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Impacts of Elephants Disturbances on Local Community: A Case Study of Sitalike Village Near Katavi National Park

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Abstract
Crop production is the principal economic activity in the local community surrounding Katavi National park. Elephant's raids upon these crops are thought to be key constraints on income generation**.** This project made the first quantitative assessment of this problems .therefore this project addresses those impacts of Elephants disturbances to the local communities.Purposefully sampling were used in selecting a selected village Sitalike village and random sampling method was used for selecting the sample households(respondents) .A total sample of 32 households were interviewed in this study. The structured questionnaire and discussions were used to get information relevant to the study. Descriptive statistics such as frequency and percentage were used to accomplish the objective and presentation of results of the study.Farmer perceptions on Elephants which induce disturbances and raids their crops were heavily influenced by farmer's ability to defend themselves. Common animals such as Rodents, Birds and cattle caused considerable crop damage but were not quantified in this study. Variations in crop damage were evident and are potentially related to distance of a village from the park boundaries, Elephants distribution and their movement patterns.This study documented the existence of Elephant's disturbances in Sitalike village and has demonstrated that local community are willing and able to collaborate with any authority to address this problems .However multi year study is needed to allow a full assessment of the temporal and spatial patterns by this one year study. And assessment of the causal factors will allow the implementation of effective mitigation measures
Key word: Disturbances, Conservation

1.0 INTRODUCTION

1.1 Background

Wildlife in Tanzania is conserved in a network system that allows wild animals to move freely in search for food and habitat at different times of the year. This implies that wildlife occurs in areas devoid of fences. Wildlife conservation areas in Tanzania are categorized according to permissible uses, all of which based on conservation of biodiversity and sustainable development (Sumardja, *et al*., 1984). Administration of wildlife categorized into four areas in relation to types of wildlife utilization permitted in each of them including National Parks, Game Reserves, Ngorongoro Conservation Areas, and Game Controlled Areas (Wildlife regulation, 1974). The Wildlife policy of Tanzania of 1998 emphasizes on the continued maintenance of these categories so as to conserve endemic, rare and endangered species. The basic problems of Elephant management are due to fundamental changes in land use and life styles that have taken place in Africa since the past century. Most conservation areas in Africa form "ecological islands" (Martin and Taylor, 1983) because they are surrounded by human settlements.

Factors which caused Elephants to increase within the conservation areas are removal of hunting pressure and compression of range (Spinage, 1973; Laws *et al*., 1975; Jachmann and Bell, 1984; Martin *et al*., 1996). Wildlife may also be found in forest reserves, on village and on general land which serves as corridors, migratory routes and dispersal areas for them, and therefore important in its conservation. Elephant's movement is still a problem when they move beyond their protected areas in search for food. They inevitably run into problems often from farmers trying to protect their crops hence conservation is brought with difficulty since the land set aside for them is insufficient.

1.2 Problem statement

Consequently the population of wild animals is in sparsely settled areas, as may be the case around the game reserves and national parks. In these areas the rural populations is permanently competing with the wild animals for survival as both occupy the same habitat (Hann and Kaggi, 2000). Also there are other socio-economic costs

associated with Elephant disturbances which can outweigh the direct costs of agricultural damage and be a major component of the conflict as perceived by local people (WWF, 1997). The extreme example of this is human death, but other examples include restrictions on human movement, competition for water sources, the need to guard property (which may lead to loss of sleep), reduced school attendance (through loss of sleep, or fear of travel), , increased exposure to malaria, and psychological stress (Hoare, 2000; Sukumar, 1990). Despite many years of research, the impact of Elephant on the environment is poorly understood. Defining management policies to deal with the Elephant over-abundance has been problematic because of lack of scientific facts. The purpose of this study is to bridge the widening knowledge gap pertaining to the impact of Elephant on the local community and the associated environment.

1.3 Justification of the study

The impacts caused by the Elephant disturbances on local community dwelling near protected areas are diverse and most lead to conflicts, loss of lives and damage to crops. The cumulative effects from these, contribute to increased poverty and destabilizing the economy of the people of these areas and rise bad attitude towards conservation. This study therefore intended at coming up with suggestions that will help to solve the existing problem. These include appropriate mitigative measures for ensured wildlife management activities and change on the attitude of people on conservation. The findings from this study intended to improve the situation and reduce Elephant's disturbances, apart from that also the information obtained would help the wildlife managers to prepare management plan that will consider local people welfare and wildlife welfare in a more rationalized manner.

1.4 Objectives

1.4.1 General objectives

To asses the impacts of Elephant's disturbances on the local community in Sitalike Village adjacent to Katavi National Park.

1.4.2 Specific objectives

(i) To assess the damage of Elephants on agriculture crops in Sitalike Village
(ii) To determine the effects of Elephants invasions on people's livelihoods
(iii) To investigate the time by seasons for which the Elephant movements occurs
(iv) To investigate the attitude of people on wildlife conservation

1.4.3 Research questions

(i) What is the damage of Elephants on agriculture crops in Sitalike Village?
(ii) What are the effects of Elephant's disturbances on people's livelihoods?
(iii) In what time by seasons do the Elephant disturbances occur?
(iv) What is the attitude of people on wildlife conservation?

2.0 LITERATURE REVIEW

2.1 Elephants and community

Human-Elephant conflict is not a new phenomenon and crop-raiding has been taking place for centuries. In the early nineteenth century 'slash and burn' subsistence farmers cultivating crops in Central African forests were losing entire crops to Elephants, while in other areas, Elephant crop-raiding caused food shortages and displaced settlements (Barnes, 1996).

Human-Elephant interactions have always had profound consequences on their respective distributions, but more recently conflict has generally led to the exclusion of Elephants (Parker & Graham, 1989). In pre-colonial times Elephants played a major role in the distribution of arable farming (Barnes, 1996). In the 19th and 20th centuries diverse factors contributed to a massive decline in Elephant numbers and range (e.g. the monetary value attached to ivory, the availability and spread of firearms, tsetse fly control, the introduction of cash crops, colonial government). The next major impact was the poaching epidemic of the late 1970s and 1980s, when the population of African Elephants declined from 1.3 million to circa. 600 000 (Hamilton, 1987). The 1989 CITES ivory trade ban was largely responsible for halting that decline and allowing populations to stabilize. The most serious issues now facing Elephants are habitat loss (through land-use change), habitat fragmentation, ivory poaching and persecution as crop raiders (Barnes;, 1999). Perversely, associated with increasing habitat loss and fragmentation is a concomitant increase in the human-Elephant interface, and by extension an increase in human-Elephant conflict and persecution.

