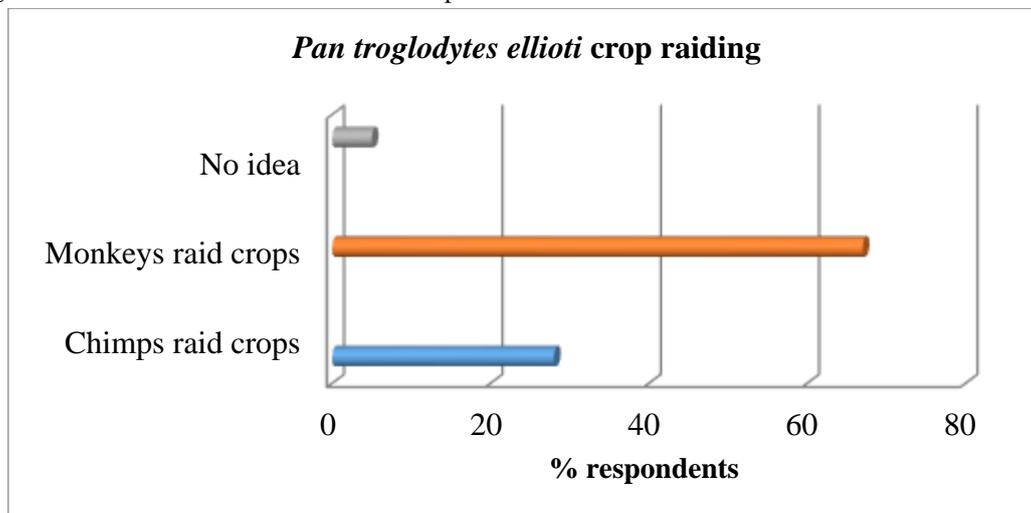


Fig.6: Percentages of crop raiding by *Pan troglodytes ellioti* in the K-FNP and K-WFR.
 Source: Field Survey, March, 2015-November 2016.

From the result, 28% (n = 81) of the informant reported that chimpanzees do destroy crops while 67% (n = 192) reported that crops are mostly damage by other primate species especially Olive baboons, Patas monkey, and Tantalus monkeys. Lastly, 5% (n = 15) were those who have no idea about crop raiding. Informants reporting on

the question if chimpanzees have ever attacked somebody in their villages, permitted to understand the level of human-chimpanzee conflicts. Figure 7 show the percentages of respondents to human attack by chimpanzee in the study areas.

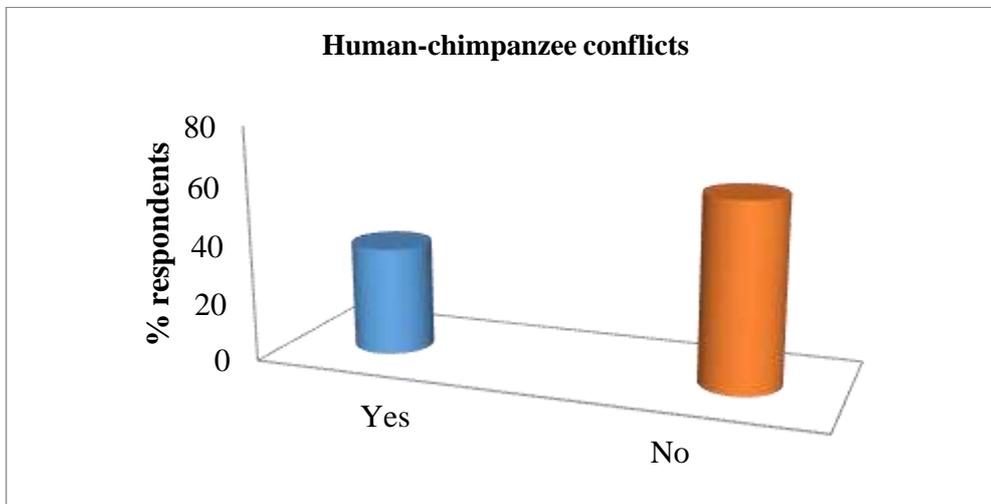


Fig.7: Percentages of respondents to human attack by chimpanzee in the study areas. Source: Field Survey, March, 2015-November 2016.

Reporting on the question if chimpanzees have ever attacked somebody in the village, figure 6.2 shows that 37% said yes and 63% said had no idea if chimpanzees have fought with someone in the village. For those who said yes to chimpanzee-human attacks, said when they are provoke or wounded as well as related many stories of

ancient traditional beliefs. Questions were designed to find out the kind of crops raided by chimpanzees in the study areas. A series of crops were reported even though no traces were found. Figure 8, shows the main crops raided by chimpanzee or other primates in the study areas.

