

## EVALUATION OF WILDLIFE PESTS ON RURAL FARMS IN GUMA AND GWER-EAST LOCAL GOVERNMENT AREAS OF BENUE STATE, NIGERIA

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### ABSTRACT

*The study evaluated the challenges confronting farmers as a result of wildlife attack on rural farms in Guma and Gwer – East Local Government Areas of Benue State. Two villages (Igbor and Abinsi) were purposively selected for the study because of their high rate of farming activities. Data was collected with the aid semi-structured household questionnaire administered randomly to fifty (50) heads of household in each study site. The results were analyzed using frequency of counts, percentages and student t-test. Collard sunbirds (*Nectarinia cuprea*), grass-cutter (*Thryonomys swinderianus*), Nile rat (*Arvicanthis niloticus*) and redtailed monkey (*Cercopithecus ascanius*) were the most disturbing crop raiders (pests) as indicated by 13%, 25%, 12% and 6% of respondents respectively. However, 13% of the respondents could not ascertain the most destructive wildlife on their farms. There was no significant difference ( $P \leq 0.05$ ) between Igbor and Abinsi in relation to pest type. The study also revealed that farmers in the area control wildlife pests by use of chemical (40%), mechanical (33%) and biological (18%) methods. Only 9% pests were involved in direct killing. Human-wildlife conflicts could possibly be resolved as reported by respondents through mixed farming, agro-forestry practices and wildlife conservation education. This perhaps could reduce the unnecessary destruction of wildlife habitats and human food resources.*

**Keywords:** Conservation, wildlife pest, raid, conflict, habitat.

### INTRODUCTION

Many wild animal species can be regarded as pests because of their negative attributes to the process of human resources management (Tisdell and Xiang, 1998). Pests are commonly considered to be insects, rodents, nematodes, birds, snails, slugs and any form of plant or animal life or pathogenic organisms that are injurious or potentially injurious to plants and their products, livestock and people (Africa Recovery, 2001). Wildlife species that have become agricultural pests present a wide spread problem throughout Africa, particularly in Nigeria (Else, 1991). In Africa and Asia, primates as wild animal pests, account for over 70% damaged crops because of their intelligence,

opportunism, adaptability and manipulative abilities in crop foraging.

Expansion of human population, particularly in the biologically rich developing areas has brought conflicts between wild animals and their crops. This poses a major threat to wildlife especially primates co-habitation with human. Crop raiding by wildlife species is neither a new phenomenon nor a rare one. In many parts of rural Africa and Asia, it is considered to be an increasingly serious issue to farmers, conservationists and developers (Daniba and Ables, 1993). Wildlife species as pests are often involved in crop raiding in most part of Nigeria, particularly the middle belt where most rural dwellers are farmers.

The wild animals often involved in crop raiding include primates, rodents, bush pigs, porcupines

and birds, among others. These animals destroy a variety of crops including maize (*Zea mays*), sweet potatoes (*Ipomea batatas*), rice (*Oryza sativa*), cassava (*Manihot esculenta*), beans (*Phaseolus vulgaris*), groundnuts (*Arachis hypogaea*), cocoa (*Theobroma cacao*) and sugar cane (*Saccharum africanum*) as reported by Sentayi (2002).

This study was aimed at assessing the challenges confronting farmers as a result of wildlife attack on rural farms in Ighor and Abinsi in Gwer East and Guma LGAs of Benue State.