When across most of Africa habitat loss and local extinction of wildlife is reducing the geographical range of human-Elephant contact (Hoare, 1995), does human-Elephant conflict appear to be on the increase? This question may be answered by a combination of contemporary physical and social conditions which bring humans and Elephants closer together with a simultaneous reduction in tolerance for Elephants (Naughton *et al.*, 1999). These conditions include:

Land-use and geographic changes

- There has been a marked increase in competition between humans and wildlife for land and resources

(Barnes, 1996; Kiiru, 1995). These have led to the expansion of agriculture into land previously occupied only by wildlife and remaining pastoralists are forced into more fragile, marginal areas, increasing habitat degradation and loss.

- Elephants are restricted in smaller areas by habitat loss and poaching. Localized high densities inexorably lead to crop-raiding in surrounding areas (Sukumar, 1990).
- Similarly, human activities (e.g. logging in forests) create abundant secondary vegetation that attracts Elephants, bringing them closer to human settlements (Barnes *et al.*, 1991).
- Artificially maintained water sources attract Elephants during drought (Sukumar, 1990).

Human-induced changes in Elephant behaviour and socio-ecology

- The increase in Elephant numbers in protected areas due to improved anti-poaching measures has led to some Elephants losing their fear of people (Kangwana, 1995).
- Human conflicts displace Elephants which in turn come to depend on crop-raiding to survive in resource poor habitats (Tchamba, 1995).
- In areas where there is intense culling or hunting, Elephants form larger groups, causing greater damage to vegetation and crops (Southwood, 1977).

Socio-economic and political changes in human communities

- State or hunting concession ownership of wildlife, coupled with bans on local hunting decrease tolerance of crop-raiding animals (Hackel, 1999).
- Changes in land tenure, with a trend towards privatization, erode traditional farming strategies based on joint properties and focus the impact of crop loss on individuals rather than communities. Similarly, at many sites farmers have abandoned communal hunting, planting and guarding activities that once reduced crop loss (Lahm, 1996).
- Crop guarding has decreased with men moving to cities to seek employment, while children are increasingly involved in education (Lahm, 1996).
- Politicians are paying more attention to local citizens who complain about crop-raiding, increasing the profile and awareness of conflict (Kangwana, 1995).

2.2 Control of Elephants problems

Live capture

Immobilization is the best method for capturing individual problem Elephants. Modern drugs have a considerable safety margin for this species. This technique requires qualified personnel for capture and after-care (experienced Elephants trackers, expert marksman with dartgun, veterinarian) (Waithaka, 1998).

Translocation

Relocation of Elephants is logistically difficulty, especially when adults are involved. It causes stress. It is better to move a whole herd if possible. The older Elephant's experience of food gathering, seasonal movements, etc., is important to the survival of the herd. Care must be taken not to separate calves from their mothers (Omondi *et al*., 2001)

Driving

A line of beaters or vehicles can drive Elephant herds to the new area. Animals should be driven to the centre of the new sanctuary, not just to the borders. It requires good planning and coordination. Progress is usually slow and it is difficulty to keep the herd together. Drums, firecrackers, buzzing helicopters and all other sudden noises should not be used as they tend to stampede the animals (Chafota *et al.,* 1996).

Buffer crops

When agricultural or forestry projects are planned adjacent to the parks. Crops should be selected that are not attractive to the Elephants. This excludes most human food crops. Cultivations or plantations bordering reserves should be well maintained as Elephants are more likely to venture into poorly-weeded and overgrown areas. (Bell, 1984)

Extermination

Extermination of problem animals is a last resolt. Animals should be killed as humanely as possible by well-trained park staff or marksmen under their supervision. Elephant control should never be left to local police or the army (Olivier, 1977; Child, 1985).

2.3 Summary on literature review

- As the Elephant population is allowed to increase without management intervention, there will be increased dispersal of Elephant into the surrounding communal areas. The human Elephant conflict will therefore be acute and this may result in restricting Elephant movement thus confining them in protected areas resulting in adverse impact on biodiversity.

- Biodiversity conservation inside and outside protected areas should be integrated throughways which will make wildlife conservation an economically viable land use option on local communities residing and living with wildlife in marginal areas. This could be done by taking a step much further than the current community based conservation approaches by focusing more on multispecies animal production systems which integrates wildlife and livestock production systems. Managers attempting to reduce crop damage by Elephants encounter a range of complex technical and social issues. Subsistence farmers bear the costs associated with maintaining wild Elephant populations and this can confound interventions designed to improve the livelihood security of farmers

3.0 MATERIALS AND METHODS

3.1 Descriptions of study area

The study done at Sitalike Village in division of Mtisi in ward of Sitalike located at the edge of Katavi National Park's northern boundary which is 40km (25 miles) south of Mpanda town. The village is situated in Mpanda District in Rukwa Region in the southwest side of the country. Sitalike village has 10 streets includes Kiloleni, Igalukilo, Ilangasika, Kazima, Insitubwike, Igongwe, Kasongwa, Kashelami, Kabenga, and Kambula. Also the village has total of 2958 inhabitants (villagers) where 1471 are females and 1487 are males.

Figure 3 Map of the study area

3.2 Sample size and Sampling framework

A purposive sampling technique was employed in one selected village (Sitalike village). A random sampling technique employed in selecting respondents from the population of households. Sample size of the population interviewed was 31 respondents, whereas 9 were females and 22 males.

3.3 Data collection

Data were collected along 6 days of interview and discussion with households from 15/01/2008 to 20/01/2008..The respondent interviewed includes farmers and workers, women and men. The households were interviewed by using a structured questionnaire. Also discussion with key informants like Village Chairperson, and other village authority leaders.

3.4 Data analysis

Quantitative and qualitative analysis of the data obtained was conducted. Quantitative data from questionnaire were coded and analyzed using SPSS to derive descriptive statistics and frequency tables and qualitative was subjected to content analysis.

