

## AN INVESTIGATION OF THREAT TYPES TO THE CONSERVATION OF *PAN TROGLODYTES ELLIOTI* AT KWANO FOREST OF GASHAKA-GUMTI NATIONAL PARK, NIGERIA

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### ABSTRACT

*The Nigeria-Cameroon chimpanzee has been classified on the red list of threatened species (endangered) of IUCN and It has been established that it is only when animal or plant species are subject to certain threat factors that the species can be considered as threaten. It is in view of the aforementioned that this research was carried out to determine those threat factors that mitigates against the Nigeria-Cameroon chimpanzee habitat. Transects, trails and random forest walks were the methods used for the data collection while tables, charts and mean values as well as photo plats were used to analyse the data collected. The different types of threats observed were Poaching which (11 segments; 52.4 5 %) of the habitat, illegal bush burning (16 segments; 76.6 %) of the habitat, river poisoning (1 segment; 4.8 %) of the habitat, tree felling (4 segments; 19.1 %) of the habitat and Non Timber Forest Products (NTFPs) extraction (7 segments; 33.3 %) of the habitat. Poaching activities were highest in Ngiti forest (49.4 %), followed by Yakuba forest (25.3 %) while Tounga (16.5 %) and Bakashi (8.9 %) experienced the least poaching activities. Despite the status of Kwano forest as a protected area; the sitting of a research project in the area and constant presence of researchers, some threat factors to the conservation of this forest prevails. Concerted effort from both the National Parks Service and Non-governmental organisations is highly needed to reduce or absolutely eliminate illegal activities from this area.*

**Keywords:** Chimpanzee, Habitat, Conservation, Threats and Kwano

### INTRODUCTION

Wildlife conservation is a process involving arts and sciences through which lay and professionals ensure the sustainability of biological resources for the present and future generations (Anthony *et al.*, 2007). However, with dismay, the deteriorating rate of these resources is becoming a major challenge to the Conservationists. Wild animals and plants in all their domains are currently faced

with threats from hunting and habitat destruction, thereby requiring urgent conservation attention. Independent of our training and background, there is widespread agreement that conservation and protection of natural resources depend on understanding the basics of habitat ecology.

Chimpanzees are African apes whose populations survive in at least 18 nations from Tanzania and

Uganda in the East to Mali and Senegal in the West (Caldecott and Miles, 2005). They inhabit a variety of biotypes such as evergreen and semi-deciduous rainforest, open savanna-woodland, gallery forest and mosaic habitats that may include plantations and grasslands. However, the very survival of these apes as that of other inhabitants of their environment is increasingly threatened due to habitat destruction, disease, civil strife and a relentless trade in bush meat (Ammann *et al.*, 2003; Hughes, 2003; Kormos *et al.*, 2003; Peterson and Ammann, 2003).

Recent genetic studies based on hair sampled from nest built by chimpanzees have revealed the existence of a fourth subspecies; *Pan troglodytes ellioti*, the “Nigerian Chimpanzee” (Gonder *et al.*, 1997, Kormos *et al.*, 2003) or Nigeria-Cameroon chimpanzee (Sommer & Ross, 2011) which is found in Nigeria and adjacent Cameroon. The total number of wild *Pan troglodytes ellioti* is estimated to be 3400 in Cameroon and 2000-3000 in Nigeria (Beck and Chapman, 2008). This taxon which was formally labeled as endangered, (*Pan troglodytes ellioti*) is now critically endangered; on the basis that its population has declined by 80% over three generations. In 2005, the Section in Great Apes of primates Specialist Group of the International Union for the Conservation of Nature (SGA/IUCN/PSG), recommended that it should be classified on the red list of threatened species of IUCN.

It has been established that it is only when animal or plant species are subject to certain threat factors that the species can be considered as threaten. Such threat factors however, differ from place to place and its intensity also depends on the animals or plant species involved. It is also pertinent to note that persistent threats have the consequence of modifying primates behaviour in an attempt to earn a better living (Akosim *et al.*, 2010). We were therefore, intrigued by the existence of this subspecies of the chimpanzees and unique habitat, to investigate whether certain threats are responsible for their current status at GGNP.

