



## Assessment of Human – Wildlife Conflicts In Filinga Range of Gashaka Gumti National Park, Nigeria

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### Abstract

*Assessment of Human-Wildlife Conflicts in Filinga Range of Gashaka Gumti National Park (GGNP) was conducted in two support zone villages of Gashaka and Mayo Yum using a set of Structured Questionnaires complemented with Field survey, Focus Group Discussion and In – depth interview. A set of 65 questionnaires were administered to representatives of households in selected support zone villages. Two group discussions were conducted in the two villages. Data collected were analyzed using descriptive statistics in form of percentages, frequencies of counts and charts. Crop raiding and animal depredation at different levels were sources of conflict in GGNP. Maize was the most affected crop while poultry was the most affected livestock. Cultivation of Cassava has become seriously reduced due to the impact of Baboon. Out of 853 bags of 50kg crops expected from a planting season, 379 bags ( 44.4%) were perceived to be destroyed by primates while farmers harvested 474 (55.6%) as leftover. About 44.4% of seasonal harvests were lost to Tantalus monkeys and Baboons of which 60.20% (228 bags) of these losses (379 bags) were attributed to Tantalus Monkeys, while the remaining 39.80% (151 bags) were caused by baboons. On individual basis, 58.46% of local farmers in the study area claimed that Tantalus Monkeys and Baboons destroyed an estimate of 4 – 6 fifty kg bags of crops in a planting season, while 70.77% loosed 4 – 12 bags of 50kg bag of crops in a season due to Tantalus Monkey and Baboons. Availability of luxuriant vegetation in the park also attracts cattle (during dry season) which raids crops of Mayo Yum respondents en route the park causing serious destructions in a single visit. The most effective strategy the local communities used in preventing crop damage was guarding (100%), which is time consuming. Other methods were scare crows (69.23%), fencing (64.62%) and trenches (24.62%). The mitigation measure advocated by nearly all respondents (98.46%) was killing of destructive wildlife species irrespective of its conservation significance. This attitude of the people could be a serious threat to Tantalus monkeys in the nearest future. Though GGNP has constructed a bridge in the study area but inaccessibility of respondents to other settlements due to water bodies, deplorable condition of boats and canoes for accessibility during rainy season, destructions by cattle in Mayo Yum due to no permanent ranger's post and unemployment of the youths were considered as major challenges.*

**Keywords:** Human – Wildlife Conflicts, Gashaka Gumti National Park, Protected Area Management, Crop Raiding, Livestock Depredation, Primates

## Introduction

Conflicts between wildlife and people, particularly those who share the immediate boundaries with protected areas, are common phenomenon all over the world (Shemweta and Kidegesho, 2000). Human – Wildlife conflict situations often have a long history of competition between man and wildlife from time immemorial in various parts of the world (Hill *et al.*, 2002). Human Wildlife Conflict (HWC) usually occurs when wildlife requirements overlap with those of human populations, creating costs to residents and wild animals (World Park Congress, 2003). Direct contact with wildlife occurs in both urban and rural areas, but it is generally more common inside and around protected areas, where wildlife population density is higher and domestic animals often stray into adjacent cultivated fields or grazing areas. According to West and Brockington (2006), globally, Protected Areas are sometimes instrumental in fueling social conflicts between groups. Simply put, conservation of wildlife has been a source of conflict in many parts of the world (Shemweta and Kidegesho, 2000; Hill *et al.*, 2002; Warren, 2003; WCS, 2010 and Distefano, 2010).

The nature of conflict shows an increasing tendency between humans and wildlife over the use of natural resources mainly land, forests and water (Wells *et al.*, 1992). Conflicts are manifested when people are killed or injured by wild animals, loss of livestock through predation, competition for pasture, wildlife invasion of crops in farms and inadequate or lack of compensation for losses (Tchamba, 1996).

Human-wildlife conflict is more intensive in developing countries where livestock holdings and agriculture are important parts of rural people livelihoods and income (Boer and Baquete, 1998). In these areas, competition between local communities and wild animals for the use of natural resources is particularly intense and direct. As a result, resident human populations or wildlife is vulnerable (Messmer, 2000). Species most exposed to conflict are also shown to be more prone to extinction (Ogada *et al.*, 2003), because of injury and death caused by humans; these can be either accidental, such as road traffic and railways accidents, capture in snares set for other species or from falling into farm wells, or intentional, caused by retaliatory shooting, poisoning or capture (Distefano, 2010).

Conflicts between wildlife and human are a major conservation problem which conservation organizations all over the world are dealing with (WCS, 2010). Human-wildlife conflict is one of the major threats to conservation in Africa. They occur in different settings such as increasing land scarcity, hunting prohibition and wildlife induced damage to property and these constitute factors that may create local hostility towards wildlife and protected areas (Dublin, 1995). Access to land is a central issue in rural Africa for both farmers and pastoralists. Consequently, rural Africans generally do not want to give up land to wildlife or have wildlife nearby (Newmarku *et al.*, 1994).