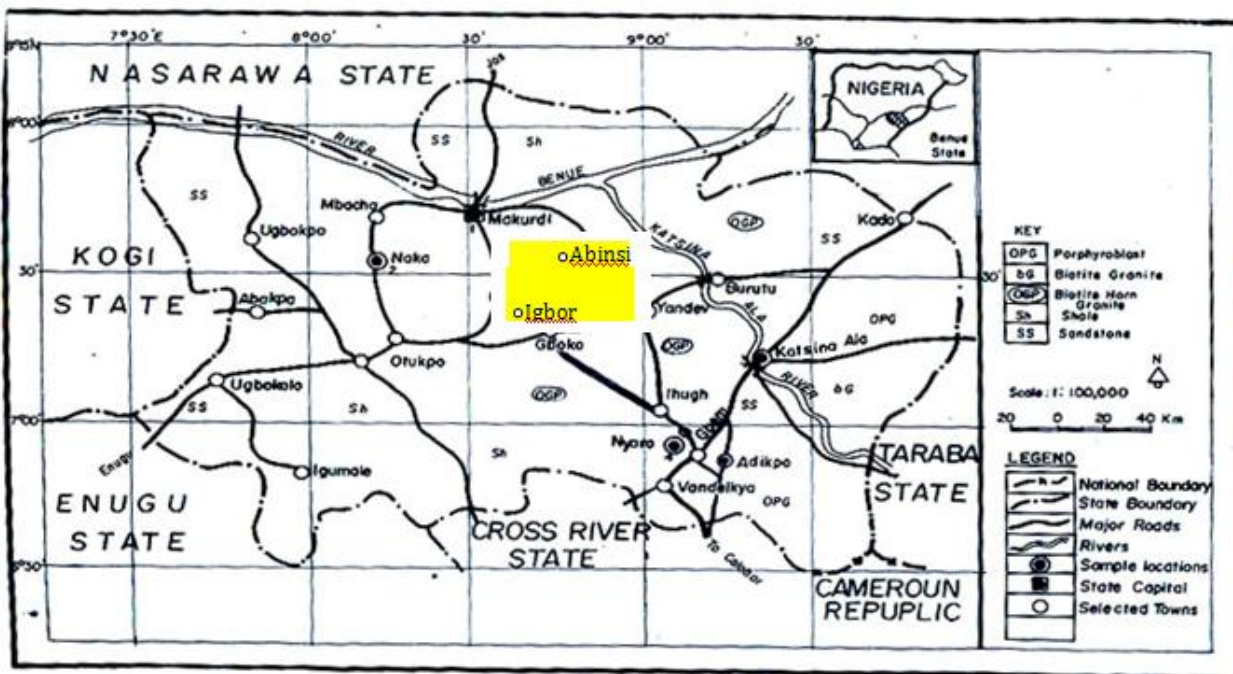
## METHODOLOGY

### Area of study

This study was conducted in selected rural farms of Abinsi in Guma and Ighor in Gwer-East Local

Government Areas of Benue State, Nigeria. The inhabitants of the area are predominantly farmers of Tiv ethnic group. The area is geographically located between latitudes  $6^{\circ}25'$  and  $8^{\circ}8'N$ , and longitudes  $7^{\circ}47'$  and  $10^{\circ}0'$  (Nyagba, 1995).

The areas lie within the Southern Guinea Savannah belt, and most of the original forests have disappeared. The natural vegetation is characterized by a mosaic of secondary forests and savannah with rolling hills ranging between 150m and 300m above sea level. The grassland is induced by bush burning and vegetation removal as a result of crop farming. Two distinct seasons identified in the area are the rainy (April to October) and dry (November to March) while temperature fluctuates between  $27^{\circ}C$  and  $37^{\circ}C$  in the year.



The study Areas.

Fig 1: Map of Benue State showing the study Areas (Ighor and Abinsi)

### Sampling method

The study was carried out using household survey questionnaire using Random Sampling Technique of fifty (50) households in five villages each surrounding Abinsi and Ighor towns. Data generated from questionnaire were augmented with in-depth interviews with stakeholders. Indigenous interpreters from the study areas were employed to assist in this case.

Direct field observation in farms was also used as additional tool in gathering authentic information

on wildlife pest occurrence in the study areas. This method was consistent with that used by Warren (2003); Weladji and Terhamba (2003) in studying human wildlife conflicts in protected areas.

Data obtained was analyzed using descriptive statistics and student t- test.

## RESULT AND DISCUSSION

Table 1 shows the common crops destroyed by wildlife pests in the study areas. The results revealed that Maize (*Zea mays*), sugar cane (*Saccharum africanum*), Okro (*Abelmoschus esculentus*), Groundnut (*Arachis hypogaea*)

soya beans (*Glycine max*) and Potatoes (*Solanum tuberosum*) were not common in Igbor as compared to Abinsi while Spinach (*Spinacia alerace*) was not common in Abinsi as compared to Igbor. This could be attributed to soil variation and the farmers' interest for not cultivating them.

**Table 1:** Common crops destroyed by pests in the study Areas.

Common Name	Scientific Name	Abinsi	Igbor
Rice	<i>Oryza sativa</i>	+	+
Maize	<i>Zea mays</i>	+	-
Water yam	<i>Discorea alata</i>	+	+
Guinea corn	<i>Sorghum bicolor</i>	+	+
Cassava	<i>Manihot esculenta</i>	+	+
Sugar cane	<i>Saccharum africanum</i>	+	-
Okro	<i>Abelmoschus esculentus</i>	+	-
Groundnut	<i>Arachis hypogaea</i>	+	-
Potato	<i>Solanum tuberosum</i>	+	-
Soya bean	<i>Glycine max</i>	+	-
Beniseed	<i>Sesamium indicum</i>	+	+
Spinach	<i>Spinacia aleracea</i>	-	+

Source: Field survey (2015)

**Note:** + = pest present  
- = pest absent

Table 2 shows common wildlife pests found in the Abinsi and Igbor. It was observed that the entire pests identified in Abinsi were also found in Igbor with the exception of Nile rat

(*Arvicantis niloticus*). This is probably because the two study areas are in the same geographical/vegetation zone.