## MATERIALS AND METHODS

### Study Area

Our investigation took place in Gashaka Gumti National Park (GGNP; Figure 1), which, at about 6,670 km<sup>2</sup> by size, is Nigeria's largest national park (for the following, see (Dunn, 1999; Chapman and Chapman, 2001; Sommer and Ross, 2011). GGNP is located in Nigeria's Taraba and Adamawa states, straddling the Cameroonian border (06°55' – 08°13' N, 11°13' N – 12°11' E). The park encompasses most of the catchments of the Taraba River, largest tributary to the Benue River. GGNP demarcates the northern edge of the Cameroonian Highlands and Africa's Gulf of Guinea forests, considered a hotspot of biodiversity (Oates *et al.*, 2004; Sommer and Ross, 2011a). Consequently, GGNP is renowned for its faunal (civets, Golden cat and leopard, ungulates such as buffalo, bushbuck, duikers, waterbuck, hartebeest, red river hog, giant forest hog, Rare fresh-water fish, otters as well as crocodiles and a few hippopotamus thrive in the translucent rivers) and floral diversity. Pronounced annual wet and dry seasons are associated with corresponding fluctuations in temperature and humidity. The mean minimum temperature is 20.9°C, the mean maximum 31.9°C. Heavy downpours from mid-Apr to mid-Nov are followed by a 5 months period with very little or no rainfall. Habitat types vary greatly and include flat grassland, Guinea savannah woodland, riverine and gallery forest, lowland rain forest, montane forest and montane grassland. It includes a succession of lowland (<825 m), sub-montane and montane (>1,650 m) strata, rising to 2,419 m at Gangirwal, Nigeria's peak. More than 500 feathered species led to the designation of the park as an “important bird area”. The park's flagship species are diurnal primates (olive baboon, putty-nosed guenon, mona monkey, black-and-white colobus, tantalus monkey, patas monkey, *Pan troglodytes ellioti*; (Oates *et al.*, 2008). This study concentrated on the habitat of a group of chimpanzee in the surroundings of Kwano (Figure 2), called the Gashaka-Kwano community (Sommer *et al.*, 2004). Their range encompasses at least 26 km<sup>2</sup>, and we estimate that the community has about 35 members. This corresponds to a density of 1.3 / km<sup>2</sup>.

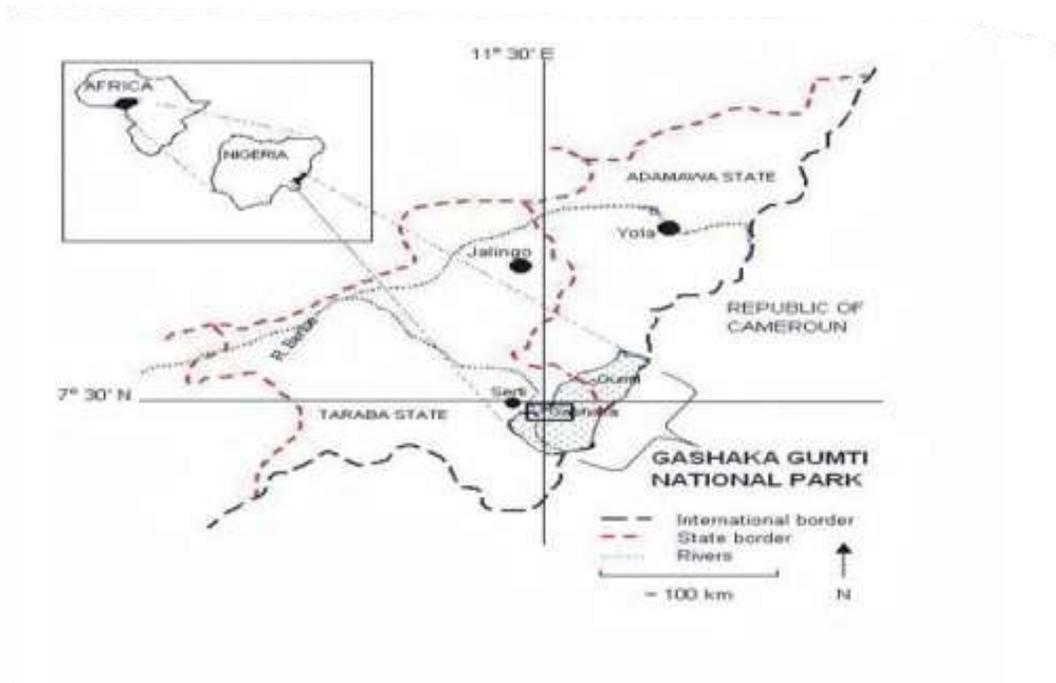


Fig. 1: Map showing the location of Gashaka Gumti National Park (Source: Warren, 2004).