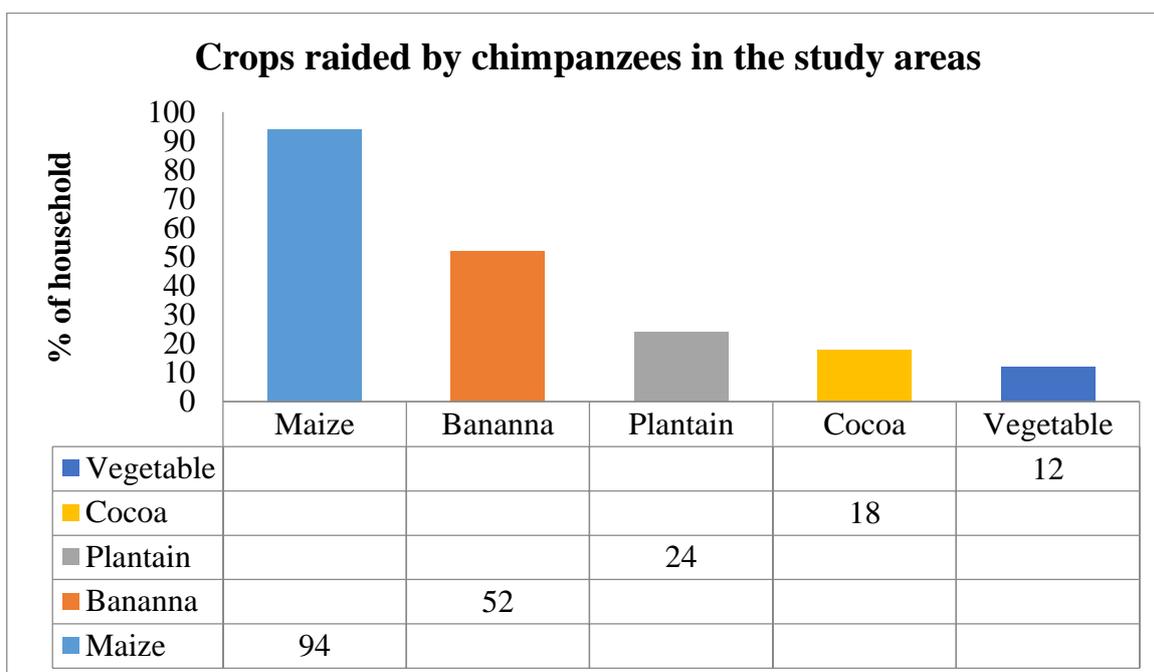


Fig.8: Kind of crops raided by chimpanzees in the study areas Source: Field Survey, March, 2015-November 2016.

The figure 8 shows that, maize (94%), a locally important staple food crop was the most frequently cited crop raided by chimpanzee and other primates. The other main crops reported to be damage by chimpanzee and other primate species with respect to their percentages included bananas (52%), plantain (24%), cocoa (18%) and vegetables

(12%). Interviewing if the cultivated areas reported damage by chimpanzee and other primate were near or far away from the park or reserve, respondents were almost equally divided. Figure 9 show the percentages of respondents to the allocation of crop farms raided by chimpanzee.

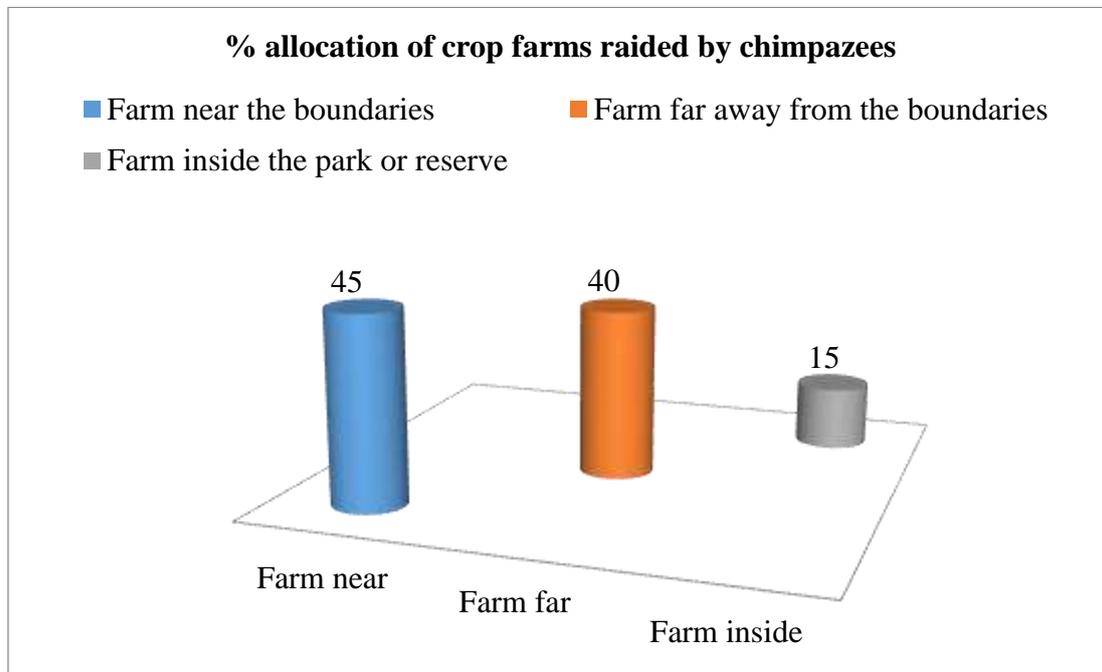


Fig.9: Percentages of respondents to the allocation of crops farms raided by chimpanzees in the study areas

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

From figure 9, 45% were reported of those who farms are near the boundaries, 40% were reported of those who are far away from the boundaries and 15% were reported of those who cultivate inside the park or reserve. According to 67% of respondents, raiding predominantly occurred when crops were at or near maturation. Of those who cultivated inside the park or reserve were those families or individuals who claim to be working on their inherited family land. Majority of the interviewees were subsistence farmers and only 33% of the respondents interviewed claim to have lost crops to primate raids in the previous year. Neither the claims of raiding incidents

nor the magnitude of losses as a result could be verified. No reference was made during the interviews to losses due to other animals, such as rodents, birds, and farmer-grazer conflicts commonly observed in the study areas. Informants equally relayed that unsustainable grazing (94%), lack of funds to buy fertilizer (82%), the actions of thieves (35%), and soil erosion (5%) were additional challenges heading to farming around the park and reserve. Informants were equally interviewed on the strategies of mitigation against crop raiders. Figure 10 shows Percentages of respondents on the strategies of mitigation against crop raiders in the K-FNP and K-WFR.