**Table 2:** Common wildlife pests destroying crops in the study Areas.

S/N o.	Common Names	Scientific Names	Abinsi	Igbor
1.	Nile rat	<i>Arvicantis niloticus</i>	+	-
2.	Collard Birds	<i>Netarina cuprea</i>	+	+
3.	Rabbit	<i>Capensis cuniculus</i>	+	+
4.	Grass cutter	<i>Thryonomys swinderianus</i>	+	+
5.	Grasshoppers	<i>Locusta migratoria</i>	+	+

**Note:** + = pest present  
- = pest absent

Table 3: Relative abundance of wildlife pests in Abinsi and Igbor

Variables	Options	Both		Abinsi		Igbor	
		F	%	F	(%)	P	(%)
Animals identified as pest	Grass-cutter	54	54.00	22	44.00	32	64.00
	Birds	28	28.00	23	46.00	5	10.00
	Squirrel	2	2.00	2	4.00	0	0.00
	Monkey	10	10.00	0	0.00	10	20.00
	Others	3	3.00	0	0.00	3	6.00
	<b>Total</b>	<b>100</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>50</b>	<b>100</b>
Types of Invasive animals	Termites	5	5.00	5	10.00	0	0.00
	Rodents	44	44.00	17	34.00	27	54.00
	Birds	38	38.00	26	52.00	12	24.00
Ever Experienced animal invasion?	Yes	96	96.00	49	98.00	47	94.00
	No	4	4.00	1	2.00	3	6.00
	<b>Total</b>	<b>100</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>50</b>	<b>100</b>
Most destructive animals	Grass-cutter	25	25.00	12	24.00	13	26.00
	Giant rat	12	12.00	7	14.00	5	10.00
	Birds	37	37.00	26	52.00	11	22.00
	Squirrel	2	2.00	2	4.00	0	0.00
	Monkey	6	6.00	1	2.00	5	10.00
	Others	13	13.00	0	0.00	13	26.00
	<b>Total</b>	<b>100</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>50</b>	<b>100</b>

Table 3 shows relative abundance of wildlife pests in Abinsi and Igbor. High number of respondents (54%) believed grass-cutter (*Thryonomys swinderianus*) was the most destructive and more abundance, while 28% of the respondents admitted that birds (*Aves*) were strong pests and relatively less in abundant in the study areas.

However, 10% indicated monkeys as pests on their rural farms, while 2% identified squirrel (*Urocyon richardsomi*) as pests and only 3% could not justify the type of animal that encroached into their farms.

Furthermore, 44% of the respondents agreed that rodents invaded their farms, while 38% believed that birds were the most invasive animals on their farms. However, 5% noted that termites were their crop destructive pests. Overall, 3% were unable to account for the pest activities on their farms.

Moreover, in ranking the animal pests, 37% believed birds (*Aves*) were the most destructive, while 25% agreed that grass-cutters were the second most destructive. However, 12% argued that Nile rat (*Arvicanthis niloticus*) were the third most destructive. Unfortunately, 13% of the respondents could not ascertain the most destructive animals on their farms.

Results from the t-test analysis (table 4) shows that there was no significant difference between the study areas. This means that rodent was recognized as a destructive pest in the study areas with  $3.30 \pm 0.15$  and  $3.80 \pm 0.13$  respectively. Birds were significantly considered as more destructive pests in Igbor than Abinsi with  $3.30 \pm 0.15$ . Primates as well were identified as pests in the study areas with the P-value is less than 0.05.

**Table 4:** T-test for major wildlife pests identified in Abinsi and Igbor

Variables	Rodent	Birds	Primates	Cattle	Pigs
Abinsi	3.30±015	3.30±0.15	2.40±0.16	1.70±0.21	2.20±025
Igbor	3.80±0.13	2.30±0.15	1.7±0.21	2.10±0.23	2.20±0.20
P-value	0.02	0.01	0.02	0.22	1.00

Note: Values of Individual decision  $4+3+2+1/4=2.5$

Factor with means greater than/equal to 2.5 is accepted and those less than 2.5 is rejected.

Table 5 shows effects of damaged done on the farm produce and control measures adopted by farmers. The most damaged farm produce by pests was rice (*Oryza sativa*) (30%) while 24% argued that maize (*Zea mays*) was the most damaged farm produce on their farms. Similarly, 22% agreed that yam (*Dioscorea spp*) was mostly damaged by wildlife pests. However, 19% reported that cassava (*Manihot esculenta*) suffered serious damage by the animal pests with no exceptions to soya beans (*Glycine max*) and sugar cane with 2% and 3% respectively.

About 42% of the respondents believed that the percentage of damage done on their rural farms was between 10% - 20%, while 5% only claimed that damage done by the animal pest was above 70%. However, 38% reported that wildlife pests attacked their farms during germination period, while 12% claimed that the attack was on farm produce. Also, the attack by shoot-cut constituted 42% while 36% explained that buds were eaten up. Overall, 53% admitted that pests' attacks were severe and 6% could not ascertain the rate of damage.