One major source of conflict between wildlife and farmers in Nigeria and the world at large is crop raiding (Rowe, 1996; Hill *et al.*, 2002; Warren, 2003 and Distefano, 2010). Crop raiding by wildlife is neither a new phenomenon nor a rare one. Until recently, there has been little attention given to vertebrates species that damage crops with the exception of elephants and rodents (Damiba and Ables, 1993). In communities with little subsistence economy even small losses can be an economic importance and can generate negative attitudes towards wildlife and conservation in general (Oil *et al.*, 1994). According to Ojo *et al.*(2010), crop raiding by wild animals is one of the major causes of human wildlife conflict which involves wild animals moving from their natural habitat on to agricultural land to feed on the produce that humans grow for their own consumption.

Naughton-Treves (1996) reported that crop damage could be up to 97.7% within 0.2km radius from the sanctuary and only about 2.3% damage within 3km and above. This will be on the increase as more and more people crowd onto less and less land. Primates and humans have been interacting for hundreds of years in various forms of relationship (commensalism, predation, competition, mutualism and so on)( Sponsel *et al.*, 2002). Primate crop-raiding has been recorded in at least 73 species in nearly all range countries varying from raiding small garden crops to raidng commercial plantations (Warren, 2003).

In Gashaka Gumti National Park of Nigeria, crop damage by various species of wild animals is a serious problem for farmers within the support zone (Pepeh, 1996). Conflicts have existed in Gashaka Gumti National Park since it creation. Human – wildlife conflicts have been studied by a number of scientists in this area (Dunn, 1998a; Hill *et al.*, 2002 and Warren, 2003). However, adequate evaluation of the effect of conserving Tantalus monkey to the local people in the Park is yet to be undertaken. This study therefore surveys the impact of Tantalus monkey conservation in Filinga range of GGNP on households in Gashaka and Mayo Yum villages.

This study is therefore carried out to specifically:

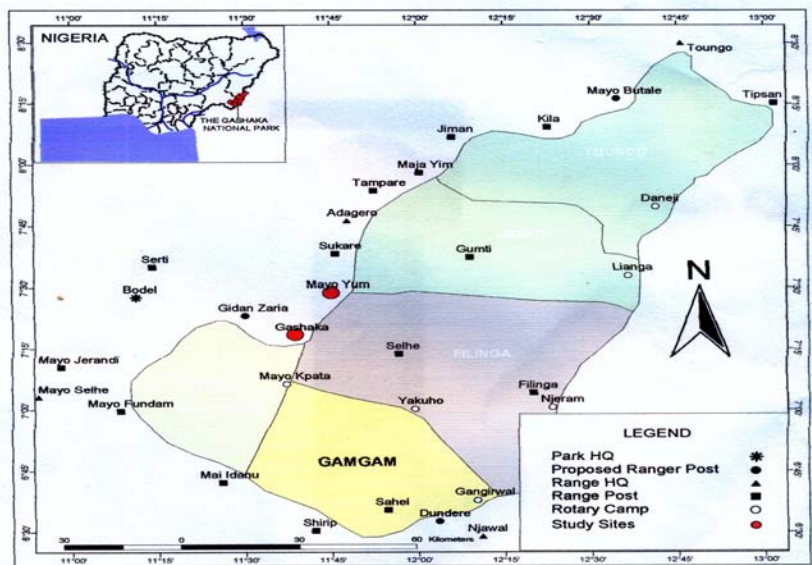
- determine the effect of conserving Tantalus monkeys in the support zone of Filinga Range, Gashaka Gumti National Park, Nigeria;
- determine percentage damage done to farms produce by Tantalus monkeys and any other related species;
- to determine the challenges of the respondents in the study area.
- determine and make recommendation on how to combat conflict in the study area;

## **Materials and Methods**

### **Study Area**

This study was carried out in the Filinga range of Gashaka – Gumti National Park (GGNP), the largest single conservation area in Nigeria (Nformi, 2002). GGNP is

located between latitude 6°55' and 8°05'N and longitude 11°13' and 12°11'E (Dunn 1998a, Gawaisa, 2001, Nformi, 2002 and Warren, 2003). The park boundaries fall within Adamawa and Taraba States of Nigeria and it shares borders with Republic of Cameroon to the east adjacent to Faro National Park, Cameroon (Nformi, 2001). The Park name is derived from two villages of Gumti in the Northern sector of the Park and Gashaka in the south of the Park. Two support zone communities, Gashaka and Mayo Yum close to Filinga range (Figure 1) were selected for the study. GGNP consists of Savannah, dry deciduous woodland, fresh water swamp vegetation, lowland gallery forest, mountain forest and cold mountain grassland. The Northern (Gumti) sector is more of Northern Guinea Savannah, which consists of open woodland characterized by tall grassland trees with usually short boles and broad leaves (Gawaisa, 2001). In southern (Gashaka) sector, moist Guinea Savannah predominates.



Source: Warren, 2003

Figure 1: Gashaka Gumti National Park showing the Study Sites

**Method of Data Collection:**

Data for the study were collected through structured questionnaires and complemented with Focus Group Discussion and In - depth interview. Data was collected in two support zone settlements of the Filinga Range of the Park. These communities were Mayo Yum village and Gashaka village. There were three separate settlements in

Gashaka village: Ranger's Post, Deu Mayo and the main village. However, both the main village and the Ranger's post was considered as one since they are the same village but only separated by a water body.

