Indigenous Land Tenure System as a Hindrance to the Development of Pandam Wildlife Park

J. I. Uloko[1*] and G. O. Yager[1]

[1]*Department of Wildlife and Range Management, Federal University of Agriculture, Makurdi, Nigeria.*

Authors' contributions

This work was carried out in collaboration between both authors. Author JIU designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author GOY managed the analyses of the study. Authors JIU and GOY managed the literature searches. Both authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Pandam Wildlife Park (PWP) is home to diverse wildlife resources. Indiscriminate encroachment by surrounding communities has become major problem to sustainability of biodiversity management. For this study, semi- structured household survey questionnaire was used in four surrounding communities of the park; Pandam village, Kyarda, Aningo and Nasukuuk. A total of 1324 questionnaires were administered in the surrounding communities out of 4200 estimated households, representing about 31.5%. Data collected was analyzed using simple descriptive statistics, tables and chi- square analysis. Result revealed that about 89.5% of the land belongs to individuals in the community (customary land tenure system) as against 10.5% statutory. The study also revealed that 53% of the people claimed that the land tenure system impacted negatively on Pandam Wildlife Park while 47% believed otherwise. The data analyzed using chi-square statistical analysis confirmed that there is significant difference between the surrounding communities in relation to the effect of land tenure system (0.05) on PWP. Alongside the land tenure system threat are farm encroachment, settlement and grazing activities. Wildlife co-existing with

Corresponding author: E-mail: juluko4u@yahoo.com;
E-mail: gbrlyager@gmail.com;

rural dwellers is difficult to maintain and sustain. Therefore, active participations of local dwellers and awareness are fundamental to establishment, development and sustenance for any protective Area/park.

1. INTRODUCTION

Efforts towards conservation of Wildlife diversity or biological resources began as colonial authorities desire to preserve and conserve game population, misunderstanding of traditional African pattern of forest resources use and concerns about deforestation with other environmental problems. However, in recent times, there is a realization that conservation efforts may advocate dual goals of conserving wildlife and maintaining them for the use of the people [1].

Land tenure system is a very much complex institution since the system is derived from customary rules that do not have any fixed set of 'instructions for use' regarding land and other protected area resources [2]. The Indigenous Land Tenure (ILT) systems are based on informal local practices that vary from community to community and are usually flexible and negotiable through verbal agreements [3]. It is a system that most rural African communities operate to express and order ownership, possession, access, and to regulate use and/or transfer [4]. Unlike introduced landholding regimes, the norms of indigenous tenure derive from and are sustained by the community itself rather than the state or state law (statutory land tenure).

Indigenous land tenure is as much a social system as a legal code and from the former obtains its enormous resilience, continuity, and flexibility. Indigenous land tenure is a major tenure system on a worldwide scale. It is not confined to Africa alone. Thus, it even governs lands in industrial economies, such as rural commons in Spain, Portugal, Italy, and Switzerland and territories belonging to indigenous minorities in Europe, North America, and Oceania [4]. The system operates most expansively in agrarian economies, that is, those societies where most of the population is dependent on gross domestic product and is derived from land-based production and use. They are not often from off-farm industry and urban employment.

Protected areas, (PA) are sites for conservation of biodiversity aimed at checkmating the damaging impact of human activities on natural habitat and the resources therein, particularly wildlife [5,6]. They cover the full range of existing categories from areas under strict protection to that under multiple land use management. These include areas that are defined locally with or without national recognition. Historically, Protected Areas in Nigeria, just like Pandam Wildlife Park, allow restricted access to its resources by the local communities who formerly were dependent on them for their livelihood [7]. This has become a problem in continuously managing any protected area through the usual land tenure system or pattern [8]. This is because African knowledge and value systems have been consistently marginalized with little or no input from the indigenous knowledge based, [9]. Hence, for local residents, establishment of national parks can lead to the exclusion of rural people from the use of forest resources in the interest of protecting Wildlife land/natural habitat. Thus the research seeks to examine the impact of land tenure system on the development of PWP. Specifically, it is to determine the dominant land tenure system in the area and their effect on PWP from the support zone communities.