4.0 RESULTS AND DISCUSSION

4.1 Demographic characteristics

4.1.1 Sex of the respondents

The demographic characteristic of the sampled population is as presented in Table 4.1., males were dominant,

accounting for 71% of the respondents while female respondents were 29%. This could be linked to the culture of many African societies where males are the family speakers and females are all the time busy with other family matters including collection of fire woods and care after their children hence most families are males headed and they have the overall responsibility to the family including talking with newcomers.

Table 4.1: Sex of the respondents

Sex of the respondents	No. of respondents	Percentage of respondents (N=31)
Male	22	71.0
Female	9	29.0
Total	31	100.0

Data source: Own Field survey, 2008

4.1.2 Age of the respondents

It is clear from Table 4.2 that there are several age groups among the population in Sitalike village. About 45.2%, 35.5%, and 19.4% are the group of people between 21-30 years, 31-40 years and above 40 years respectively. The group of 21-30 years was the group with highest percentage as compared to other groups. This is the group which is most active working group there by it signifying the availability of the potential labour in the Sitalike village for Agriculture and other activity related to production and has family responsibility.

Table 4.2: Age of the respondents

Age of the respondent	No. of respondents	Percentage of respondents (N=31)
21-30 years	14	45.2
31-40 years	11	35.5
above 40 years	6	19.4
Total	31	100.0

Data source: Own Field survey, 2008

4.1.3 Educational level of the respondents

Generally, there are different educational levels in Sitalike village. About 32.2% have not been to school, 61.3, 61.3% have primary education and 6.5% reached Secondary level. As shown in table 4.3. It is however very important to note that at least some people know how to write and read.

Table 4.3: **Educational level of the respondents**

Level of education	No. of respondents	Percentage of respondents (N=31)
Not been to school	10	32.3
Primary level	19	61.3
Secondary level	2	6.5
Total	31	100.0

Data source: Own Field survey, 2008

4.1.4 Occupation of the respondent

Also the results reveal that 87% of the respondent engaging on farming where 6.5% are the workers and other 6.5%are both farmers and workers

Table 4.4: Occupation of the respondent

Occupation of the respondent	No. of respondents	Percentage of respondents (N=31)
Farmer	27	87.1
Worker	2	6.5
Both	2	6.5
Total	31	100.0

Data source: Own Field survey, 2008

4.2 Agriculture activity

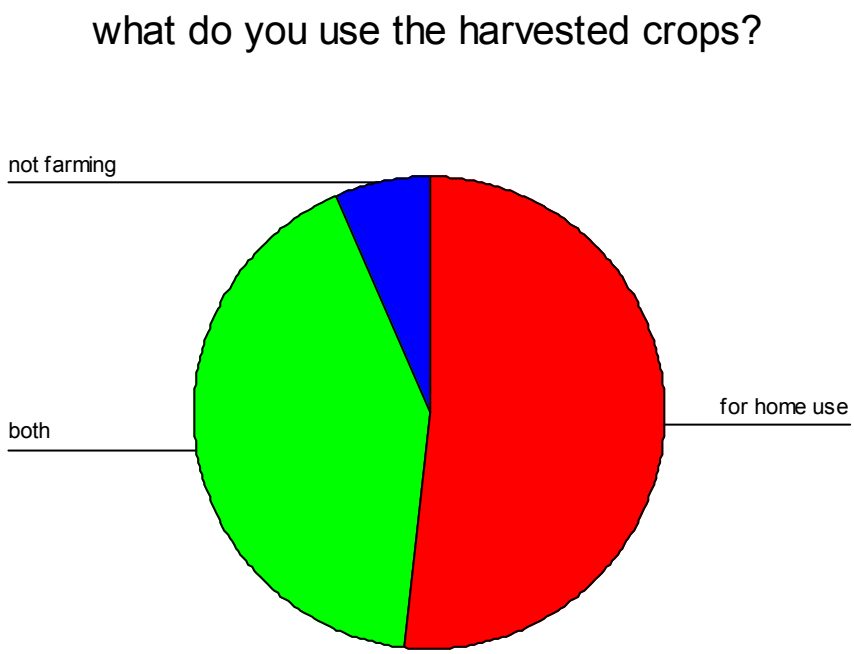
In Sitalike village agriculture is seasonal and most crops are food crops and are grown during the rain season of the year as shown in the table below.

Table 4.5: Agriculture activity

Type of crops	No. of respondents	Percentage of respondents (N=31)
Food crops	29	93.5
Not farming	2	6.5
Total	31	100.0

Data source: Own Field survey, 2008

Types of food crops grown by Sitalike villagers are Maize, Rice, Cassava, Sweet potatoes, Groundnuts, and Pumpkins. Most crops are grown for subsistence (home use) as proved by 51% of the respondents where 41% grows for both home use and business. Such crops include cassava and rice which are sold in Mpanda town.



Data source: Own Field survey, 2008

Figure 4.1 Responses on the use of harvested crops

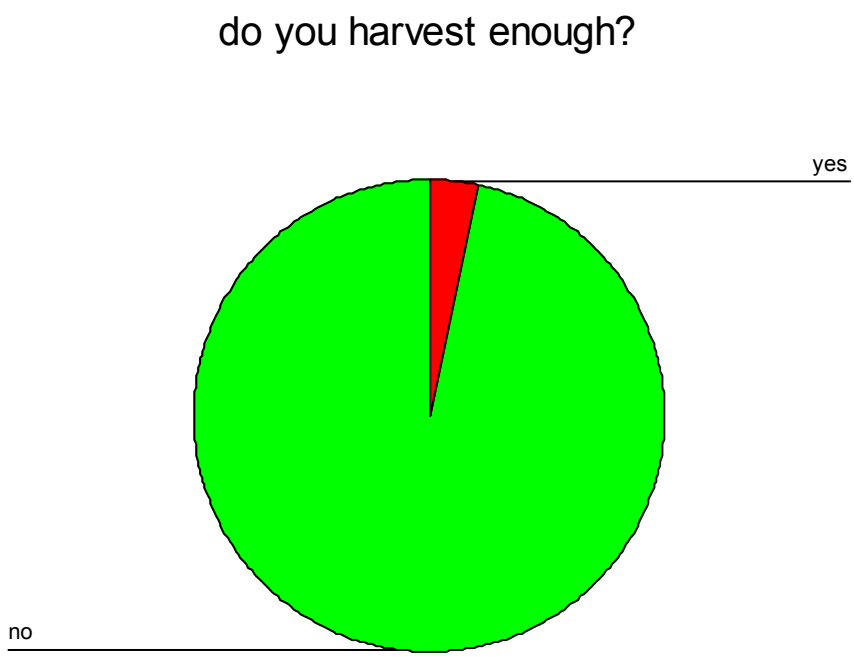
Also the study revealed that Sitalike farmers are small scale farmers where the mean size of the respondent's farm plot is 2.74 hectares and maximum farm plot is 5 hectares due to the fact that 6.5% don't have farm plots 12.9% of the respondents have 1 hectares farm plots, 22.6% of the respondents have 2 hectares farm plots, 25.8% of the respondents have 3 hectares farm plots, 22.6% of the respondents have 4 farm plots, and 9.7% of the respondents have 5 farm plots as shown in table 4.6 below