#### **(1) Questionnaires**

A set of structured questionnaire were administered to household representatives in the two villages. The questionnaires were randomly administered to twenty percent of household representatives in the two settlements. Household representatives included both females and males of various age groups. Twenty six respondents were interviewed in Gashaka main Village, 19 respondents in Deu Mayo (which is also part of Gashaka village) while 20 respondents were also interviewed in Mayo Yum. In all a set of 65 questionnaires were administered to household representatives.

**In Depth interview:** With the assistance of three interpreters selected indigenes of the villages that have lived there for a minimum of twenty years or from the time of birth and have been conversant with events happening in the villages were interviewed. The respondents were interviewed with three native speakers. Six staff members of GGNP with minimum of five years experience in the park were interviewed in Gashaka Ranger's Post. Traditional ruler of both settlements (Jauro Gashaka and Jauro Mayo Yum) were also interviewed. This is consistent with the methods used by Warren (2003), Weladji and Tchamba (2003) and Shemweta and Kidegheso (2000) in studying human – wildlife conflicts in protected areas.

#### **Focus Group Discussion**

This method was used to gather information on how local communities perceived wildlife especially Tantalus monkey, respondents' level of wildlife tolerance, benefits derived from the Park and suggestions on how to check further conflicts. Two group discussions were conducted. Selection of participants was based on those who have lived in the area for a minimum period of ten years. The number of participants in the two villages was 14. Among them were the traditional rulers and their chiefs, elderly women above fifty years of age (who always stay at home as they can no longer go to farm due to age) and who lived in the village all their lives. The group discussion was conducted with the aid of translators. Data collected were collated and integrated in the discussion in a narrative form as used by Shemweta and Kidegesho (2000) while studying Human-wildlife conflict in Senkele Swayne's Hartebeest Sanctuary in Ethiopia.

#### **Data Analysis:**

Data obtained were analysed using descriptive statistics in form of percentages, frequencies of counts, tables, bar and pie charts.

## Results

### The Relationship between Crops Grown and Animals Associated With Crops Damage

Table 1 shows that Tantalus monkey was implicated by all respondents as the animal species that mostly frequent their farms.

**Table 1: Species of Animal that Visit Farms of respondents**

Animal	No. of Respondents	Percentage
Tantalus Monkey	65	100
Baboon	45	69.23
Warthog	25	38.46
Birds	22	33.85
Rodents	23	35.38
Colobus Monkey	11	16.92
Reptile	7	10.77
Cattle	6	9.23

Source: Field Survey, 2010

Table 2 shows that all the respondents cultivated Maize. Banana (50.77%) and Plantain (35.38%) were among the crops mainly cultivated by respondents.

**Table 2: Type of Crops Grown by households in the Study Area**

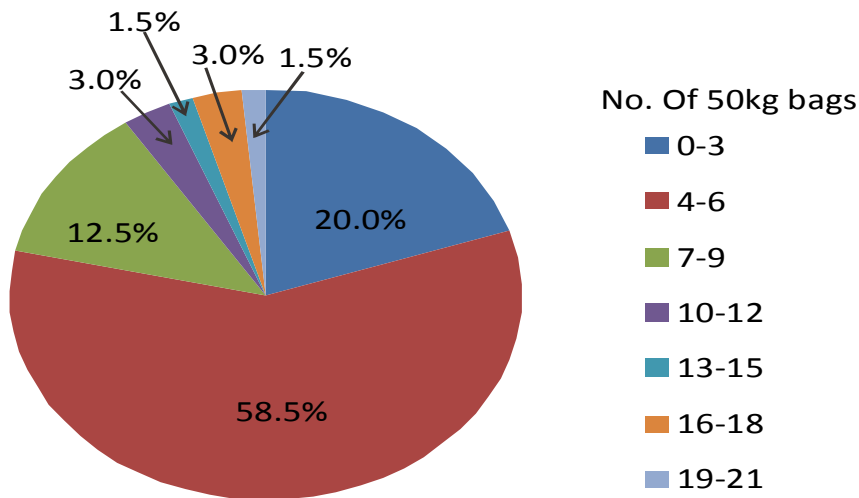
Crops	Number of Respondents	Percentage
Maize ( <i>Zea mays</i> )	65	100
Banana ( <i>Musa sapientum</i> )	33	50.77
Plantain ( <i>Musa paradisiaca</i> )	23	35.38
Guinea Corn ( <i>Sorghum bicolor</i> )	19	29.23
Cassava ( <i>Manihot spp.</i> )	18	27.69
Groundnut ( <i>Arachis hypogaea</i> )	17	26.15
Beans ( <i>Mecuna spp.</i> )	15	23.08
Yam ( <i>Dioscorea spp.</i> )	14	21.54
Mango ( <i>Mangifera indica</i> )	14	21.54
Paw paw ( <i>Carica papaya</i> )	11	16.92
Cocoyam ( <i>Xanthosoma sagittifolium</i> )	9	13.85
Rice ( <i>Oryza sativum</i> )	2	3.08

Source: Field Survey, 2010

**Assessment of Damages Caused by Primates in the Study Area**

Figure 1 shows that most respondents (58.5%) complained that the destruction caused in their farms by primates were in the order of 4-6 bags of 50kg size of crops per season. Others respondents reported 3 – 5 (20.00%), 7 – 9 (15.00%)

According to Table 3, the crop mostly destroyed by primates and other wildlife species is maize.