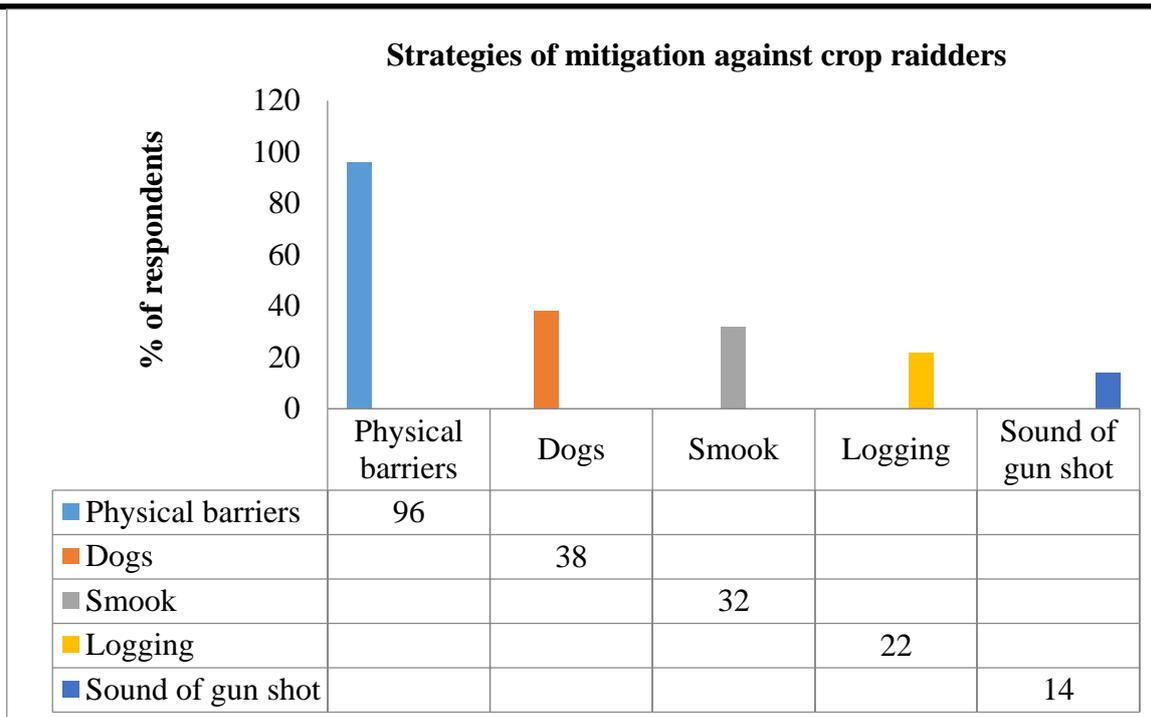


Fig.10: Percentages of respondents on the strategies of mitigation against crop raiders in the K-FNP and K-WFR. Source: Field Survey, March, 2015-November 2016.

Figure 10 indicate that many of the respondents (96%) were limited to physical barriers such as caricature, fences, ditches, noise, and active guarding. Farms were reported to be actively defended by farmers, who have guard huts within the farms and stay there day and night. Woodroffe *et al.*, (2005) reported the same kind of strategies. Children were also reported to guard farms especially during holidays by making a lot of noise around the peripheries of farm. Some respondents (38%) indicated that on “country Sundays”, the used of well feed dogs with extra food and water kept in cages around farms produced noise that frighten and send away primate. In addition to guiding with dogs, some respondents (32%) said special species of wood are burnt which can produced smoke for more than three days to scared crop raiders. Another strategy reported by respondents (32%) involves the logging down of trees around the peripheries of the farms to distance the farms from raider. Other alternative mitigation strategies (14%), were those who reported the frightening of chimpanzees and other primate by the constant sounds of gun shot in the air or killing them when need arises. Equally, the cultivation of crops such as paper, cassava, cocoyam and coffee that are less palatable or accessible to raiders was

reported to be planted in areas with high crop raiders as means of mitigation.

3.3. Indigenous people conflicts to natural resource exploitation in the study areas

Interview administered questionnaires were equally designed to assess the types, origin, nature and levels of conflict relating to natural resource exploitation, the environment and wildlife officials. This was to better appreciate the root causes and dynamics of conflict, as well as the possible opportunities for resolution for the better management of the natural resources in the study areas. Decoding the data after interview surveys, three main types of conflict were identified (namely; structural conflict, data conflict and interest conflicts) from the household heads interviewed in the study areas base on the typology classification of conflicts by Moore, (1996). The structural conflict was found out to be the main type that characterized the study areas. Informants were interviewed to identify the main sources of conflicts in the study areas. As such information resulting from the interviews indicated that the imposition of policy without effective participation local people, inadequate sources of livelihood and demographic change as the immediate sources of conflict in the study areas. Table 1, shows the sources of conflicts resulting from the study areas.

