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The Role of Indigenous Knowledge in Human-Snake Conflicts in Ogun State, Nigeria

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Abstract. Human-wildlife conflicts are interactions between man and wild animals that yield negative impact on each other. Increase in human population with a consequential expansion of human settlements into wild animals' habitats has brought man into close interaction with wild animals. Such interactions sometimes end up in conflicts, especially when one considers the other as a threat to life or survival. Farmers often come into contact with snakes during the process of land clearing in preparation for cultivation of crops and even up to harvesting season. This study assessed the influence of indigenous knowledge on the conflict between farmers and snakes in Ogun state, Nigeria. Two agricultural zones were purposively sampled and structured questionnaire administered (n=125) to farmers to elicit information on their demographic characteristics and experiences with snakes on their farms. Descriptive statistics was used to analyse data on demographic characteristics and experiences with snakes. Association between incidence of snake bite and farmers' support for snake conservation was tested with chi-square. There were more male farmers (68%). Farmers' major religions were Islam (53.6%) and Christianity (44.8%). Most of the farmers killed snakes when encountered. Few farmers (25.6%) had snake bite incidence while majority (74.4%) declined support for snake conservation. There was a significant association between snake bite incidence and support for snake conservation (X^2=29.768, df=1, P<0.05). Farmers' indigenous knowledge contributed to the minimal account of human snake conflict while their perceived value of snake was self-limiting and could cause a spike in human-snake conflict.

Keywords: Conflict, Conservation, Indigenous Knowledge, Snake Bite, Nigeria

1. Introduction

Human-wildlife conflicts are interactions between man and wild animals that yield negative impact on each other. Just as humans have positive interactions with wild animals (e.g. as pets and for tourism), human-wildlife conflicts are the negative interactions between humans and wildlife (Huguenin, 2005). The occurrence of human-wildlife conflicts dates to human prehistory. The earliest form of conflict occurred in the form of predation of ancestors of prehistoric man and early hominoids (Berger and McGraw, 2007; Anand and Radhakrishma, 2017).

Human-wildlife conflict has extended from what was initially considered as a problem associated with rural or agricultural communities to what has become a threat to most of the globally endangered mammal species. It is one of the most critical issues facing environmentalist. The continuous increase in human population with a consequential expansion of human settlements into wild animals' habitats has brought man into close interaction with wild animals. In other words, the space between man and wild animals is consistently shrinking, thereby increasing their frequency of interaction. This often occurs when man and wild animals explore natural resources for survival and means of livelihood respectively. Where the natural resources are limited, these encounters sometimes end up in conflicts, especially when one considers the other as a threat to life or survival.

Conflict occurs when wildlife requirements overlap with that of humans creating costs to man and wildlife (Eniang, *et al*., 2011; Datiko and Bekele, 2013). Human-wildlife could also be fueled by explosion of some wild animal populations, as a result of successful conservation efforts and environmental changes (Pittiglio, 2008; Kate, 2012; Anand and Radhakrishma, 2017). The steady rise in socio-economic activities in natural vegetations has also contributed to a decline in forest cover subjecting the wild animals to smaller habitats and less food. The increasing demand for land and declining productivity of the already cultivated land prompts local communities to search for virgin lands preferably in wildlife habitats. A typical example of human-wildlife conflict related to this factor is the farmers-snake conflict. It is remarkable to note that out of the estimated 3000 species of snake, only about 600 species are venomous (National Geographic, 2020).). Man's fear of snakes and snake bites prompt man to lunch attack on snakes which oftentimes, eventually result in snake bite. More often than not, farmers come into contact with snakes more than other members of the local communities especially during the process of land clearing in preparation for cultivation of crops and even up to harvesting season. This formed the basis for assessing conflict between farmers and snakes in Ogun state, Nigeria**.** Preliminary investigation revealed that the farmers usually encountered various species of snakes such as python, viper and cobra.

It is commonly perceived that indigenous knowledge informs rural communities' decision about their social and economic life. It was on this note that this study also examined the influence of indigenous knowledge of the farmers on their response to conflict with snakes.

2. Methodology

The study was conducted in Ogun State, Southwestern Nigeria. Ogun state lie approximately within latitude 7^{o} and 27'E a land area of 16, 409.26sq.km and with an estimated population of 3, 728,098. The state has a humid tropical climate with an average annual rainfall of between 105mm and 128mm. Ogun state borders Lagos state to the south, Oyo state to the north and Ondo state to the east. It is bounded on the west by Republic of Benin. The state is commonly referred to as the "gateway" to Nigeria from other coastal West African Countries due to its geographical location (Solanke, 2000). The indigenes of Ogun state are mainly Yoruba speaking people. Ogun state shares certain aspects of their culture and tradition with other Southwestern states who are equally Yoruba speaking people with different dialects. Indigenes of Ogun state are traditionally hunters and farmers. Ogun state is divided into four zones by Agricultural Development Project (Obayelu, *et al*., 2015)**.** The zones are Abeokuta, Ikenne, Ilaro and Ijebu Ode. Two (Ilaro and Ijebu) of the zones were purposively sampled owing to massive farming activities in the selected zones. Purposive sampling technique was equally adopted to administer questionnaire to farmers who had encountered snakes on their farms for a minimum of five years. This category of farmers is expected to be knowledgeable about the subject matter. This method is in agreement with Nyanganji *et al*., (2011) who conducted a similar study. In all, 125 respondents were identified and sampled. The questionnaire was designed to elicit information on the farmers' demographic characteristics and their experiences with snakes on their farms. Descriptive statistics such as frequencies and percentages were used to analyze data on the farmers' demographic characteristics, as well as their knowledge about and experiences with snakes. Chi square was used to test for relationship between incidence of snake bite and farmers' support for conservation.