Table 4.6: Farm plot sizes of the respondents

the size of the farm farm	Frequency	Valid Percent
0 Hectares	2	6.5
1 Hectares	4	12.9
2 Hectares	7	22.6
3 Hectares	8	25.8
4 Hectares	7	22.6
5 Hectare	3	9.7
Total	31	100.0

Data source: Own Field survey, 2008

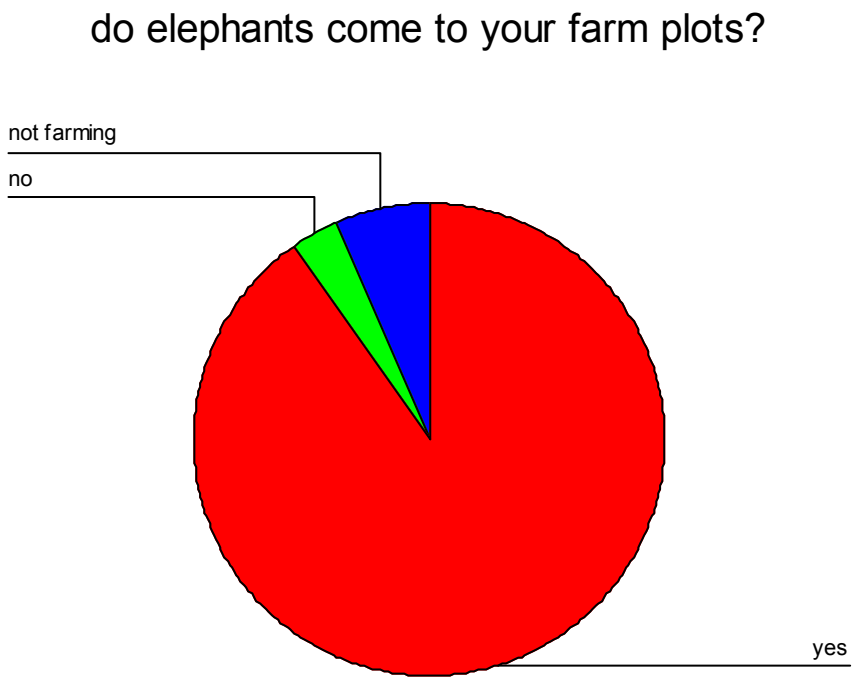
Apart from having farm plots villagers still complain that they don't harvest enough as per their plan due to many factors (i.e. lack of capitals, lack of fertilizers, and plant diseases like maize streak etc) but the major one is Elephant's invasion to their farm plots as presented in Figure 4.2 below.93.8% of the respondents had it that they do not harvest enough while the other 3.2% harvest enough.



Data source: Own Field survey, 2008
Figure 4.2 Responses on if the amount harvested is enough

4.4 Crops damage

The nature and extent of crop damage experienced in Sitalike village was explored through interviewing and discussion with the community. Respondents were asked to prove the invasion of Elephants on their farm plots and also to mention the crops damaged, seasons, and the time preferred by Elephants to invade including



Data source: Own Field survey, 2008
Figure 4.3 Elephants comes to the farm plots

It was revealed that 90.3% of the respondents agree that it is true that Elephants used to come in their farm plots while the other 6.2% says no and other 6.5% are not farming at all. Elephant's disturbances were discussed in more detail and the crops damaged by Elephants were ranked according to the frequencies of the damage to the

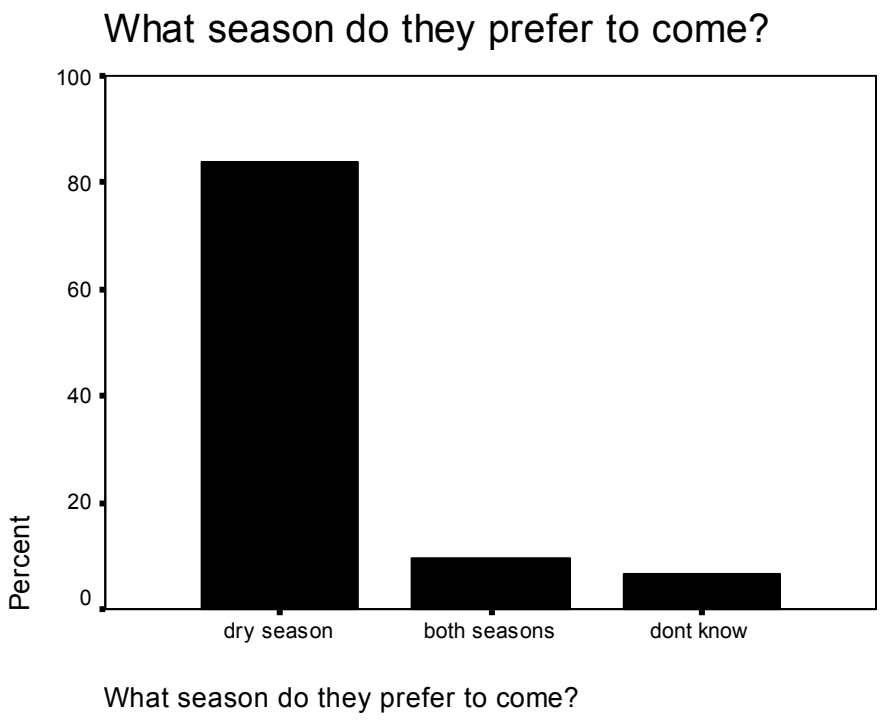
farmers. Maize and Cassava were the crops considered to be frequently damaged by Elephants. This was because Maize and Cassava represent one of the few trading opportunities for farmers. Hence are the most common crops in Sitalike village followed by potatoes, rice, and ground nuts as presented in the Table 4.7 below.