2. MATERIALS AND METHODS

2.1 The Study Area

The park is located North of Benue River and South of Plateau State, along Lafia-Shendam Road in Quanpan Local Government Area of Plateau State [10]. It lies between latitudes $8^o 35^1$ N and $8^o 55^1$ N, and longitudes $8^o 00^1$ E and $10^o 00^1$ E [11]. It is bounded on the East by Namu and Kayarda towns, on the West and North, by the Dep River and on the South by Aningo, Pandam and Nasukuuk towns [12]. It covers a total area of 22,400 km^2 [13]. The entire park lies within the Northern guinea savanna (Figs. 1 and 2). The Pandam Wildlife Park consists of a Y-shaped lake, which has a length of about three kilometers and the width is between 67-100 m. Major vegetation types of the park include wooded Guinea Savannah comprising *Afzelia*

africana, Vitellaria paradosum and *Parkia biglobossa*. A riparian vegetation mostly observed along the many smaller rivers that form tributaries to the lake and all along the banks of the Pandam lake with the presence of *Elais guinensis, Berlina grandiflora* and *Bosqueia angolense*. Marshlands form an open continuous wetland separating the lake and the Savannah vegetation. The two major features of the climate of the park are divided into wet and dry seasons and the variability from year to year due to climate change. The wet season extend from April to October, while the dry season extends from November to March and annual rainfall in the park is between 1,000 – 1,500 mm per annum [13].

2.2 Sampling Procedure

A multi- stage sampling technique was designed for the purpose of selecting respondents within

the surrounding communities of Pandam, Kyarda, Aningo and Nasukuuk.

Firstly, stratification of enumeration wards was carried out. Then, household listing was carried out in each ward. Households that were used were further selected by random sampling and respondent was the head. Where he or she was not available, the next most available adult was interviewed.

2.3 Data Collection and Analysis

A total of 1400 questionnaires were administered but only 1,324 were retrieved in the four selected surrounding communities composed of 4200 estimated households. The collected data represented 31.5% of the total estimated households. Data collected were pooled together and analyzed using simple descriptive statistics (tables) and chi- square analysis.

Fig. 1. A map of Nigeria showing position of Plateau State with Qu'apam LGA
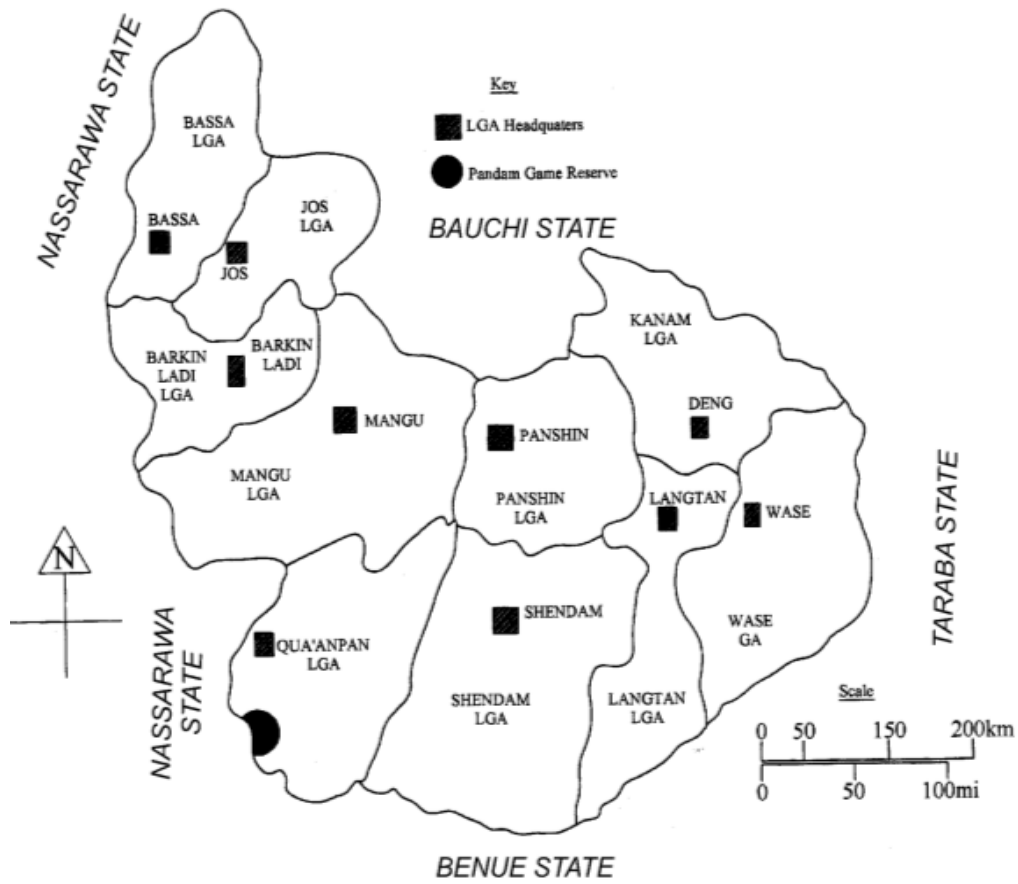*Sources: Google/map of Nigeria/structure*