Table.1: Sources of conflicts in the study areas

Factors	Number of households	
	Frequencies	Percentage
ISL	84	29
DC	82	28
IPEPS	68	24
WERL	42	15
LL	12	4
Total	288	100

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

ISL– Inadequate source of livelihood, DC – Demographic change, IPEPS – Imposition of policy without effective participation of stakeholders, WERL-Weak enforcement of Resource laws and LL – Land litigations, Percentages sum up to 100 because respondents were allowed to respond to the most striking source of conflicts they thought of. Table 1, indicates that, 29% out of the 288 households identified ISL as the main source of conflicts in the study areas. Again, DC (28%), IPEPS (24%) WERL (15%) and LL (4%) 91% also revealed that the causes of conflict in the study areas. Effah *et al.*, (2015) reported the same kind of sources in his study of assessing natural resource use conflicts in the Kogyae Strict Nature Reserve in which 25% was attributed ISL to the cause of conflict in the area. It is evident that the inadequate sources of livelihood has led to the 94% out of the 288 households depend on farming for their livelihood. While hunting (74%), logging (24%), traditional healing (24.5%), gathering of NTFP (35.5%) and artesian (10.5%) are supportive livelihood activities (figure 5). In addition to the sources of conflicts, 28% of the household’s associated demographic change as

another cause of conflicts is evident. Many of the interviewees reported that due to hardship in the city, many of their sons and daughters who cannot make it in the city are gradually coming back home to embark on farming. Other factors observed from the households from which conflicts were emanating from included: land litigations (4%) between the Sabon-Gida traditional council and the Gida-Jukum traditional Councils over the part of the land attached to the K-FNP. Weak enforcement of natural resource laws (15%) were reported to be due to low capacity of wildlife officials and traditional authority and political influences. This was evidenced from the number of poachers and grazers observed in the park and reserve as against the 4 and 2 individual reported by interviewees to have been arrest and detain at the police custody for intruding the park and reserve respectively.

Investigation from the interview surveys equally brought out the main conflicting items in the study areas which included land, timber, NTFPs and poaching. Figure 11 shows the conflicting items in the study areas.

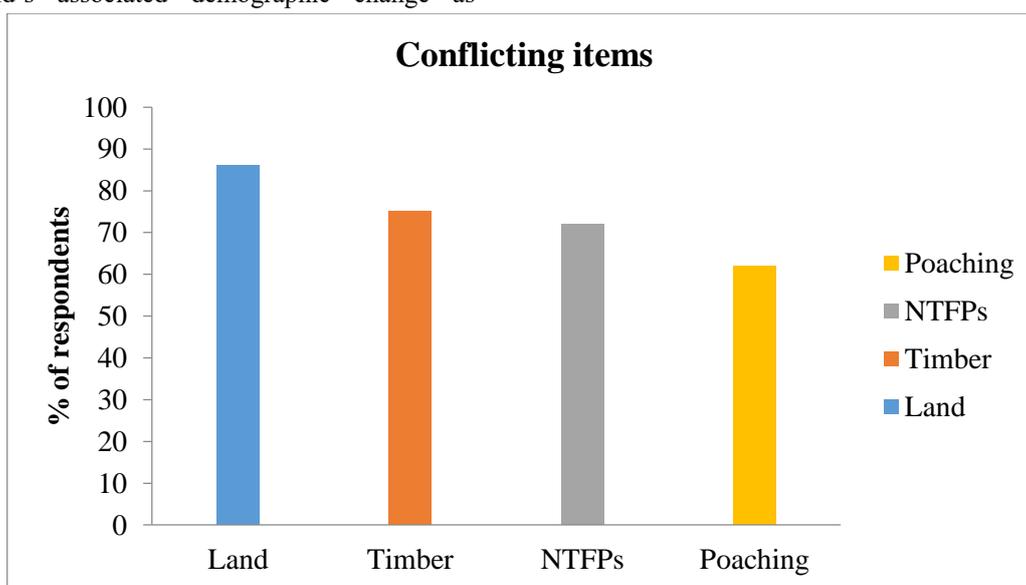


Fig.11: Conflicting items in the study areas

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

From figure 11, percentages sum up to more than 100 because respondents were allowed to respond to more than one conflicting item. Result shows that land (86%), timber (75%), non timber forest products (72%) and poaching (62%) were the major items around which these conflicts were occurring according to the households. Land (86%) was the most conflicting items in the study areas, land in these areas have anciently been particularly split up to families and each family head is in charge to ration land to all its family members. As a result, those families which the extension of the park or reserve

eventually touch their land had no option rather than to revolt. This study contrast those of Effah *et al.*, (2015) in which the conflicting items identified were land, water, game and gathering.

Basic information was also gathered on the conflict situation in the study areas. Two crucial levels of conflicts were identified during the survey. These two main levels were commonly of conflicts found among the community members themselves and between the community members and the wildlife officials. Figure 12 shows the two main level of conflict identified in the study areas.