Table 4.7. Type of crops damaged

Type of crops damaged	No. of respondents	Percentage of respondents (N=31)
Maize	8	25.8
Maize and cassava	8	25.8
cassava and potatoes	1	3.2
potatoes, ground nuts and maize	1	3.2
Maize and groundnuts	4	12.9
Maize and rice	2	6.5
rice and potatoes	1	3.2
Maize, potatoes and rice	1	3.2
rice and cassava	1	3.2
Rice	1	3.2
Total	31	100.0

Data source: Own Field survey, 2008

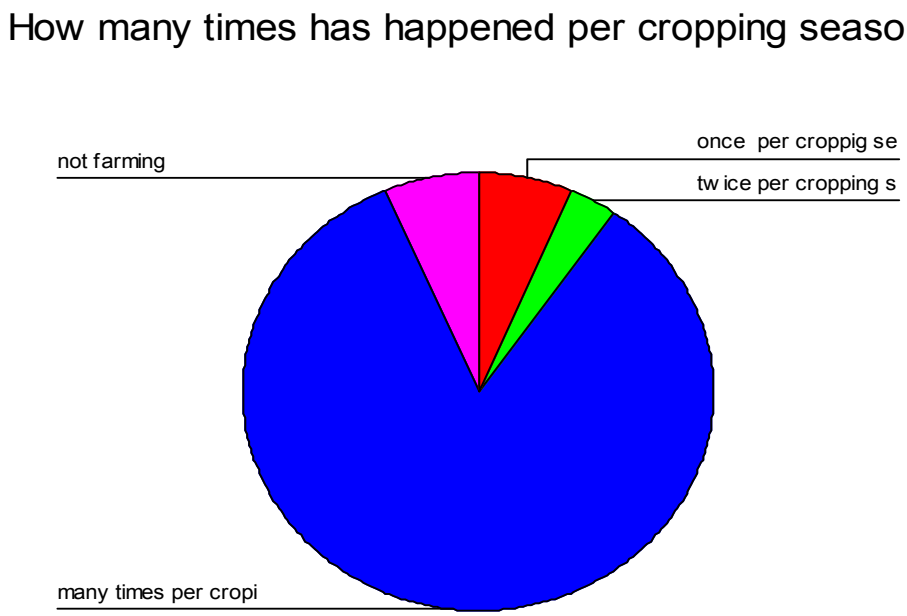
The Elephant disturbances does not occur throughout the year but occur in the seasonal pattern of the year where by 83.9% of the respondents said it occurs in dry season of the year where by 9.7% said it occurs in both dry and rain season which means that Elephants disturbances normally occur in dry season of the year and few cases seen in the rain season of the year. Some suggest that disturbances occur in the dry season during the flowering of mangoes. Also before farmers' harvest their crops from May to September every year as presented in the Figure 4.4 bellow



Data source: Own Field survey, 2008

Figure 4.4 Season in which Elephants prefer to come

Also it revealed that 83.9% of the respondents prove that the Elephant's disturbances have no regular pattern in the cropping season hence it occurs many times per cropping season. Where 6.5% of the respondent experience once per cropping season and 3.5% of the respondents experiences twice per cropping season.



Data source: Own Field survey, 2008

Figure 4.5 Times in which Elephant's disturbances happens per cropping season

Data source: Own Field survey, 2008

Figure 4.6 Time in which Elephants normally come

The study revealed that 93.5% of respondents experience Elephant's disturbances every night during cropping season while some suggest that Elephant's disturbances can not be avoided. They believe that Elephants invade the village searching for food, and sometimes it happens when they migrate to the other areas of the park. Other respondents associate the invasions to being closer to the park, The increase in elephant numbers in protected areas following the establishment of Katavi National park and improved anti-poaching measures which had led to some elephants losing their fear of people this said by some of the respondents.

Table 4.8 Proposed ideas on why do Elephants come

Proposed ideas on why do they come	No. of respondents	Percentage of respondents (N=31)
searching for food	11	35.5
don't know	11	35.5
Because there is no hunting	3	9.7
migrate to other areas of the park	1	3.2
the village is near by the park	4	12.9
part of their movements	1	3.2
Total	31	100.0

Data source: Own Field survey, 2008

Also the farmers were asked to express the extent of the loss due Elephants on their farm plots. Generally the case was found to be serious when compared with the size of the farm plots relative to the amount that loss due to Elephants invasions. The mean amount lost 1.4 hectares is almost a half the mean size of the farm plots 2.7 hectares per each respondent. The same applied to the sum of the hectares loss due to Elephants invasions (43.8 hectares) is almost a half of the total size of the villager's farm (85 hectares).(Table 4.9).

Table 4.9 Sizes of farms vs. amount loss caused by Elephants

Parameter	what is the size of your farm?	what is the amount of loss caused by those elephants?
Mean size of the farm	2.7419	1.411
Mode size of the farm	3.00	1.0
Minimum	.00	.0
Maximum size of the farm	5.00	3.0
Sum size of the farm	85.00	43.8

Data source: Own Field survey, 2008

4.5 Other impacts

Apart from the agriculture impacts resulted by Elephant's disturbance also there other problems addressed by villagers during discussion like human injury and deaths including restricting people's movements where they act as barrier of to and from movement of people for their daily activity hence hinder provision of social services and village developments in general. Also Elephants used to broke houses and food stores, falling of trees and infrastructures and other structures and any features that would seem to be an obstacle to their movements and destroy other property as summarized in the Table 4.10.below

Table 4.10 Other impacts resulted by Elephants

Category	No. of respondents	Percentage of respondents (N=31)
human injury or death	1	3.2
disturbances people movements	2	6.5
falling of trees and infrastructures	2	6.5
human injury/dealth and restrict people's movements	26	83.9