Fig. 2. A map of Qu'apam L.G.A showing location of Pandam Wildlife Park
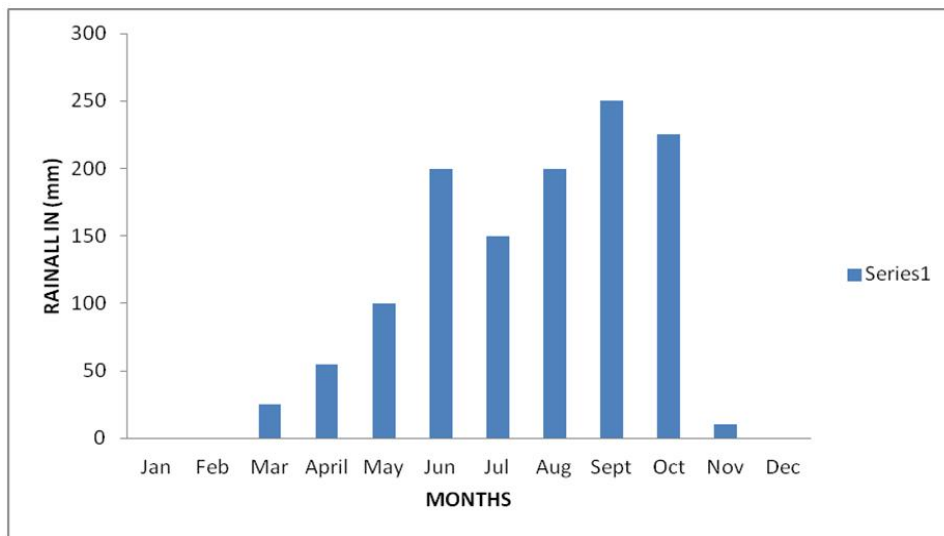*Source: Ministry of land and survey Plateau State*

Fig 3. Total monthly rainfall (mm) in Pandam (2010)
Source: Department of Agricultural Education, College of Agriculture, Lafia (2012)

Table. 1. Average climatic data for Pandam Area (2008- 2010)

Months	Mean monthly rainfall (mm)	Mean monthly rain days	Mean monthly average daily temperatures (°C)	Mean monthly sunshine duration (hours	Mean monthly relational humidity maximum 2
JAN	0.00	0.00	28.42	4.52	40.44
FEB	0.01	0.02	28.30	6.00	41.20
MAR	0.20	0.04	31.43	7.84	40.34
APRIL	40.60	6.46	32.64	7.24	43.64
MAY	101.30	10.25	30.84	6.83	53.84
JUNE	120.40	10.30	29.64	6.24	63.34
JULY	150.30	13.46	28.20	4.02	70.46
AUG	160.80	12.20	27.85	4.34	73.50
SEPT	182.40	16.40	28.10	4.10	73.84
OCT	120.30	15.64	28.00	5.34	70.22
NOV	25.00	1.06	27.40	7.04	46.84
DEC	0.04	0.14	28.24	3.86	42.46