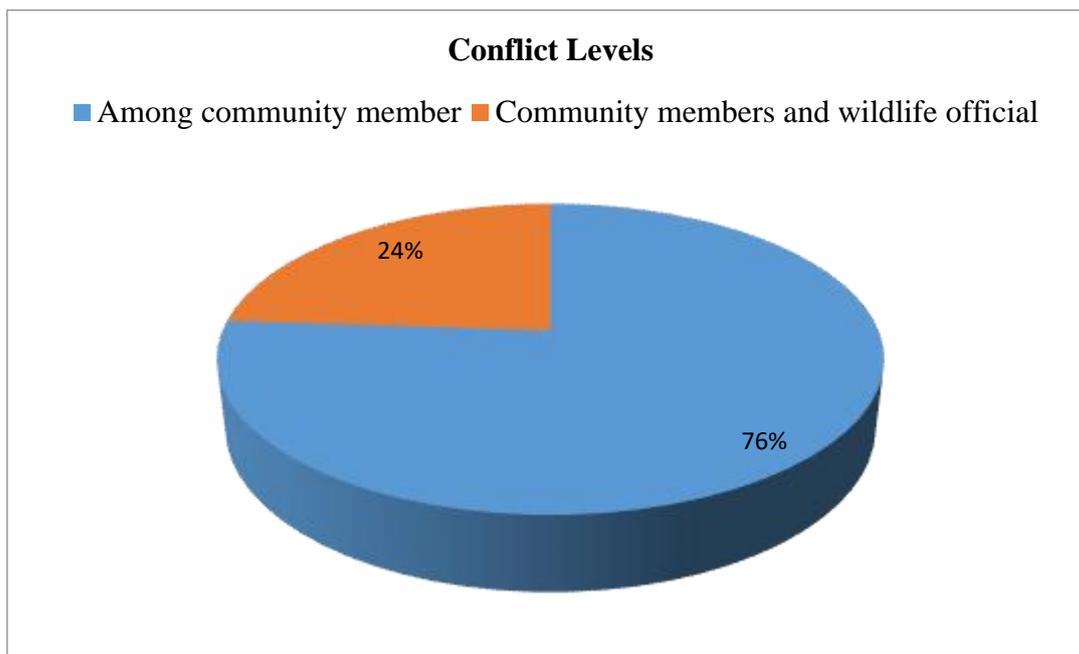


Fig.12: Level of conflict identified in the study areas.

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

From figure 12, about 76% of the households interviewed claimed that conflicts were mostly observed at the level of community members and wildlife officials. While 24% interviewees indicated that conflict occurs among the community members themselves. Looking at level of the

conflicts, varying opinions were given with regards to the nature of the conflict. The forms of the nature of the conflict have been a mixture of non-violent and violent conflicts. Table 2 shows the different forms of conflicts in the study areas.

Table.2: Nature of conflict in the study areas

Forms of conflict	
Non-violent Conflict	Percentage of respondents
Intervention	16
Non-cooperative	14
Protest	4
Violent conflict	Percentage of respondents
Physical damage	23
Economic damage	21
Environmental damage	18
Social damage	4
Total	100

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

From the table 2, intervention (16%) was the most frequent dimension of the non-violent conflict reported by interviewees. The non-cooperative (14%) non-violent conflicts result when the indigenous people demands are poorly handle or not listen to. These leads to protest conflict (4%) as the people seek to protect the resources of their livelihood. Physical damages (23%) result due to the seizure of poacher, grazers, and farmers items as well as burning of their huts. This provoked the victims to poach for logs in excess, sometimes set some part of the park or reserve on fire to drive the animals to areas where they could be killed or to graze cattle. All this led to habitat fragmentation and destruction which constitutes environmental violent conflict damages (18%). This further pilot to economic damage (21%) as uncontrolled logging result to deforestation and loss of most economic trees and limited species. Equally the destruction of farms or forcing the indigenes out of their farm located inside the park or reserve constitutes great economic violent conflicts loses.

Couples to the nature of conflicts, the most serious effect of the conflict is the irony that more land is needed to expand the park and the reserve. This is causing the indigenous people to admit that the park and the reserve exert enormous influence on their land as such hindering free access to their natural resources. Consequently, 48% of the household heads further argued that the protection of wild animals in a very large arable environment is to the disadvantage of future generations. However, 52% of the informants argued that the Park and the reserve are contributing enormously to significant research both locally and internationally there by bringing other means of improving livelihood. However, the conflict situation is having negative impacts on the livelihood of the people within their communities, on the environment, and on the management of the K-FNP and K-WFR.

IV. DISCUSSION

4.1. Indigenous people conflicts on *Pan troglodytes ellioti*.

Pan troglodytes ellioti like other chimpanzees, face increasing conflict with humans throughout their range, driven by agricultural incursion into their territories, logging, poaching and illicit pet trade (Chuo and Tsi, 2017 and Doumbe, 2014). All of which are ultimately driven by sharply rising human populations. These human activities badly hit chimpanzees since essential fruit-bearing trees from their territories are usually being removed, causing them to seek out alternative sources of food, which in turn brings them into conflict with human agriculturalists (Krief *et al.*, 2012). One of the main challenges facing chimpanzee conservation is the rising

level of interaction between humans and chimpanzee. Humans and chimpanzee are basically forced into conflict situations as land use changes to accommodate ever growing human populations and plantation expansions shrink existing forests to mere fragments (Sunderland, 2008). The rising population and the increasing demand of land for the cultivation of cash crops have led the indigenous people to cultivate farms up to the borders and inside the park and reserve.

A good number of *Pan troglodytes ellioti* were reported to range outside the park and reserve. For instance, the Baiso community forest which is closer to the K-WFR was reported to have more chimpanzee than are found in the reserve. The chief of Gida-Jukum said chimpanzees were seen playing with little children near a river bank an area that is closer to the K-FNP. In Mbongkesu, two interviewees reported to have noticed chimpanzee feeding signs on vegetable through their footprints and hair. Most of the farmers around the study areas are subsistence farmers who carry out slash and burn agricultural practices. This kind of farming, constantly demand fresh land. As such, farmers cultivate adjacent to the borders, or inside the forest of protected areas and are therefore vulnerable to crop raiding by primates. Distant from protected areas reduces the susceptibility of farms to primate invasion. But in these areas, lack of effectively establishing of buffer zones and the low use of unpalatable crops such as cocoyam, cassava, peppers and coffee reiterate conflicts. Where chimpanzee's populations occur in fragments, the establishment and preservation of forest corridors that include a buffer zone may also reduce conflict in promoting greater availability and access to natural foods for the apes, while also helping link core habitats and preserve water sources (Humble 2011). Furthermore, the number of *Pan troglodytes ellioti* perceived in the study areas is very few and they generally shy away from humans and hardly visit open/cultivated areas. As such they may be a possibility that interviewees were confronting Olive baboons which are greater crops raider to chimpanzees since no proves or signs of crop raiding by chimpanzees were observe.

4.2. Indigenous people conflicts to natural resource exploitation.

This study identified three main types of conflicts namely structural conflict, data conflict and interest conflicts according to types of conflicts by Moore (1996).