Data source: Own Field survey, 2008

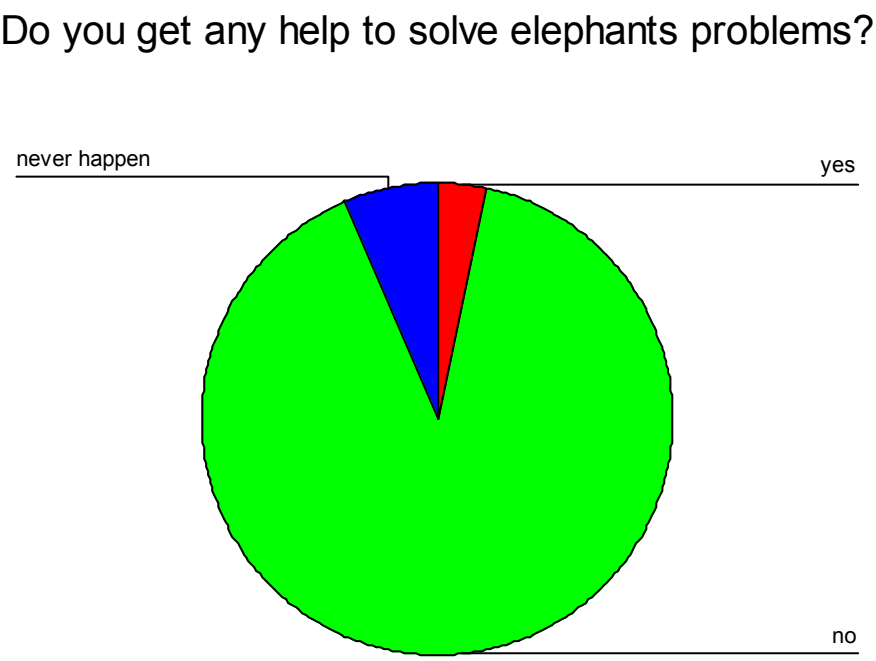
This study revealed that not only the Sitalike village that experience the Elephant's disturbances there are other villages that are located near by the Sitalike village and the Katavi NP also which includes Matandalani, Kibaoni, Situbwike, Mpimbwe, Mirumba, Sibwesa, Makutanio, and Mkumbi. as summarized in the table bellow:

Table 4.11 Other villages affected

Other village affected	No. of respondents	Percentage of respondents (N=31)
dont know	14	45.2
matandalani	8	25.8
kibaoni	2	6.5
kibaoni and matandalani	2	6.5
matandalani and situkwike	1	3.2
mpimbwe	1	3.2
mirumba and sibwesa	1	3.2
makutanio	1	3.2
mkumbi	1	3.2

Data source: Own Field survey, 2008

Hence the Elephant's disturbances are so relevant in Sitalike village and their impacts seems to go beyond their ability to solve them as the fact that they got no help from no where as revealed from this study as 90% of the respondents prove that they got no help from no where hence this make problem animal control to be difficulty.



Data source: Own Field survey, 2008

Figure 4.7 Is there any help to solve Elephants problems

4.6 Control of the problems

The study shows that farmers attempted to chase Elephants from their farm plots during the wet season by ringing bells (noise making), making fire and throwing to them, beating them with shrubs and drumming. Each individual farmer is responsible for his/her own crops, and there is no coordinated effort at crop protection. Also the workers of the Katavi national park living in the village they don't have a field in the village where most crop raiding occurs, and so crop protection does not receive their support. While the village authority leader shows more interest it is clear that a wider cooperative approach by the village is less likely in the short term than individual farmer responses.

Table 4.12 Responses on the means used to chase Elephants

how do you chase elephants	No. of respondents	Percentage of respondents (N=31)
ringing bells(noise making)	12	38.7
making fire and throwing to them	5	16.1
beating with shrubs	2	6.5
drumming	2	6.5
not chasing	10	32.3

Data source: Own Field survey, 2008

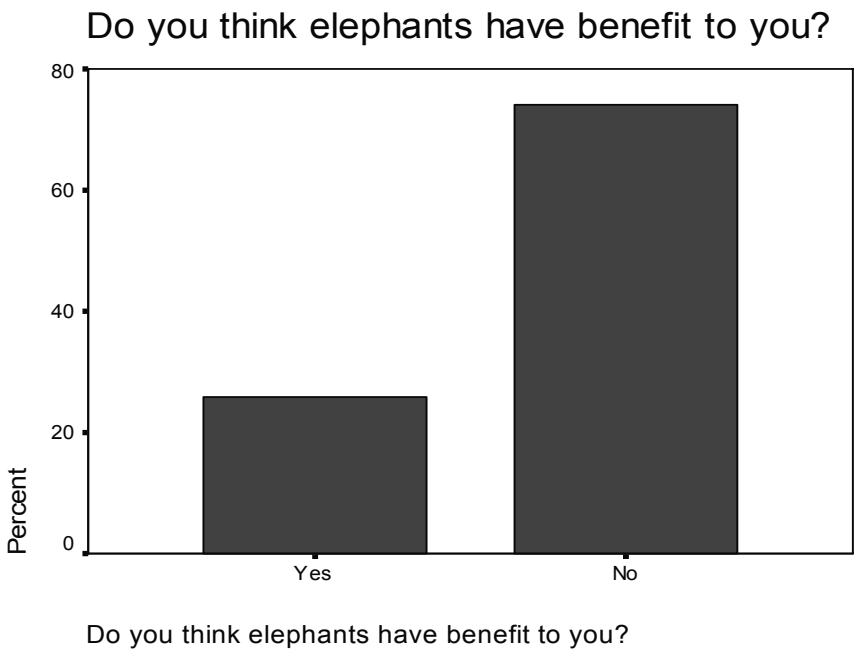
Also during interviewing and discussion with villagers they had something to contribute to reduce such problems by suggesting there should be increased communication with Wildlife Division and the village authority should train village scouts, also they ask the government to introduce compensations to the loss resulted by Elephant's disturbances includes human death and agriculture crops by providing financial support and also they ask government to help to chase Elephants when they come to the village as summarized in table 4.13

Table 4.13 Responses on what should be done to minimize this problems

What should be done to minimize the problems	No. of respondents	Percentage of respondents (N=31)
Increased Communication with wildlife division	1	3.2
Wildlife division compensates for human deaths	7	22.6
Government should help to chase problem Elephants	7	22.6
I don't know	3	9.7
Wildlife division should compensate for agr.loss	13	41.9