**Figure 1: Perceived Extent of Damages done to Crops by primates**

**Table 3: Ranking of Crops in the order of destruction by primates**

Crop	Frequency	Percentage	Rank
Maize	65	100	1
Cassava	3	4.62	2
Rice	2	3.08	3
Banana	2	3.08	3

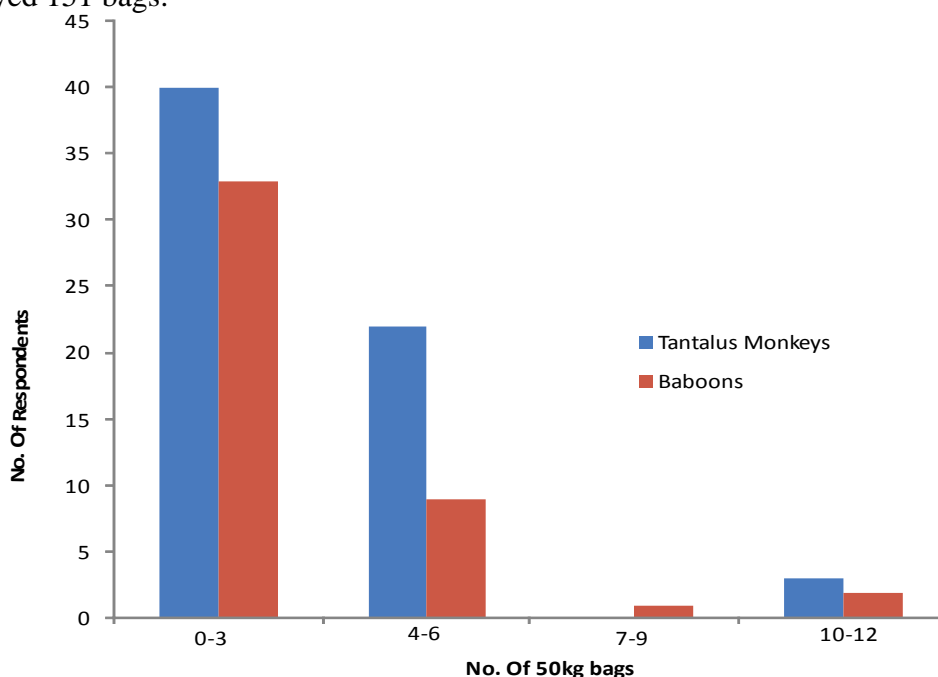
**Source:** Field Survey, 2010

**Table 4: Estimated losses in 50kg bags incurred by Respondents in the Study Area**

Total estimated yield	Total Losses	Losses caused by Tantalus Monkey	by Losses caused by Baboon	Harvested yield
853	379	228	151	474

Source: Field Survey, 2010

On assessment of comparative total damage to crops yield by Tantalus and Baboon as damage caused by other species were considered negligible by respondents, Figure 2 showed that 59.10% of total damage to crops in the study area was caused by Tantalus Monkeys while 40.90% was attributed to Baboon. Figure 2 showed that in the class of 0-3 bags of 50kg destroyed by Primates, 40 respondents indicated that Tantalus monkey was number one in rank in terms of damage done; destroying 228 bags while baboon destroyed 151 bags.



**Figure 2: Assessment of number of 50kg bags of Crops damaged by Baboons and Tantalus monkeys**

**Depredation of Livestock by Primates in the Study Area**

Depredation of livestock was uncommon in the study area as only 15% of the respondents indicated cases of livestock depredation by Baboons (*Papio anubis*) (Table



5). There was no report on depredation attacks on livestock by Tantalus monkey (*Chlorocebus tantalus*).The livestock mostly depredated was poultry (Table 5).

**Table 5: Respondents’ assessment of Livestock Depredation**

Livestock reared	Depredation agent	
	Baboon	Tantalus monkey
Poultry	10	-
Goat	-	-
Sheep	-	-
<b>Total</b>	10	-

Source: Field Survey 2010

**Crops not generally disturbed or eaten by Tantalus monkeys in the study area**

Despite crop damages in Filinga Range of GGNP, there are certain crops that the animals do not feed on (Table 6). About 30 respondents admitted that Tantalus monkey does not feed on Guinea Corn (40.00%), Cassava (30.80%), cocoyam (16.70%) and yam (13.30%).

**Table 6: Crops not depredated by Primates in the study Area**

S/N	Crops	Frequency	Percentage
1	Guinea Corn	12	40.00
2	Bitter Cassava	9	30.00
3	Yam	4	13.33
4	Cocoyam	5	16.67
	<b>Total</b>	30	100

Source: Field Survey, 2010

**4.1.6 Level of Crop Destruction in the Study Area**

About 90.77% of respondents rated the destruction caused by non-human primates to be high (Table 7) and none rated the level of destruction to be negligible.