4.2.1. Structural conflict types

Structural conflict was the main type that characterized the areas. This resulted because of structural inequalities in control, ownership, power, authority, institutional limitations or geographic separation, weak enforcement of

resource laws, land litigation and demographic changes following the aspects laid down by Moore, (1996). The improper structures to effectively regulate the operations of the K-FNP and K-WFR have been the major triggers of conflicts among the indigenous people, conservationists and the environment. This is further exacerbated due to lack of harmony and cooperation among stakeholders to ensure effective conservation.

4.2.2. Data conflict type

Data conflict type which resulted from the study areas were due to information lacking either withheld by one party from the other party or differently interpreted. Equally the policies and interventions for the demarcation of park and reserve, as well as for the natural resources were formulated without the active and sustained participation of some members of the local communities or traditional authorities and other stakeholders, such as Dumbo ranch, Fulani communities, some wildlife divisional Chief of post were not included. Consequently these unaware stakeholders continued their activities which are illegal according to the wildlife and forestry regulations laid during the creation of the park and the reserve and hence generating conflicts. For instance, some traditional authorities in their ignorance have continued to support farmers within their communities to expand their farm sizes which extensively encroached into the park and reserve so much so that the areas are becoming seriously threatened. The Dumbo ranch officials, despite their clear boundaries with the park continue to ignore the roles and regulations put in place during the creation of the K-FNP. Their encroachment with cattle in the park, wearing the same uniform like those of wildlife officials in which they threaten and seize items from poachers, fishermen and non timber forest products from the indigenous people in the park are becoming rampant. The consequences are the constant confrontations that are mostly violent especially when the Dumbo officials make attempts to seize items from indigenous people. On the other hand the local people poison their cattle and at times angry individual aggravate matters by attacking them in private occasion. Equally, at times wildlife officials suffer the effect of conflicts cause by Dumbo officials since they put on the same uniform.

4.2.3. Interest type of conflict

Land is becoming a scarce resource in the study areas due to competition between different land users such as the traditional authorities, wildlife division, agriculturalist, grazers and households for subsistence farming. The indigenous people seek to secure large land for subsistence and cash crop farming, cattle grazers search for vast pasture land, agriculturalists want much land for plantation and wildlife official are interested in expanding the buffer zones as well as boundaries of the park and

reserve for corridor linking and for the effective conservation of wildlife. Therefore, fight to capture or protect specific land for their various interests or activities is now a common struggle. Thus the forceful eviction of one party in the study areas is generating an interest type of conflict.

4.3. The main causes of conflicts identify in the study areas

Most traditional rulers, indigenous people, local farmers, hunters, NGOs and other state institutions claimed their unawareness of the policy change of the former Kimbi game reserve and Fungom forest reserve to the K-FNP. Consequently, these ignorant stakeholders such as the state agencies endorsed the right of the indigenous people whom efforts are made to perpetuate their stay and engagement in unrestrained farming activities in the K-FNP. This mostly resulted into conflicts with the eco-guard. Thus, poor stakeholder analysis in natural resource management as stated by Nang *et al.*, (2011) are the major cause of conflicts over natural reserves. Another major cause of conflict was the inadequate source of livelihood in the study areas. Looking at the field survey that 94% out of the 288 households depended on farming for their livelihood. While hunting (74%), logging (24%), traditional healing (24.5%) gathering NTFP (35.5%) and others (10.5%) were reported to support their livelihood (see figure 4.5). However, the creation of the K-FNP necessitated the extension of the original boundaries of the reserves to obtain an ecological unit suitable for the conservation of the wildlife. This action according to the households claimed most of the farmlands as well as great portion of grazing land without any corresponding provision of alternative livelihood support for the affected people. According to the respondents they had no other option than to fall back on the K-FNP for survival. Equally, result also revealed that the people lack the needed funds to train and establish themselves in the alternative livelihood activities that were identified with them. This has resulted in their over dependence on farming, poaching, collection of non timber forest products and other activities in the study areas to make living. In addition to the sources of conflicts, table 1 indicated that 28% of the households associated demographic change as another cause of conflicts in the study areas. According to the households, the increase in their community population especially those coming in from the cities due to hardship is evident that more mouths are needed to be feed, quality education, health and food security are needed. Other conflicts such as, land litigations between the Misaje Council and the Ako Councils over the Gida-Jukum is another cause of conflict. Some of the cattle Grazers become uncertain as to which council to pay their dues. The traditional council

of Sabon-Gida continues to claim control over Gida-Jukum as part of their land and argued that it should be under the control of the Misaje council. And finally, weak enforcement of natural resource laws due to low capacity of the wildlife division, loss of customary law as a result of poor handling by the traditional authorities and poor political influences, has been the evidenced for the increasing number of poachers/grazers observed park and reserve especially trans-boundary poacher/grazer coming in from Nigeria.

4.4. The major conflicting items observe in the K-FNP and K-WFR

4.4.1. Scramble for land

Among the four major items identify in the study areas, the demand for land especially for farming and grazing among community members continues to serve as a major conflict. With the culture of farming, subsistence agricultural practices that lead to frequent loss of soil fertility, the introduction of extensive agricultural cash crops farming such as cocoa and coffee, grazing and influx of migrants especially from Nigeria to the villages continue to exert high pressure on the available lands. The struggle over these lands becomes worse off because land has not been adjusted to accommodate the needs of the current population. For instance the encroachments into the park and reserve as can be seen in the K-FNP that joint Nkang and Nser, half of the forest have been turn into extensive cocoa farms. Likewise, in Metang and Mbongkesu in the K-WFR, part of the reserve has been cleared off forest as a result of subsistence farms. All these further serve as a source of conflicts between the indigenous people and the protected area managers.