Data source: Own Field survey, 2008

4.6 Attitude of people toward wildlife conservation



Data source: Own Field survey, 2008

Figure 4.8 Responses on benefits gained from Elephants

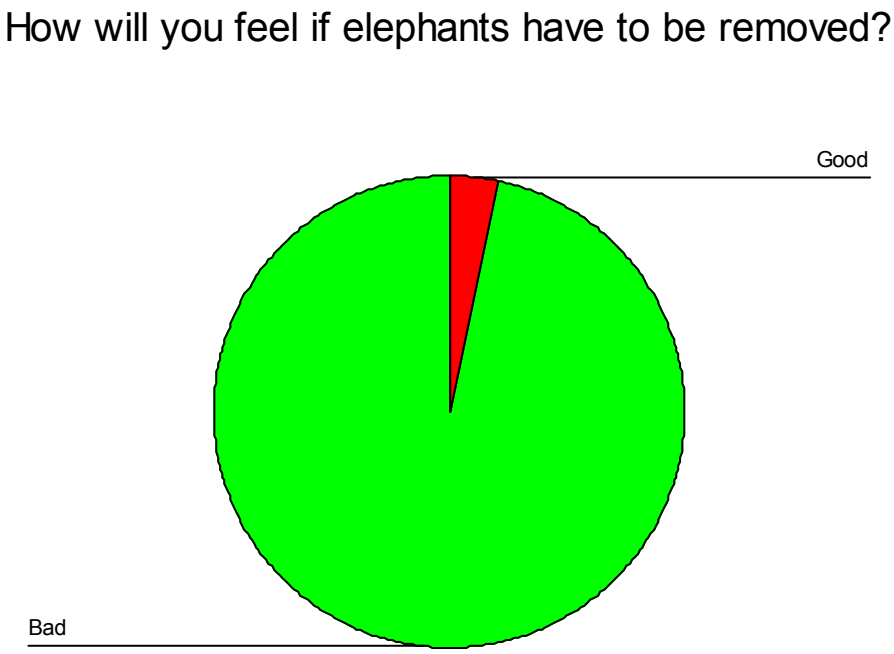
The study identified that 74% of the respondent have not realized both tangible and intangible benefits brought by elephants as they perceive that elephants cause hunger, source of destruction of property.
As the fact that they got no assistance from any where to reduce the problem elephants and the absence of compensations to any loss or damage resulted by problem animal either in people's life (kill people) or property.
The rest 25% of the respondent realize the benefits brought by elephants as the perceive that they bring money through tourism hence they increase national income, some says that apart from tourism they create job

opportunity (Employments) due to the facts that some of the villagers have been employed in the Katavi National Park and other social services they got from the park authority like building secondary school, village dispensary and water services etc.

Table 4.14 Type of benefits earned from Elephants

Type of benefits	No. of respondents	Percentage of respondents (N=31)
brings money through tourism	8	25.8
cause hunger	8	25.8
we got no assistance to reduce this problems	4	12.9
cause death to us	3	9.7
destruction of property	7	22.6
increase employments	1	3.2
Total	31	100.0

Data source: Own Field survey, 2008



Data source: Own Field survey, 2008

Figure 4.9 Responses on if Elephants should be removed

This study also identified that 96.8% of the respondent have positive attitude on the Elephant's presence on their local area.

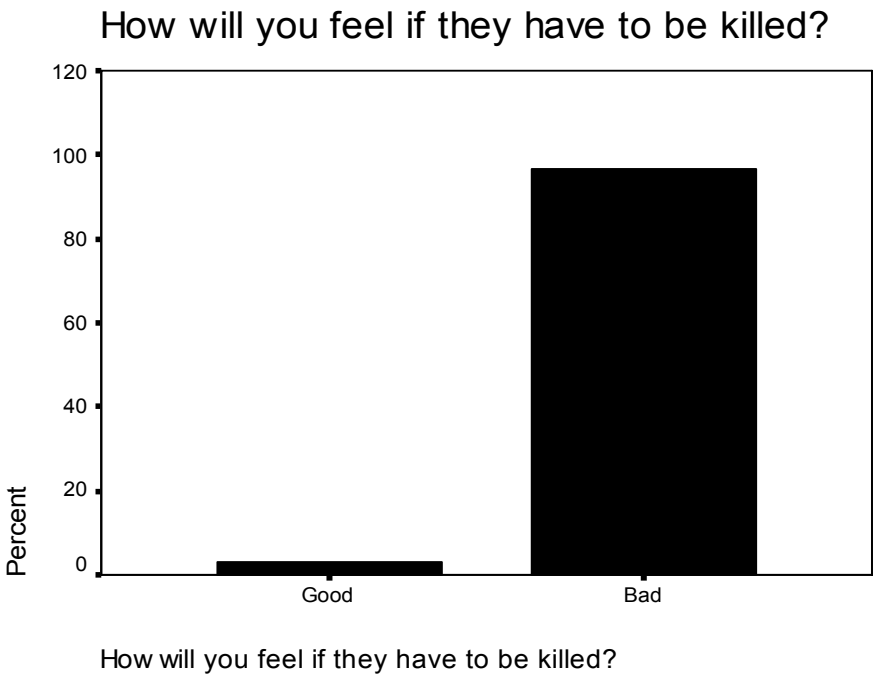
As they says that they'll feel bad if Elephants will be removed from their local area hence they believe that if this done some of villagers will lost their jobs, also will affect the tourism sectors (minimize the national income) and compromise the future generations of their area to enjoy them and learn about them.

Some suggest that if they have to be removed it will not be fair to them because not all elephants are bad but some are innocent. And 6.5% of the respondents says they will feel good if elephants should be removed as they believe that their harvest will increase as they perceive that elephants reduce their harvest.

Table 4.15 What could be if Elephants have to be removed

If elephants have to be removed	No. of respondents	Percentage of respondents (N=31)
It will affect income through tourism	21	67.7
some villagers will lost their jobs	2	6.5
they should be conserved for future generation	6	19.4
my harvest will increase	2	6.5
Total	31	100.0

Data source: Own Field survey, 2008



Data source: Own Field survey, 2008

Figure 4.10 Responses on If Elephants should be killed

The study shows that 96.8% of the respondents have the positive attitude on the Elephant's existence as they say that they'll feel bad if Elephants have to be killed. Since they perceive that by doing so it will compromise the right of the future generation to enjoy the richness left to us by our forefathers.