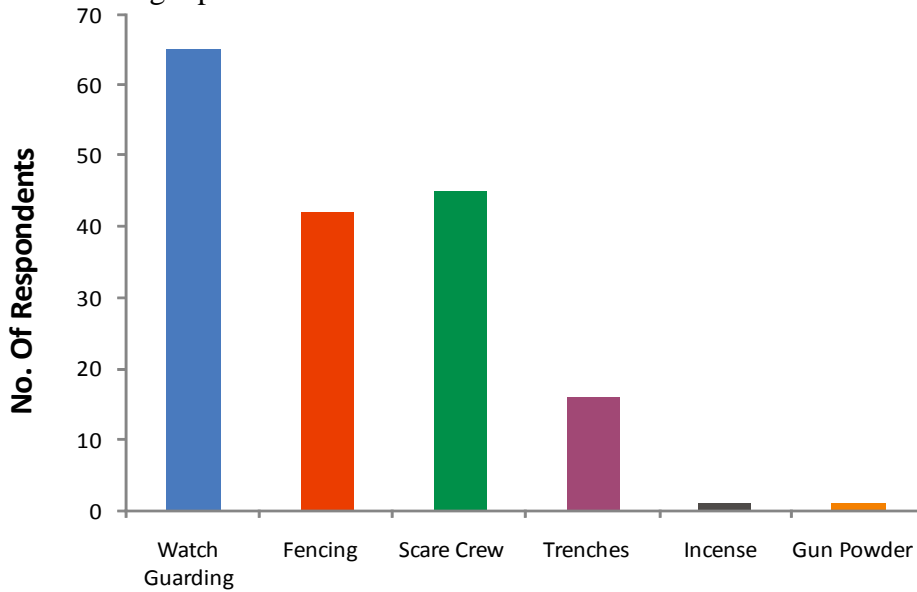
**Table 7: Perceived assessment of the Level of Destruction caused by Tantalus Monkey**

Level	No. of Respondent	Percentage
High	59	90.77
Medium	6	9.23
Low	0	0
<b>Total</b>	<b>65</b>	<b>100</b>

Source: Field Survey, 2010

### Methods of Controlling Damage

All the respondents used watch guarding as means of safeguarding their farms, some used fencing (64.62%), 24.62% used trenches while 1.54% used either incense or gunpowder.

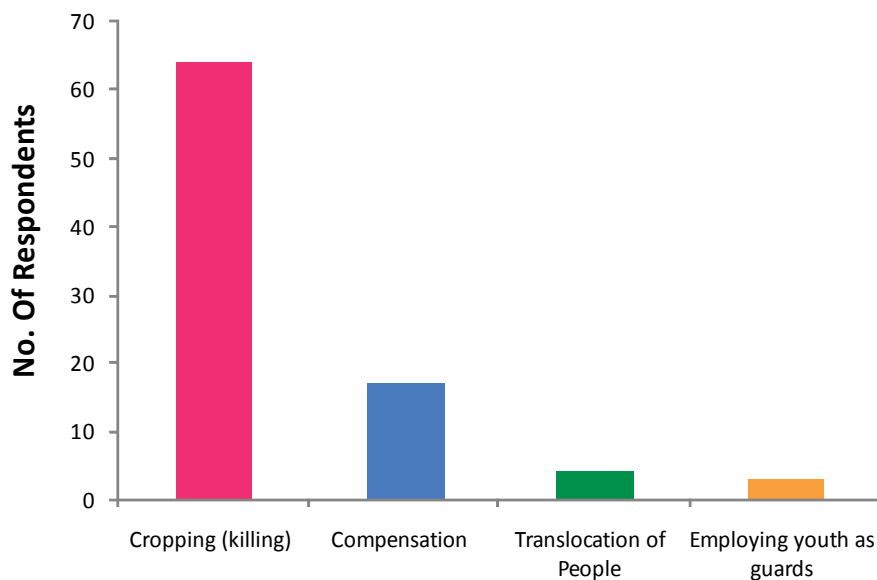


### Methods of Control

**Figure 3: Methods of controlling crop damages by respondents**

### Mitigation Measures Suggested by Respondents on how to Prevent Damages

Figure 4 shows that almost all the respondents (98.46%) wanted the pest to be killed while 26.15% advocated compensation from relevant government and non-governmental agencies.



**Mitigation Measures**

**Figure 4: Mitigation Measures Suggested by Respondents to tackle Crop and Livestock Damages**

**Responses from Park Management on Conflict Related Issues**

**Table 8: Usual responses to respondents on complaints about damages by primates**

Action taken by GGNP	Frequency	Percentage
Be Patience	35	53.85
We will do something to that effect	24	36.92
Learn to Tolerate	7	10.77
No Response	5	7.70

Table 8 presents the various responses normally given to respondents by the park management when they complain about damages done to their crops by animals. They are mostly asked to be patient (53.85%) while some are promised that something would be done (36.92%) or Learn to tolerate (10.77%) and in some cases not given any response at all (7.70%).

### Challenges of Respondents

Table 9 shows that the priority of respondents in terms of needs differ with location. The most felt need of respondents in Gashaka is how to get the youths in the area employed unlike in Mayo Yum where the respondents need a bridge to link them with other settlements. Table 10 presents some benefits that the support zone communities have derived from the park.