4.4.2. Seizure of hunting tools

Incidence of poacher's activities in the study areas is still at an increase. This was evidenced by the numerous exhausted cartridges, guns and wire snares that were observed. However, hunting on commercial basis by the indigenous people in the study areas is rarely seen. But hunting of large mammals such as chimpanzees, buffalo, leopard, and other species of primates are in high demand for traditional medicine, rituals and food preference. Group hunting using dogs is also carried out in and around the reserve in the dry season with the resultant escalation of bushfires. The relative low prices of hunting equipments sold in black market such as rare guns of one to five ranks and cartridges of all kinds usually used during hunting activities though strictly forbidden are basis of conflicts. For instance, there have been several occasions where staffs of the wildlife guard have been assaulted and beaten up for trying to arrest poachers or seize their hunting items as reported by some of the respondents.

4.4.3. Illegal trees felling

Even though logging company are absent around the study areas, the exploitation of timber is very rampant. Illegal tree felling by the indigenous people (for instance, Akum, Gayama and Kwept in the K-FNP and in Mentang and Mogholm in the K-WFR) which is one of the most priority occupations of the local people in these areas is now a major source of conflict. In the K-FNP, these illegal activities are encouraged by the Nigeria traders with ready cash in collaboration with some elites that facilitate the slugging process through river Kasina-la to Nigeria. These illegal commercial activities when caught result to conflicts and economic losses (loss timber in the river) and defaulter traders or exploiters result to brutality. Equally in the K-WFR, the forceful stopping of over a hundred individual engaged in logging exploitation in Mogholm without providing alternative sources of livelihood by local council and forestry officials have resulted to serious fighting and assaults. As a result of this, some logging exploiters now carry out this illegal process during the night. That is, trees are sawed and transported during the night.

4.4.3. Illegal harvesting NFTP

The forceful implementation of natural resource policies by wildlife official without proper sensitization of the indigenous people, especially on the exploitation of non forest timber products by the indigenous people is posing another kind of conflicts. The local people have been used to harvesting NFTPs without any charge. But with the creation of national park and the revival of the reserve, seem to be restricting their right as they are asked to register legally by paying some dues. Many women reported to have got confrontation with eco-guard to the point of assault as a result of the seizure of their products (such as; njangsa, bush mango, bitter cola, raffia cane, charcoal and others) and at times they are force to pay some money in return for their seized items.

4.5. Nature of the Conflicts in the study areas

From the survey, varying opinions were given with regards to the nature of the conflict such as non-violent and violent conflicts. Rapid calm intervention was the most frequent dimensions of the non-violent conflict used by all stakeholders. The traditional authorities mostly plead through the politicians to get their positions achieved. While unaccepted amicable solutions were the most dimensions of the violent conflict, which led to economic and environmental damages. An example of these kinds of conflicts was observed amongst the hostile communities Crushien whose land was mapped out into the K-FNP without their concern. This led rapid to clearing down of huge forest inside the park and the planting of permanent cash crops as well as intensifying hunting to send away wild animals with specific target to chimpanzee, leopard and buffalo as they knew they are

the priority species in the park. To limit such violence conflict, a political appeasement was observed when the conservator and his staff in 2016 undertook an initiative sensitization campaign with the affected hostile indigenes. This was aim to educate the people on the importance of the national park and strategies the government is putting in place to introduce buffer zone and how to redistribute land to those families or clan which farms/settlement were greatly demarcated by the boundaries K-FNP. Notwithstanding, environmental damage, a dimension of violent conflict also occurred when some agitating section of the people in Mogholm felt that the forestry officers were insensitive to their needs especially when an official request has been made. For instance, some indigenes requested for logs from the K-WFR to construct their houses. However, their request was not granted by the officer but later on permitted some contractors who were not of the same village to log tree which were transported to Bamenda. This provoked the indigene to poach for logs in excess especially during the night. The uncontrolled logging resulted in deforestation and loss of most economic trees and limited species.

Grazers, who formerly pastured in the areas before the creation of the national park and the revival of the reserve, but are not allowed to graze any more, sometimes set the park or reserve on fire. When the grass sprouts the cattle are feed inside the park at night. This result to environmental losses since many animals are expose to danger and the noise from the cattle further drive them away from their original habitat range. The destruction of hunter's, farmer's, fishermen's and NTFPs exploiter's huts couples with the seizure and forcefully sending away of the local people without compensation or proposing alternative sources of livelihood, do not only hurt those concern but give them urge to do damaging things that leave impact in the environment. Economic damage also occurs as farms with crops are abandoned. Other dimensions of both non-violent and violent conflict observed in the study areas, were protest, non-cooperation, social damage and physical damage. One can therefore conclude that the high non-violent nature of the indigenous people is a positive indication of their willingness to participate in a constructive conflict resolution over the K-FNP and K-WFR.

4.6. The Effects of Conflicts in the development of study areas

The indigenous people admitted that the park and reserve exerts enormous influence on their environment. Even though it is evident that the park and reserve protects wildlife which otherwise would have been nonexistent in the area, to the disadvantage of the future generations. Most especially by contributing enormously to significant research both locally and internationally and may advance

to improve livelihood in the nearby future. However, the conflict situation has had negative impacts on the livelihood of the people, the management of the study areas and on the environment. On the livelihood consequence, the conflict between the villagers and the wildlife official has constantly resulted in the seizure of items, abandoning or destruction of farms. The common challenge in meeting the livelihood needs of the indigenous people is employment opportunities. On the issues of the effect of the conflict on the management of the park or reserve, the unresolved clear identification of land for particular purposes by the state during the creation of the park and the revival of the reserve, have resulted into a low sense of commitment of some traditional authorities, grazers, farmers, as well as hunters supporting the conservationists in the management of the park/reserve. They see the park and reserve as potential farm/grazing land which should not be taken away from them especially the savanna section which the Fulani claim is very suitable for the grazing of cattle. To them it is a waste of arable land as park or reserve. Consequently, some traditional rulers and indigenes continue to lease land to their people for the cultivation of cash crops and grazing.