Source: Meteorological station, College of Agriculture Lafia (2012)

3. RESULTS

The gender characteristic of the respondents presented in Table 2 reviewed that the male respondents were dominant (83.2%), while the female were only (16.8%) of the sampled population. Table 3 indicates the type of land ownership practiced in the study area. The result shows that about 89.5% of the land belongs to individuals in the communities as against 10.5% statutory. The response on the impact of land tenure system on PWP was presented in (Table 4). Respondents (53.16%) agreed that the customary land tenure system had impacted negatively on PWP. On the other hand, 46.84% of the respondents believed otherwise. This position was further confirmed when the data was subjected to chi-square statistical analysis (Table 5), which was significant at (P>0.05) between the communities. For instance the Pandam, Aningo

and Nasukuuk indicated that land tenure system affects PWP negatively while Kyarda believe otherwise. The elements that pose major threat as an attributes to the land tenure system which hindered the development of the PWP are presented in Table 6, Fig. 4 and Plate 1 respectively.

3.1 Hypothesis

H_o (Null hypothesis): There is no significant difference between the surrounding communities in relation to the effect of PWP on land tenure system.

H_l (Alternative): There is significant difference between the surrounding communities in relation to the effect of PWP on land tenure system.

Decision: Since X^2 cal > X^2 tab at (0.05) the H_1 is accepted.

Table 2. Gender distribution of household heads in landlord communities of PWP

Communities	Distance (Km)	Male	Female	Total
Pandam	0-0.5	245 (77.53)	71 (22.47)	316(100.00)
Kyarda	1	356 (76.72)	108 (23.28)	464(100.00)
Aningo	2	192 (93.20)	14 (6.80)	206(100.00)
Nasukuuk	3	308 (91.12)	30 (8.88)	338(100.00)
Total		1,101 (83.16)	223 (16.84)	1324(100.00)

Source: Field Survey (2011)
Note: Figures in bracket are in percentage

Table 3. Types of land tenure system in the study area

Type of Tenure	Number of respondents	Response (%)
Customary (i.e communal inheritance)	1,185	89.50
Statutory	139	10.50
Total	1,324	100.00

Source: Field Survey (2011)

Table 4. Response on impact of land tenure system on PWP

Community	No effect	Has effect	Total
Pandam	144(45.57)	1721 (54.43)	316(100.00)
Kyarda	286(61.64)	178(38.36)	464(100.00)
Aningo	92(44.66)	114(55.34)	206(100.00)
Nasukuuk	160(47.34)	178(52.66)	338(100.00)
Total	710(46.84)	614(53.16)	1324(100.00)

Source: Field Survey (2011)
Figures in bracket are in percentage

Table 5. Chi Square statistical analysis on the effect of land tenure system on PWP

Community	No effect	Has effect	Total
Pandam	*144 ** 148	*172 ** 167	316
Kyarda	*286 ** 217.34	* 178 ** 246.66	464
Aningo	*92 ** 84.48	*114 ** 121.52	206
Nasukuuk	*160 ** 132.02	*178 **205.98	338
Total	710	614	1,324

* = Observed value; ** Expected value
$X^2_{cal} = 39.83$; X^2_{tab} (0.05) at 1 df = 6.07

Table 6. Summary of farm encroachment in PWP 2010/2011and 2010/2011 farming season