**Table 9: Needs of Villages in order of preference by Focus Group Discussants**

Settlement Area	Identified Needs	Need Rank
<b>Gashaka Village</b>	Employment of youths	1
	Monetary Compensation	2
	Provision of Functional Health centre	3
	Construction and maintenance of road, culverts and bridges	4
	Provision of incentives for chemicals, scarecrow and improved varieties of crop	5
	Integration of village council in management process	6
<b>Mayo Yum Village</b>	Provision of bridge to link them with other settlement	1
	Construction of Ranger’s post	2
	Provision of food processing machine	3
	Provision of Boats or canoes in the absence of bridge especially in Rainy season	4
	Monetary Compensation	5
	Provision of incentives	6

Source: Field Survey, 2010

**Table 10: Benefits Derived from GGNP Management as identified by Focus Group Discussants**

Settlement Area	Benefits Derived
<b>Gashaka Village</b>	Grading of roads
	Construction of bridges, road and culverts
	Provision of a health centre and occasional supply of drugs
	Provision of canoes for transportation during rainy season
<b>Mayo Yum Village</b>	Employment
	Clearing and grading of Roads
	Canoes for transportation during rainy season

Source: Field Survey, 2010

### Discussion

#### Animal Visitation and Crop Raiding

Wild animals visit farms of local people, deplete their livestock and raid crops in most enclaves of protected areas. In Filinga range of Gashaka Gumti National Park animals have been observed to cause damages during their visits. Tantalus monkey

(*Chlorocebus tantalus*) has been noticed by all the respondents as the most regular species that encroach into farms of respondents in the study area (Table 1). Tantalus monkeys, apart from being abundant in the area have become used to people. They are mostly observed in the residential areas and farms than in the forest. Primate species are intelligent and have noticed that they are not being killed in the locality as the local inhabitants are mostly Muslims, a religion that forbids consumption of primates. Because of their closeness to the farms and residential areas they easily observe when ripe maize are available. And as social species, their cooperation aids them in operating effectively. Another primate, Baboon (*Papio anubis*) is the second in the order of species observed by respondents in their farms. Baboons destroy Maize and Cassava. However, it is not as close to the people as Tantalus monkeys. Maize is cultivated by all respondents (Table 2). However, it is the crop mostly destroyed by primates in the study area (Table 3). Households have stopped cultivating Cassava because of destructions caused by Baboon.

Primate species raid Maize, Banana, Plantain, Yam and Cassava. Respondents are aware of visitation of their farms by Warthog (*Phacochoerus aethiopicus*) and rodents such as Cane rat *Thryonomys swinderianus*, crested porcupine (*Hystrix cristata*), Brush-tailed porcupine (*Atherurus africanus*), and ground squirrel (*Euxerus erythropus*). These species also raid crops especially Maize, Cassava and Yam but their visitation has not been as frequent as that of Tantalus monkey and they are not as abundant in Filinga range as Tantalus monkeys. Moreover, these species are not close to people. With exception of Warthog that its consumption is forbidden by Muslims the other species can be secretly killed and consumed by respondents. Visitation by cattle is easily noticed because of the higher magnitude of damages caused in a single raid. This agrees with Warren (2003) and Dunn (1998) who reported on the severity of crop raids among rural farmers in GGNP. The cattle, horses and even donkeys are attracted to the area by the luxuriant vegetation in the park.

These findings agree with the observations of some previous studies (Else, 1991; Naughton-Treves, 1998 and Naughton-Treves *et al.*, 1998; Shemweta and Kidegesho, 2000; Hill, 2000; Weladji and Tchamba, 2003) that raiding which affects Maize occurred when ripe Maize are available. The impact of Maize destruction is most felt by households. Tantalus monkeys were implicated for most destruction done to Maize in Filinga range. Similarly, Shemweta and Kidegesho(2000) listed Warthog, Tantalus monkey and porcupine among the major cause of crop damages to the local communities around the Seakale Swayne hartebeest sanctuary in Ethiopia. Maize is a priority crop cultivated by all the farmers in the study area (Table 2). Destruction of a priority crop in a community where about 80% of the people are engaged in agriculture (Kirk - Green, 1958) is a very serious case that requires an urgent attention to save the entire populace from hardship as respondents' economies are negatively affected.

Results obtained in a similar study in an agrarian community by Oil *et al.* (1994) revealed that in communities with little subsistence economy even small losses can seriously affect their economies. The people of Gashaka and Mayo Yum are generally farmers though some engage in fishing and hunting as alternative livelihood. The fact that these destructions by Tantalus monkey and Baboons are mostly experienced when Maize have mature, implies that the farmers have finished labouring but would not be allowed to reap because of the activities of Tantalus Monkeys. The people as local farmers spend many hours in the farm working on daily basis. Weladji and Tchamba (2003) have obtained similar results on crop damages with staple foods such as Maize and Millet being most affected. To further demonstrate the seriousness and magnitude of destructions by Tantalus monkey and Baboon on individual respondent basis, 58.46% of local farmers in the study area claimed that Tantalus Monkeys and Baboons destroyed an estimate of 4 – 6 fifty kg bag of crops in a planting season, while 70.77% loosed 4 – 12 bags of 50kg bag of crops in a season due to Tantalus Monkey and Baboons (Figure 1).