Another effect of the conflict on the management of the K-FNP and K-WFR is that the villagers are still very ignorance about the boundaries of the park they are used to the former boundaries of the Fungom forest reserve and the Kimbi game reserve which extension now represent the K-FNP. Consequently, the present boundary passes through communities like Gayama, Medi, Tenguka, Mbweimbwe, kedzuh, Iwoh, Takiseng, Mubken, Kendzong Cha, Munkep and Gida-Jukum, with the result that some of the inhabitants in these communities live inside the park. This state of affairs has led to the present uncontrolled use of the park land for cash crop farming, grazing, timber logging and uncontrolled hunting, with permanent settlement houses/huts and wild bush fire is becoming very rampant than before. The fragmentation and degradation of the vegetation of the park and reserve is fast emerging. It was evident from the survey that the forest being destroyed due to fast depletion of trees through poor farming practices, timber operations, and bush fires. Shifting cultivation was observed as the farming practice by the farmers. Farmers frequently shifted from land to land due the financial incapacity to procure and apply agro-chemicals to enrich the soil. The consequence is the break in the resilience in the park ecosystem. As a result many large mammals especially chimpanzees, leopard are extinct in some suitable habitat range. According to the forestry officials, the fragmentation of habitat, local disappearance of native species and invasion by exotic weeds and other plants are

some of the other ecological consequences of shifting agriculture in the study areas.

V. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

Lack of well-designed conflict management plans which could integrate different techniques and be adjusted based on the nature of the conflicts to boost co-existence is a greater challenge in the study areas. Nevertheless, indigenous people's conflicts on *Pan troglodytes ellioti* in the K-FNP and K-WFR, prove to be very low since only 28% of the informants reported on the fact that chimpanzee do destroy crops (such as; banana, plantain, cocoa and legume). Likewise, 72 percent of interviewees affirmed that other primate species like olive baboons, Patas monkeys and Tantalus are great crop raiders. Reducing conflicts between chimpanzee and people is likely to reduce the negative attitudes of the indigenous people towards chimpanzee and other primate conservation. Equally, improving food security by reducing wildlife related impacts on crops and livestock will also reduce the need to seek alternative sources of food, such as hunting of primates. On the other hand, indigenous people's conflict on natural resources is common in the parks and reserve due to high poverty rate. Farming is the major occupation of the people and is supported by hunting, grazing, longing and gathering of NTFPs to meet their livelihood. The occurrence of conflict between the natural resource users expecting to sustain their livelihood from the resources of the park/reserve is as a result of the wildlife officials seeking to protect the overall health of the ecosystem through the sustainable extraction of natural resources. The imposition of policy without effective participation of traditional authority and other stakeholders, inadequate alternative livelihood activities, and increase in demographic change were reported as the main source of conflict. The situation shows a mixture of violent and nonviolent conflicts between the indigenous people and the wildlife officials. Regardless of several interventions to address these conflicts, minimal success has been attained. Despite the fact that, the wildlife officials have adopted the force strategy to keep away the peoples' illegal activities from the park and reserve, the indigenous people on the other hand have also adopted withdrawal strategy to stay away from any conflict management mechanism initiated by the wildlife official. This have pilot to the weak enforcement of natural resource policy, as the tension in the area keeps on increasing between the indigenous people and wildlife officials due to uncontrolled exploitation of the natural resources in the study areas.

5.2. Recommendation

There is need for equity and fair distribution of benefits and a better collaboration among the stakeholders to ensure efficiency in the execution of sustainable utilization and management of the K-FNP and K-WFR. To achieve this;

- It is necessary for all the stakeholders to come together and ensure that legislation is enacted to support collaborative natural resource management and *Pan troglodytes ellioti* conservation in the study areas. This will go a long way to ensure support for a well-structured conflict management mechanism aimed at ensuring proper cooperation between managers and resource users. There is also the need for such a legislation to consider allocating a sustainable portion of benefits accruing from resource management towards the development of the local villages.
- Wildlife officials, NGOs, conservationists and researchers should be deliberately strengthened to embark on educational activities around the villages of the park and reserve. These educational efforts should be aimed at sensitizing the community on sustainable forest management issues. To this end, the communities will be informed and indigenous knowledge on sustainable natural resource management practices enhanced.
- Concerted efforts should be made by the stakeholders to identify alternative livelihood activities within the study areas. This will help reduce their dependence on the natural resources and to build the capacity of local communities and support them in exploring alternative livelihood items that are sustainable and viable in meeting their livelihood needs while maintaining the overall health of the ecosystem services.
- Efforts should be made to strengthen the capacity of traditional councils and local government institutions among others in promoting the sustainable exploitation of natural resources, utilization and management of the social and economic benefits from natural resources.
- There is the need therefore to ensure a collaborative approach towards sustainable conflict management through consultation, needs assessment, investigation, synthesis and consensus building.

CONFLICT OF INTEREST STATEMENT

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

ACKNOWLEDGMENT

I am grateful to all the wildlife officials, especially the Chief of posts in Zoah, Furuwa, Kimbi, Dumbo and the District security council guards who played a facilitating role. I thank the Conservator of K-FNP for the support during the entire period of this research work. I also wish to recognize all the traditional authorities/traditional council chairmen and the indigenous community for their willingness to participate during the interviews.

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