Also some says that not all Elephants are bad to us some are innocent so by doing so it wont be fair to them and it against conservation ethics and by killing them it may affect tourism because the country depend more on tourism. And some says that they would lose their jobs.

About 3.2% of the respondents says they will feel good if all elephants would be killed because their harvest will increase.

Table 4.16 what could be if Elephants have to be killed

If elephants have to be killed	No. of respondents	Percentage of respondents (N=31)
It will affect income through tourism	17	54.8
some villagers will lost their jobs	1	3.2
they should be conserved for future generation	12	38.7
my harvest will increase	1	3.2
Total	31	100.0

(Data source 2008)

The results shows that local people dwelling in Sitalike village however they recognize that Elephants has no benefits to them but they still have positive attitude toward them.

5.0 CONCLUSION

This study documented the existence of Elephants disturbances around Sitalike village. It has shown that there are both spatial and temporal patterns in crops raiding by Elephants .But more importantly it has demonstrated that local community are willing to collaborate with any authority so as to address this problems.

6.0 RECOMMENDATIONS

In summary Elephant's disturbances occur in Sitalike village band other villages mention in results above. Crop damage by Elephants differ both spatially and temporally it can not be assumed that the greater raids frequency will mean a greater damage.

What is the damage of Elephants on agriculture crops in Sitalike Village?, What are the effects of Elephant's disturbances on people's livelihoods?, In what time by seasons do the Elephant disturbances occur? And what is the attitude of people on wildlife conservation? Are the questions answered in this project.

Based on the patterns observed there are several things that management can consider in terms of long and short term mitigation measures

Increase patrols

During times of the year when Elephants to crop raids, based on the pattern observed this may involve the increase the number of park rangers at a particular times of the year at the ranger posts closest to the Sitalike village which may be facing the frequent crop raiding incidents.

Consider the causal factors carefully

After analysis of some factors will come out as having predictive powers than the others and some of these may be manipulated by Park management and village authority if attempts to reduce Elephants disturbances.

Test mitigation measures

Currently farmers are using direct measures such as making noises, throwing stones, sometimes calling game scouts to deter Elephants with gun shots. These need to be considered for example fences, and ditches work in some study sites but may not be appropriate or applicable to the Katavi National park context but have to be considered and explored.

Implementation of alternative crop growing regimes

These alternative mitigation methods have been shown to work in some study sites. Planting crops that may be harvested earlier or later than the time Elephants are expected to raid. Planting crops that may not be affected by Elephants such as Chilli or Sesame changing the areas that that certain crops are planted, such as not planting corn close to the boundary. It might be necessary to consider buffer zones, given that some farms are within 1000metres from the park boundary.

More needs to be done before these problems can be properly addressed. Pattern of Elephant's disturbances have been observed and documented but more works need to be undertaken before we can understand these patterns or make effective changes to reduce this problems.

- We need to analyze the list of causal and test them for their predictive values.
- We need to asses spatial factors using our Geographical information Systems (GIS)
- We need to assess the current mitigation methods for their effectiveness and begin to explore and implement the testing of the alternative methods.
- We need to undertake a multiple year study , research has shown that there is significant variation of Elephants disturbances between years , thus this one year study may not be enough to fully understand the pattern of this conflicts.

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5.2 QUESIONAIRE.

A. HOUSEHOLD CHARACTERISTICS.

1. Division…….
2. Ward……..
3. Village……..
4 .Date of Interview……..
5 .Name of respondent……
6. Age of respondent
   i.10 to 20 years =1
   ii.20 to 30 years =2
   iii.30 to 40 years =3
   iv.40 and more years =4
7. Gender/sex of the respondent
   1=male
   2=female
8. Highest level of education attained by the respondent
   1=Primary level 1-7.
   2=Secondary level
   3=Secondary level Advanced level
   4=Diploma level
   5=Degree level
   9=others (specify).
9. Occupation of the respondent
   1=farmer.
   2=Worker
   3=Both
10. What is the size of your family? …….
11. How long have you been in this village? ……..

B.AGRICULTURE ACTIVITIES

12. Do you farm?
    1= Yes
    2= No
13.If yes! What type of crops do you grow?
14. What size of the farm?
15. Do you harvest enough?
    1= For sale.
    2= For home use
    3= For both

C. ELEPHANT DAMAGE

16. Do elephants come to your agriculture plots?
    a. Yes
    b. No
17. If Yes! What are the types of crops damaged? .....
18. What is the amount of loss caused by those Elephants? .....
19. How many times has this happened?
    a. Few times.
    b. Many times.
20. At what time are they prefer to come?
    a. day time.
    b. Night time.
    c. Both times.
21. What season do they prefer to come?
    a. Rain season.
    b. Dry season.
    c. Other season! Specify …….
22. Do you have an idea why do they come? .....
23. What are the other problems they cause apart from raiding?
    a. Human injury or death.
    b. Livestock injury or death.
    c. disturbance people movements.
    d. Destruction of water points.
    e. Falling the buildings and infrastructure.
    f. Others specify.
24. What do other village affected apart from your village?
25. Do you get any help to solve it?
    a. Yes.
    b. No
26. If Yes! Where do you get this help?
    a. Park rangers.
    b. Villagers.
    c. Others specify
27. What kind of help do you get?
    a. Monetary.
    b. Kill the raid elephant.
    c. Chasing by rangers.
    d. Food materials.
    e. Other specify.

D. CONTROL OF THE PROBLEM

28.1. Do you chase elephants?
    a. Yes.
    b. No.
28.2. If yes! How? ……..
29. In your opinion what should be done to minimize this problem? .....

E. ATTITUDE OF PEOPLE

30.1. Do you think elephant have benefit to you?

a. Yes.

b. No.

30.2.How. ……..

31.1. How will you feel if elephant have to be removed?

Good, Bad, Neutral

31.2. Explain……

32.1. How will you feel if they have to be killed?

Good, Bad, Neutral

32.2. Explain……..

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