Observation of threats to the chimpanzee and their habitat were made and recorded during systematic, opportunistic and dedicated walks for data collection on all other objectives for this study. Where applicable, the level of destruction done was measured and recorded. All the observed threats were further sorted by rank and severity.

Two transects of 4 kilometers each (Figure 4) were cut across the study area and supplemented by several randomly-cut animals' survey trails which

were named alphabetically from trail "A" to "O". Each transect was walked twice a month and records of encountered threats were carefully taken. Trails were walked randomly on daily basis (morning and evening throughout the study period) and records of sighted threats were also taken. Another set of data was also collected based on opportunistic contacts with various threats types during trail/transect walks for other purposes.

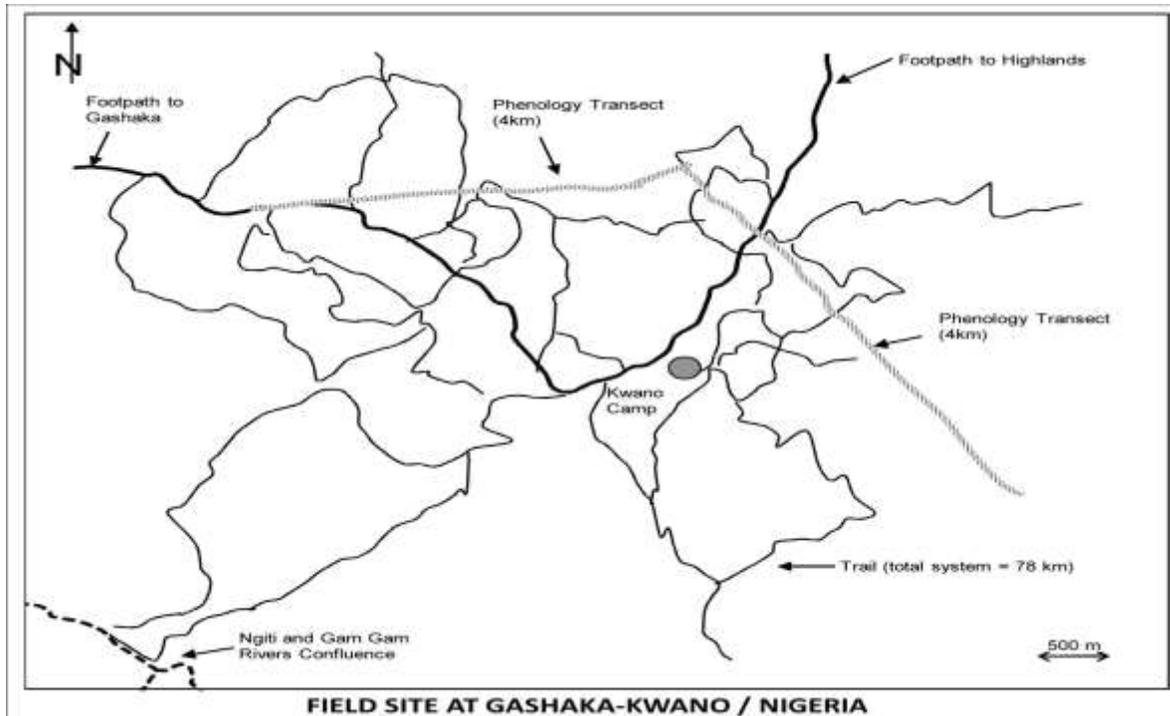


Figure 2: Map showing the trails and transects cut across the field study site (Source: Field data 2010).

### Statistical analysis

In order to establish information on the threats to the conservation of the chimpanzee and their habitat, the data collected were analysed using charts and percentages. Generally, Microsoft Excel 2007 and GPPSW (GraphPad Prism software) version 5.03 were used to perform the analysis.

## RESULTS

### Observed threats to the conservation of the chimpanzees and their habitat

The results of observed threats to the conservation of the chimpanzee habitat are presented in Table 1 and Figures 3 – 5. The different types of threats (Table 1) observed were Poaching (Plate, 1 and 2) which was observed in 11 segments (52.4 %) of the habitat, illegal bush burning (Plate, 3a:b) occurred in 16 segments (76.6 %) of the habitat, river poisoning occurred in 1 segment (4.8 %) of the habitat, tree felling was observed in 4 segments

(19.1 %) of the habitat and Non Timber Forest Products (NTFPs) extraction occurred in 7 segments (33.3 %) of the habitat.