### **Tantalus Monkeys and Crop Damage**

Primates were believed to cause greatest damage in the study area as respondents considered destructions from other wildlife species, negligible. Tantalus monkey (*Chlorocebus tantalus*) known by local people as “kirka” has been known to have caused great damages in GGNP. Out of 853 bags of 50kg expected yield from a planting season 379 bags ( 44.4%) were perceived to be destroyed by primates while farmers harvested 474 (55.6%) as leftover (Table 4 ). Tantalus monkeys were identified as the worst offenders among the primates. It contributed to 60.20% (228 bags) of the losses (379bags) while the remaining 39.80% (151 bags) of the losses were caused by baboons (Table 4 ). This is partly in line with the findings of Warren (2003) that primates reduce 42.1 % of expected crop yield in the study area. It also corroborates other studies (Naughton-Treves, 1998; Porter and Sheppard, 1998 and Yudelman *et al.*, 1991) that estimated losses caused by primates to be between 10-50% of total crop production in the study area. Households have stopped cultivating Cassava because of destructions caused by Baboon. Tantalus Monkeys do not depredate livestock unlike Baboon that preys on domestic chicken in the area (Table 5). One of the old women in the Focus Group Discussion commented that “sometimes wild animals, particularly Baboon will attack women and children even up to their house and sometimes kill our fowls”. Nevertheless destructions by Tantalus Monkey in Filinga range is more pronounced (Figure 2).

Only few crops such as Guinea corn, Bitter Cassava and Cocoyam that are not destroyed by Tantalus Monkey and other primates (Table 6). This could have

contributed to the reason 90.77% of the respondents rated the level of destruction by Tantalus monkey high (Table 7).

### **Perception of Local People on Conservation of Tantalus Monkeys in GGNP**

Gashaka Gumti National Park harbours large population of Tantalus monkey and Baboons especially in the Filinga range. The villagers believed that the ultimate beneficiaries of these problem animals are visitors or tourists and the Park management (Pers.Com. 2010). One of the discussants emphasized that “Wild animals especially Kirka (Tantalus Monkeys) has disturbed this village for a long time. We are not permitted to kill the animals. These animals are not useful to us because we don’t use them as meat”. The respondents have generated negative attitudes towards conservation activities in the park due to their encounters with Tantalus monkeys. Warren (2003) obtained similar report in GGNP, which also agrees with the findings of Oil *et al.*(1994). While baboons were scared away by the people, Tantalus monkeys were seen near houses. Since settlements and farming activities were along the river courses of Mayo Gam Gam, Mayo Gashaka and Mayo Yum, these animals were also found to be more active around these locations but less active far away from these rivers.

Respondents believed that if these damages continue at the present rate without any intervention as a way of cushioning the effects of the losses that killing of Tantalus monkeys would be the last option as the Monkeys are not useful to them in any way. This will pose a threat to Tantalus monkeys in GGNP in the near future.

### **Ways of controlling crop raiding in the farm**

All the respondents have adopted watch guarding as a strategy to prevent Tantalus monkey from raiding crops (Figure 3). This was confirmed by a discussant that “if I don’t stay in this hut from morning till evening, this Maize farm will be gone and I will not have enough food to survive. They always come in their numbers. No matter my presence, many cobs are taken away by them. I want them to be killed; they are not useful to me. We are suffering” Others resort to fencing of farms, scare crow and digging of trenches around the farm. These methods are all laborious, time consuming and increase cost of production. Watch guarding is the most effective because Tantalus monkeys are very mobile species and can jump both trenches and fences to raid crops. In every farming area that is up to 1km far from residential area, respondents always build a hut close to it to ensure that the farm is guarded by somebody especially a youth. If the farm is not seriously guarded the farmer could lose everything to primates especially Tantalus Monkeys.

### **Responses given to respondents on complaints about destruction by Tantalus monkey**

Respondents are becoming tired of reporting crop raids to the management of GGNP because several complaints were laid but nothing positive was done to that effect. Instead they were told to be patient and sometimes that the park would do something about it or that they should learn how to tolerate the species (Table 8). The respondents have exhausted their patience yet nothing positive has been done to ameliorate the effects of the raiding. And for how long will they continue to tolerate the destructions is what bothers respondents most.

The fact that sometimes the management of GGNP keeps mute over complaints indicates that they are even tired of giving promises that attempts have not been made to implement. This can be attributed to the fact that there has not been any policy provision to that effect by the Federal government of Nigeria. In essence they people are suffering neglects. A discussant, Jauro of Mayo Yum said “it is not only wild animals that destroy the farms, our greatest threat is cows that can finish the whole farm at once. We have learned to tolerate primates from the Park because there is nothing we can do. The problem we have here is basically good access road to Serti where we can sell our farm produce. This condition worsens during rainy season and we need a boat to transport ourselves across the river”.

The discussant solicited that the Park should help them to address the issues mentioned. The Jauro of Mayo Yum was more worried about the destructions caused to the crops of his subjects by cows than Tantalus monkey because of the severity of destruction caused by cattle in a single visit. Households in Mayo Yum experienced more destruction from cattle because cattle access the park for grazing during dry season through the village route. The presence of cattle normally disperses wild animals. But during rainy season the river over flows its bank, thus preventing cattle from taking the route. Tantalus monkeys operate in Mayo yum only during rainy season when the cattle are not found in the area. This situation is different from what is obtainable in Gashaka settlement where Tantalus Monkeys operate at all seasons.