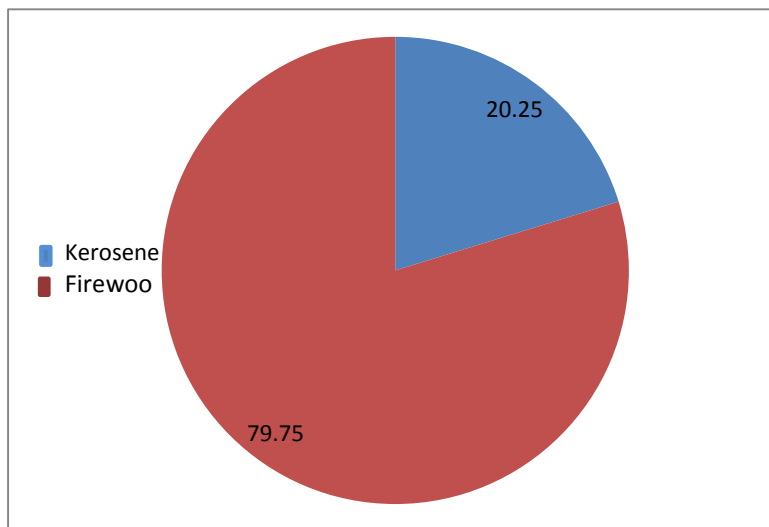| Community	Total no. of encroached farms 2009/2010 & 2010/2011	% rate of encroachment	Total size (hectares) of farms	Main crops cultivated
Pandam	29/41	12/17	166.77	Maize, guinea corn and yams
Kyarda	33/38	14/16	186.56	Cassava, yams and maize
Aningo	39/35	16/15	207.46	Cassava, yams and maize
Nasukuuk	9/15	4/6	56.68	Maize, guinea corn and yams
Total	239		636.48	

Source: Field survey, 2011

Fig. 4. Response (%) on type of cooking energy/fuel used across the villages
Source: Field survey, 2011

Plate 1. Human settlement and logging activities at Pandam Village Encroaching the boundary of PWP

Plate 2. Domestic animals trailing into the park in search of green pastures from Pandam Village

4. DISCUSSION

In this present study, issues of the conservation of natural resources have raised some fundamental questions. The questions of who owns the resources- government or natives and who actually controls the use of the natural resources?. These are some of the pertinent questions relating to the use of Pandam Wildlife Park with dominating traditional (customary) land use pattern by the surrounding communities. Numerous studies [4,15,16] have shown that often women in rural areas have less access than men to productive resources, services and opportunities, such as land ownership and this is the reflection of the male being dominant in the

study area. This also confirmed the cultural believes and view that males are always the head of families.

Perhaps, the reason for differences in opinion on the direct impact of land tenure on PWP by the surrounding communities may be due to the relative closeness of some of the communities to the PWP boundary; the proportion of the PWP land acquired by the surrounding communities; the ever changing of the social and economic activities within the communities and increased population leading to more demand for social and economic purposes, particularly land for agriculture. Moreover, the two views expressed between communities is significant (P>0.05) to the extent that it should not be ignored because it has implication for the conservation of biodiversity in the PWP. In the same vein, the land tenure system alongside elements of human activities was responsible for habitat encroachment over time through agricultural expansion within the park, thus, encouraging human threats to wildlife species through logging, grazing activities and hunting. This also has led to under development of the ecotourism sector of the park, thus affecting tourism related activities and community participation.

According to African Biodiversity [17], challenges of protected Areas come from rapid population growth with lack of appropriate resources management structure. In addition, land suitable for farming becomes inadequate and therefore land use encroachment on reserved areas becomes an option for the support zone communities.

All the above reasons have given wildlife utilization an easy ride in Pandam Wildlife Park and a threat to its conservation. This is in agreement with the view of Ezenwaka and Aberee [9]. that there is always a conflict in land use pattern between Protected Areas and the surrounding communities.

5. CONCLUSION

Pandam Wildlife Park is gradually being encroached by the surrounding communities due to quest for agricultural expansion and demand for firewood. It is obvious that the rural dwellers co-existence with wildlife their and negative impact on the protected areas is difficult to maintain due to increasing socio-economic activities of our rural population. Therefore, the active participation of the local communities and

public awareness about the importance of wildlife conservation and range management is fundamental to establishment, development and sustenance of any protective area/ park to have meaningful economic value and maintenance of stable range resources of the reserve. No doubt if the encroachment rate is continued and an increased rate, the Pandam Wildlife Park will become ordinary vegetation cover in the next few years as all ecotourism activities may come to moribund state.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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