3. Results

Table 1: Demographic Characteristics of Respondents

Demography	Frequency	Percentage
Gender		
Male	85	68.0
Female	40	32.0
Religion		
Islam	67	53.6
Christianity	56	44.8
Traditional	2	1.6
Age		
21-30	12	9.6
31-40	26	20.8
41-50	26	20.8
51-60	47	37.6
61 and above	14	11.2
Education		
No formal education	19	15.2
Primary education	41	32.8
Secondary education	24	19.2
Tertiary	41	32.8
Total	**125**	**100**

Table 2: Farmers' Response to encounter with snakes

Response to snake	Frequency	Percentage
To kill	96	76.8
To avoid	29	23.2
Total	**125**	**100**

Table 3: Respondents' Perceived Benefits of snakes

Perceived Benefits	Frequency	Percentage
Consumption/source of protein	81	64.8
Traditional medicine	9	7.2
Pest control	14	11.2
No benefit	21	16.8
Total	**125**	**100**

Table 4: Respondents' Knowledge of how to Prevent Conflict with snakes (snake bite)

Respondents' Knowledge	Frequency	Percentage
Safety boot	53	42.4
Killing of the snake	14	11.2
Fleeing from the snake	32	25.6
Use of anti-snake chemicals	2	1.6
Traditional means	12	9.6
Total	**125**	**100**

Table 5: Incidence of snake bite among respondents

Incident	Frequency	Percentage
Snake bite incident	32	25.6
No snake bite incident	93	74.4
Total	**125**	**100**

Table 6: Farmers' support for Snakes Conservation

Snake Conservation	Frequency	Percentage
Yes to Snake Conservation	32	25.6
No to Snake Conservation	93	74.4
Total	**125**	**100**

Table 7: Association between Incidence of snake bite and Farmers' support for snake conservation

Variable	df	X^2	Pvalue	Decision
Snake bite incidence	1	29.768	0.000	Significant

df=degree of freedom, X^2= Chi square value, Pvalue=probability value

4. Discussion

As indicated in table 1, most of the respondents were of the male gender. This is not farfetched as African men are culturally known to be involved in farming activities more than women which also explain why more men are involved in human-snake conflicts. The spread of the respondents among the religions depicts the two major religions (Islam and Christianity) being practiced in the country, as only a few still hold on to the indigenous traditional religion. The respondents were spread across a wide range of age groups. This implies farming is neither exclusively for the young nor the old, more so, that farming is a traditional practice in Nigeria. Cumulatively, many of the respondents' level of education did not go secondary education. These are rural dwellers, most of which are peasant farmers who do not see the place of formal education in their traditional day to day life.

The influence of traditional indigenous knowledge cannot be downplayed in the assessment of human snake conflicts. As a matter of fact the United Nations Educational Scientific and Cultural Organization stated categorically that indigenous knowledge forms the basis of decision making about fundamental aspects of day to day life of rural people (UNESCO, 2017). The indigenous knowledge of the farmers played a vital role in how they prevented conflicts with snakes (table 4). The method deployed by the farmers to prevent snake bite apparently proved effective as just a handful of the farmers had one time or the other been bitten by snakes (table 5). The chi-square test further indicated an association between incidence of snake bite and farmers support for snake conservation (table 7).

The application of indigenous knowledge is however not without short comings and limitations. (Nicholas, 2010, Smith and Wobst, 2005). Some of the views held by the farmers could fuel conflicts between man and snakes as majority of the respondents mentioned killing of snakes as their response whenever they sighted snakes on their farms (table 2). Little wonder many of the respondents declined their support for snake conservation. Meanwhile the farmers' purported attempt to kill snake when encountered increases the probability of being bitten by snakes. Attempt to kill snakes aggravates conflicts between man and snakes. A parlance among snake specialists states that: "leave a snake alone and it will leave you alone" (Melle, *et al.*, 2018).

The indigenous knowledge which farmers hold could sometimes be self-limiting, as reflected in how the farmers utilized the snakes (table 3). Apart from killing snakes for consumption and traditional uses, there are other sustainable benefits derivable from snakes unknown to the farmers. Rather than killing snakes and igniting conflicts, other sustainable means of benefiting from snakes include snake farming and snake tourism.

Countries such as Bangkok and China train people including farmers on how to handle and capture live snakes without been harmed. Such snakes constitute the resource base for snake farming and snake tourism in those countries. While the local knowledge held by farmers in the Ogun state, Nigeria limited them to a "one time" use of "kill and consume", elsewhere in other climes, there is a booming business arising from a more viable use of snakes. In a small village of Zisiqiao in China's Zhejiong province, just a few entrepreneurial snake farmers generate up to USD12million per annum from the sale of snakes in their farms to pharmaceutical companies. These countries use different parts of the snakes to produce nutritional supplement that are sold to waiting customers in Japan, South Korea, America and Europe (Marks, 2018).

The narrative can equally change for farmers in Ogun state, Nigeria, if their knowledge base is upgraded through massive informal/ "out of classroom" education. Education empowers and guides an individual to take well informed decision about natural resources thereby reducing conflict of interest or decision borne out of sentiments. It equally

facilitates awareness about peaceful co-existence with other components of the environment (Alam, 2018).

5. Conclusion

Farmers' indigenous knowledge contributed to minimal record of human-snake conflict in Ogun state, Nigeria. On the other hand, the knowledge held by farmers on the perceived value of snake is self-limiting and not sustainable. It could also bring about a spike in human-snake conflict in the study area. It is recommended that a re-orientation of farmers on their attitudes towards snake be facilitated through public enlightenment programmes.

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