### **Ways of compensating Respondents**

Majority of the respondents suggested cropping of Tantalus Monkey as a way of compensation (Figure 4). This perception by households who forbid consumption of primate is an indication that the respondents are already aggrieved due to losses consistently suffered seasonally without any compensation. Besides, they could have perceived that the management of the park would not be able to sustainably compensate them in a way commensurate to the losses being experienced seasonally. They believe that killing of the Monkeys would definitely reduce their number to a population with lesser negative impact. It cannot be unconnected with the fact that they have never been



benefitting from the park financially and therefore felt that any promise made might not be implemented. However, some of the respondents including the two traditional rulers (Jauros) interviewed suggested that the management of GGNP should compensate households in the study area to cushion the effects of the negative impacts. Jauro of Gashaka stated that “we have stayed in the village for long. We are peace loving people. We are cooperating with the Park management very well. Crop damages by Tantalus monkeys and Baboons have become part of us. The destruction can be low or high. There is only one Cassava farm in the village. People are reluctant to plant Cassava in the village because Baboons will destroy the farm. The issue of tolerance is based on individual differences”. The Jauro of Mayo Yum also stated “I want the Park to build a permanent Ranger’s Post in the village so that Fulani cattle rearers will not use this village as a route. We also need an access road that can connect us to the town. We also need a processing machine (mechanical grinder) to process our food” (Table 8).

#### **Need Assessment and Benefits Derived from GGNP Management**

Employment of the youths is top priority for respondents from Gashaka. About three of the indigenes are employed as rangers posted within the Filinga range. Compensation was ranked second. In the case of Mayo Yum village the top priorities are construction of bridge to link villagers with other settlements and construction of ranger’s post (Table 9). During rainy season it requires canoe or boat to link other settlements. And during dry season the cattle take the village as a route to the park for grazing. Construction of ranger’s post in Gashaka village permanently stopped Fulani cattle rearers from taking that route thus saving them from heavy destructions of their crops by cattle. Mayo Yum village want a similar provision.

The roads are being graded in the two villages by the park management. Access to other settlements has been made easier through a bridge constructed by the park (Table 10). However, lack of a bridge to cross the bigger river (Mayo kpa) during rainy season is a major challenge to the inhabitants of the area. Hence, canoes or boats are always provided during rainy season by the park management to assist inhabitants in linking other settlements. On getting to the water, one needs to wait, sometimes up to an hour for someone who knows how to paddle the canoe to cross the persons. Inhabitants put their motor bikes inside canoe to cross during rainy season. For the bigger river, Gashaka people have only one canoe which could be in a deplorable condition sometimes. A primary school has also been built by GGNP management with the aim of contributing towards educational development of the study area. Moreover, health centre has been provided though supplying of free drugs is only occasional

## **Conclusion**

Tantalus monkeys are one of the major sources of Human - Wildlife conflict in Filinga range of GGNP because of its relative abundance. Although Baboons and other species are also involved, but more blames were on Tantalus monkeys in the range. Farming households have tolerated the activities and destructions caused by the species over the years without any form of compensation. In as long as there is abundance of food in the area the destructions by Tantalus monkey would not cease because animals are attracted by what they want – food. And food would always be abundant because of the high fertility of the soil along the river basins coupled with the fact that the agrarian households are continuously cropping at least 3 times in a year. If a commensurate means of compensating the people is not put in place as the pressure is continuously building up the resultant conflict will become frequent and complex to manage because of the major stakeholders involved- the Fulani cattle rearers attracted by the luxuriant vegetation in the park whose cattle have been vandalizing crops of farming households and grazing on vegetation meant for wild games, the farmers trying to check the activities of monkeys and cattle at all means, the park management who would want to protect the park and the wild animals from both the cattle and the farmers, and the visitors or tourists who visits for pleasure. Besides, the respondents have generated negative fillings about Tantalus monkey and may start killing the species secretly using poisons.

## **Recommendations**

From the findings of this study, the following recommendations are made.

- a. Conservation education for local population at different levels to disseminate innovative techniques, building local capacity in conflict resolution and more understanding of Human -Wildlife Conflict (HWC). This will promote commitment towards conservation.
- b. Promotion of dialogue and cooperation among different stakeholders. The commitment and coordination of local governments, National Park Service, Non-Governmental Organization (NGOs), conservation organization, scientific community, tourism and rural people will enhance participation, support and more contribution towards conservation activities.
- c. integration of the village council in management process to create better understanding between the Park and the local communities.
- d. Construction and maintenance of bridges, culverts, roads and tracks to ease movement of people and farm produce.
- e. Employment of more youths of the area to increase local involvement.
- f. Construction of permanent ranger's post in Mayo Yum guard against illegal grazing in the Park.

- g. Boats or canoes should be provided for the inhabitants of the area where bridge is not available to convey people.
- h. Compensation when necessary to reduce frictional intensity of aggrieved parties by relevance agencies
- i. Provision of incentives like improved scare crows, farm inputs like improved variety of crops and chemicals.
- j. Tourism should be developed in such a properly planned manner that the local people would be beneficially integrated in its management.

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