Results of Gunshot (Figure 3) as a poaching characteristic was mostly heard from Ngi forest (47.2 %) of the chimpanzee habitat, followed by Tounga forest (30.6 %), while Yakuba forest (16.7 %) and Bakashi forest (5.6 %) were least from the bottom. The result on traps removal (Figure 4) shows that Ngi forest contained the highest number of recovered traps (51.2 %), Yakuba was second with 32.6 % while Tounga was least with 4.7 % of total traps removed. The result of poaching intensity (Figure 5) indicates that poaching activities were highest in the Ngi forest (49.4 %), followed by Yakuba forest (25.3 %) while Tounga (16.5 %) and Bakashi (8.9 %) experienced the least poaching activities.

Table 1: Types of Threats Observed during the Study Period Total number of forest segments base on trail cutting in the habitat = 21

S/No	Threats	Frequency	% Frequency
1.	Illegal hunting	11	52.4
2.	Illegal bush burning	16	76.6
3.	River poisoning	1	4.8
4.	Tree felling	4	19.1
5.	Non Timber Forest Products extraction	7	33.3

Source: Field data, (2010).

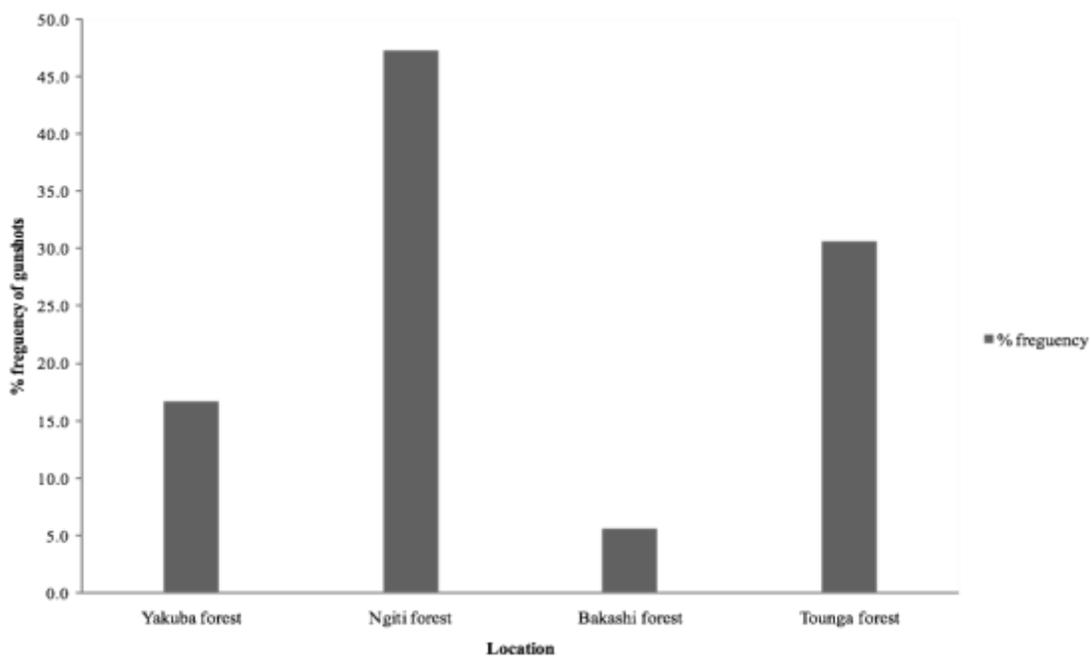


Figure 3: Percentage Gunshots heard in the study area during the study period (Source: Field data, 2010).