Nevertheless, 14% believed that the trend of attack was on the increase for the past three years while 6% agreed that the trend was fluctuating under the period. Considering methods of wildlife pest control, 40% of respondents used chemicals to

control animal invasion, while 33% and 9% made use of mechanical and biological method respectively.

## DISCUSSION

The evaluation and effects of wildlife pests on rural farms in Igbor and Abinsi appeared to be similar. This could be due to the fact that the two study sites grow almost the same types of crops, and also lying within the same ecological zone. There were losses of farm produce in both Abinsi and Igbor and these accounted for reasonable decreased in revenue and food security by rural farmers.

Generally, birds (*Aves*) were the most destructive invasive wildlife animal pests followed by Grass-cutter (*Thryonomys swinderianus*). However, rodents were reported to be the least destructive animals. This was in line with findings of Joshi and Sabastian (2000) who believed wildlife pests constitute 70% loss of farm produce in rural farms. The result also revealed that animal pests were more prevalent in Abinsi than Igbor as more farms in Abinsi were damaged as compared to Igbor, particularly rice farm. Chemical, biological and mechanical methods were used by the farmers to control these pests invasion.

**Table 5:** Effects of damaged done on the farm produce and control measures adopted by farmers.

Variables	Options	Both		Abinsi		Igbor	
		F	%	F	%	F	%
Types of crops mostly damaged	Maize	24	24.00	13	26.00	11	22.00
	Yam	22	22.00	7	14.00	15	30.00
	Cassava	19	19.00	6	12.00	13	26.00
	Rice	30	30.00	24	48.00	6	12.00
	Soya Beans	2	2.00	0	0.00	2	4.00
	Sugar-cane	3	3.00	0	0.00	3	6.00
	Total	100	100	50	100	50	100
% damage	10-20%	42	42.00	28	56.00	14	28.00
	30-40%	14	14.00	3	6.00	11	22.00
	40-50%	2	2.00	2	2.00	0	0.00
	50-60%	4	4.00	1	2.00	3	6.00
	60-70%	1	1.00	1	2.00	0	0.00
	> 70%	5	5.00	0	0.00	5	10.00
	Total	100	100	50	100	50	100
Stage of attack during growing cycle	Germination	38	38.00	14	28.00	24	48.00
	Flowering	12	12.00	9	18.00	3	6.00
	Seedling	6	6.00	1	2.00	5	10.00
	Harvesting	38	38.00	25	50.00	13	26.00
	Others	6	6.00	1	2.00	5	10.00
	Total	100	100	50	100	50	100
Symptoms after animal attack	Shoot-cut	42	42.00	22	44.00	20	40.00
	Buds eaten up	36	36.00	25	50.00	11	22.00
	Discoloration	3	3.00	0	0.00	3	6.00
	Poor husk cover	13	13.00	2	4.00	11	22.00
	Others	6	6.00	1	2.00	5	10.00
	Total	100	100	50	100	50	100
Extent of damage done to farm produce	Severe	53	53.00	23	46.00	30	60.00
	Moderate	35	35.00	23	46.00	12	24.00
	Stable	6	6.00	3	6.00	3	6.00
	Others	6	6.00	1	2.00	5	10.00
	Total	100	100	50	100	50	100
Implication of animal attack to farm produce	Decreased yield	48	48.00	26	52.00	2	4.00
	Discourage farming	20	20.00	5	10.00	15	30.00
	Food shortage	29	29.00	19	38.00	10	20.00
	Others	3	3.00	0	0.00	3	6.00
	Total	100	100	50	100	50	100
Trends of animal attack over the years	Increasing	14	14.00	6	12.00	8	16.00
	Decreasing	43	43.00	29	58.00	14	28.00
	Stable	37	37.00	14	28.00	23	46.00
	Others	6	6.00	1	2.00	5	10.00
	Total	100	100	50	100	50	100
Ways of controlling animal invasion	Chemical	40	40.00	30	60.00	10	20.00
	Mechanical	33	33.00	9	18.00	24	48.00
	Biological	18	18.00	10	20.00	8	16.00
	Others	9	9.00	1	2.00	8	16.00
	Total	100	100	50	100	50	100

## CONCLUSION AND RECOMMENDATION

This study revealed that crop raiding by wildlife pests contributed immensely to the loss of farm produce which subjects rural farmers to poverty. For continuous human-wildlife existence, there is need to close the gap of human- wildlife conflicts

by understanding the species involved and knowing the appropriate conservation strategies in preventing such conflicts. By recommendation, embarking on conservation education by stakeholders will go a long way in curbing such conflicts.

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