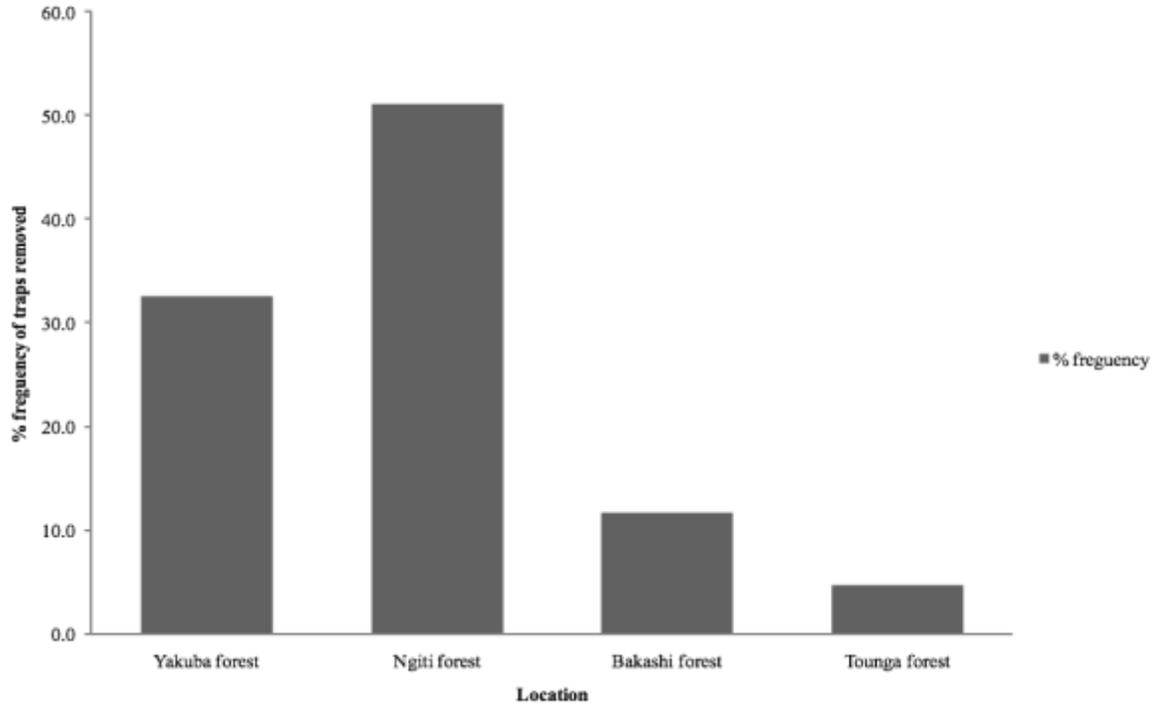


Figure 4: Percentage of Traps removed in the study area during the study period  
Source: Field data, (2010).

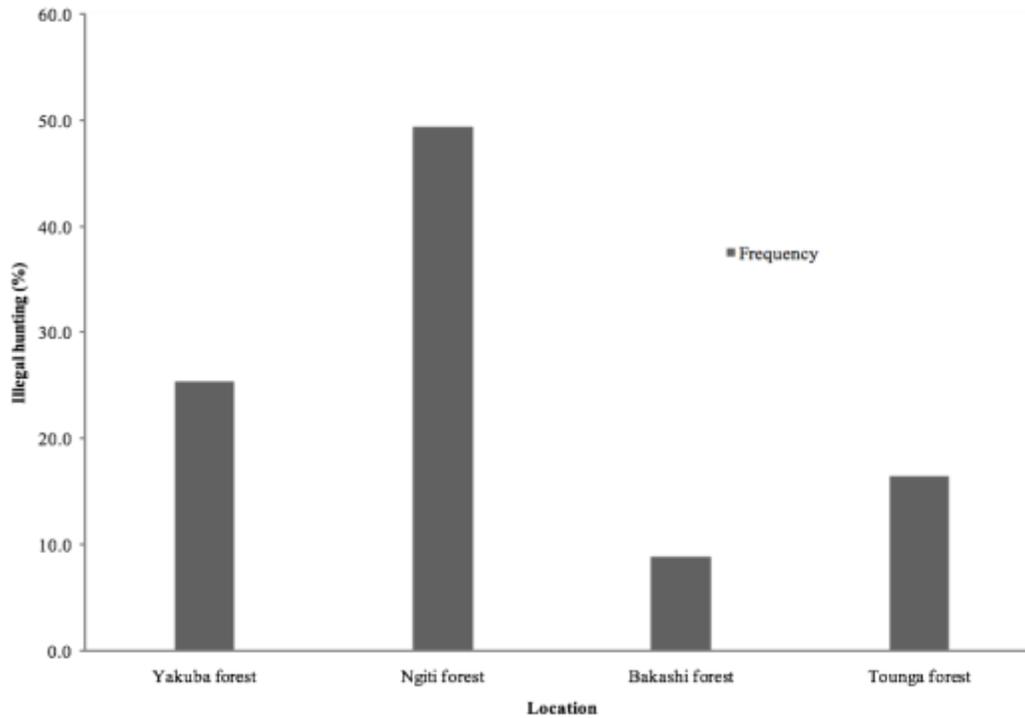


Figure 5: Illegal hunting intensity in the study area during the study period  
Source: Field data, (2010).



Plate 1: A chimpanzee found in a trap during the study period at mayo kappa



Plate 2: Black and white colobus monkeys killed by poachers during the study period



Plate 3a: Point view of chimpanzee habitat before fire incidence during the study period



Plate 3b: Point view of chimpanzee habitat after an illegal fire incidence during the study period

## DISCUSSION

### Observed threats to the conservation of chimpanzees and their habitat at Kwano forest

These are threats that were observed during the study period to be militating against conservation efforts in the chimpanzee habitat. The observed threats to the chimpanzee habitat were absolutely human induced problems as there was no record of any natural disaster during the study period.

### Threat types

The different types of threats (Table 1) observed were Poaching, illegal bush burning, river poisoning, tree felling, and Non Timber Forest Products extraction. Considering the complexity and ruggedness of this habitat, it will be very

difficult for a stranger or foreigner to successfully embark on any of the above mentioned threats. Investigation during the study indicated that these illegal activities were functions of the local people leaving around the park and in cases where strangers or foreigners are involved, then, it is carried out in conjunction with the local people.

Poaching was observed in 11 segments of the habitat which forms about 52.4 % of the habitat's area. This observation, suggest that poaching may be a regular activity in the chimpanzee habitats, despite the constant presence of researchers. One will expect a zero tolerant to poaching activities due to the researchers' presence. This therefore indicates that the intruding poachers are likely to

be the villagers who are more conversant with the terrain than the rangers and who will always be favoured by the local field assistants in case of any attempt to arrest them.

Illegal bush burning was observed in 16 segments (76.6 %) out of 21 segments that comprised the entire chimpanzee habitat. This particular threat as observed is an annual and most violent of all the threats. Firstly, the national park in its position as the managers of this unique biosphere have laid down policies and strategies on fire management through controlled burning. However, the chimpanzee habitat hardly benefits from these practices probably because of its long distance interval (43 km away from the park's head office) from the management crew. Other factors acting contrary to the implementation of controlled bush burning at the chimpanzees habitat could be lack of fire ecologists among the management team of GGNP, lack of sound knowledge of the chimpanzees habitat by the rangers who have been doing the controlled bush burning in some parts of the park, deliberate avoidance of the chimpanzees habitat because of its complexity and ruggedness and the influence of the foreign researchers. The non-practicing of controlled bush burning in the chimpanzees habitat have paved the way for illegal fire setting probably by travelers, poachers, illegal grazers and ignorant rangers at the peak of the dry seasons which becomes disastrous to the plants and animals.

River poisoning occurred in 1 segment (4.8 %) of the chimpanzee habitat. Many rivers that form major tributaries into the River Benue have their source from or flow through the chimpanzee habitat. Some of these rivers include Rivers Gangan, Gashaka, Yim, Ka'ai, Ngiti and Tolore. These rivers contain unstudied species of fishes observed to be under severe threats against their conservation. Being a mountainous area, most of the rivers in this area are fast flowing with few natural pools good enough for fishing using nets and hooks. However, for easy gathering per unit catch, the fishermen apply poisonous chemicals such as "gamalin 20" to kill the fishes. This illegal method of fishing does not obey the role of

selective cropping as it kills indiscriminately including the fingerlings, non-targeted freshwater animals and terrestrial animals such as chimpanzees that drink directly and frequently from the rivers around their habitat. River poisoning is a very serious and punishable crime because the effects does not only end on the wild animals but can also affect the human populations inhabiting the river banks down streams.

Tree felling as one of the threats to the chimpanzees habitat was observed in 4 segments (19.1 %) of the total habitat. The chimpanzees of GGNP depend on the trees for most of their daily activities ranging from feeding, resting, grooming, nesting, tools construction, medication and drumming. A single tree removal implies denying the chimpanzees the full rite to one or more than one of these activities mentioned above. From the finding of this study, it has been revealed that the social insects which chimpanzees of GGNP require in their diets, nest in tree hollows. For the chimpanzees to successfully exploit these resources, they need tree branches to carefully convert into useful tools: a highly established activity of chimpanzees known as material culture. Similarly, chimpanzees staple food comes from the trees. They spend most of their foraging time on ripe fruits and only between 18 – 21 % of their foraging time is spent on plant parts. This is according to the report of Ammann *et al.* (2003). On the other hand, it is also important to note that every weaned chimpanzee construct a sleeping platform every night. However, the choice of nesting site is highly determined by several factors which includes fruit trees availability and proximity (Akosim and Buba, 2007); therefore, it is unacceptable to fell trees in the chimpanzees habitat as it deprives them of basic habitat requirements.

Non Timber Forest Products (NTFPs) extraction occurred in 7 segments (33.3 %) of the habitat. NTFPs were those forest resources other than timber and non-trees resources. They include fruits, leaves, firewood, tree bark, roots, sap or latex, animals/insects and their products as well as mineral mining. The kwano forest of GGNP which

constitutes the chimpanzee habitat is also rich in NTFPs and was under constant illegal exploitation by trespassers. A genuine case of illegal extraction of NTFPs that posed a threat to the chimpanzees habitat during this study was the extraction of honey by means of a complete felling of the entire tree. Some herbalists illegally scrapped the whole bark of a tree for its medicinal constituent thereby which consequently results to the death of the tree. The illegal extraction of precious stones at the peak of the chimpanzee habitat (Njuwai forest) left such areas open and susceptible to gully erosion which further uproots important tree species along the course. Another resulting effect of mineral mining is the filling of riverbeds with sand and in some cases, the affected rivers are forced to change their course of flow.

### Poacher's weapon

Results of Gunshots were carefully recorded and presented as an indicator of poacher weapons. Gunshots produce very loud sound which could be heard from every part of the chimpanzee habitat. The directions of Gunshot were always conspicuous and it was therefore, easy to know which part of the forest the gunshots were coming from. Gunshots heard were categorized according the different zones of the chimpanzee habitat to establish information on their hunting regimes. Based on categorization, Ngiti forest scored 49.4 % of gunshots, followed by Yakuba forest (25.3 %), while Tounga forest (16.5 %) and Bakashi forest (8.9 %) were least from the bottom. The highest number of gunshot recorded for Ngiti forest may be coming from the poachers from the neighbouring village of Gashaka because Ngiti forest adjoins the Gashaka village and River Gamgam flows through this forest to the Gashaka village which can be used as road into the forest by villagers. During the rainy season river crossing becomes one of the major problems to the Park rangers because most of them cannot swim but this shortcoming to the Rangers may be an added advantage to the Poachers to carry out a successful and fear-free operation on the order side of the river which forms part of this forest. Yakuba forest was second in terms of gunshot recorded. This may be attributed to the fact that this part of the

chimpanzees habitat is the least visited by rangers because of its long distance interval from the Ranger's camp. However, Tounga and Bakashi forest segments were the least disturbed areas by gunshots which might be as a result of their proximity to the foot path that passes through the chimpanzees habitat. Other reasons may be because these forest segments are closest to the research camp. During this study, the researchers led a Rangers patrol team that carried out a successful arrest of poachers in the Bakashi forest after hearing a gunshot from the area.

The result of trap removal shows that Ngiti forest contained the highest number of recovered traps (51.2 %), Yakuba was second with 32.6 % while Tounga was least with 4.7 % of total traps removed. For poaching activities, guns and traps were used by the hunters to kill the animals indiscriminately. My research team also removed a number of traps during the study period along animal trails while a trapped chimpanzee was found alive with the trap at mayo-kpa'a forest of the chimpanzee habitat. Discovery of the victim chimpanzee in a trap did not help save its life as it was further executed by the Rangers partly because it was already badly injured and there was no expert available to save the life of that chimpanzee. The findings of this study suggests that flourishing animal populations attract poaching activities.

### CONCLUSION

The high habitat quality in terms of cover and food trees availability were found to be under threats. The identified threats include poaching, illegal bush fires, river poisoning, deforestation and extraction of Non-Timber Forest Products (NTFPs); a situation that results into exploitative competition between the chimpanzees and humans. We therefore, recommend that more Rangers be recruited and additional patrol posts constructed in all the ranges to boost anti-poaching patrols.

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