

Full Length Research Paper

# Roles of Forest Resources in Sustaining Rural Livelihoods around Yankari Game Reserve, Nigeria

Y Usman<sup>1</sup>, MN Danjuma<sup>2\*</sup> and IA Abdulkarim<sup>2</sup>

<sup>1</sup>Nigeria Prisons Service, Federal Ministry of Internal Affairs, Nigeria

<sup>2</sup>Department of Geography, Bayero University Kano, Nigeria

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Forests are increasingly being conserved and managed for multiple uses and values. Forests provide resources for people, including renewable source of energy. This study assessed the roles of forest resources in sustaining communities' livelihoods around Yankari Game Reserve. A total of 150 respondents were drawn using systematic sampling techniques from the target population of 21, 900 people in 15 study communities around Yankari Game Reserve. Data was collected using two sets of questionnaires which were administered to 150 respondents each from the 15 communities and the management staff of the reserve respectively. The questions were on the role and importance of forest products in sustaining rural livelihood, impact of community sources of livelihood and most important economic activities of the people around the reserve. Farming and rearing are the most important income generating activities of the neighbouring communities which accounts for 49.3% of the population, while 24% account for farming/hunting, 21.9% farming/trading, 2.7% are civil servant and 2.1% represent others. The reserve contributes in diversification of livelihoods of the communities and forest users through hunting, cattle herding, collection of firewood, herbs, post and timber fruits and cash crops. Though, human activities on the reserve have led to forest degradation, findings of the study revealed that it still plays an important role in sustaining rural livelihood of the neighbouring communities. It is recommended that the people should be sensitized on the importance of conservation through changing local peoples' attitude. Other recommendations area that: alternative sources for domestic energy should be introduced and essential infrastructural facilities should be provided for the people so as to reduce human pressure on the reserve.

**Key words:** Forest resources, rural livelihoods, Yankari Game Reserve, Nigeria.

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## INTRODUCTION

Forest resources are key component of the natural resource base of any community, region or country in sub-Saharan Africa, and they play a fundamental role in the socioeconomic well-being of the people of those communities. Depending on circumstances, forest products

may offer both a daily net (everyday use) and a safety net (occasional use). The daily net describes everyday use, with products meeting current household needs, offering a reliable source of income to purchase agricultural inputs or fodder for livestock herds (Shackleton and Shackleton, 2004). A safety net comes into play when other sources of household income (e.g. Petty trading, farming and plantations) fail to meet dietary shortfalls, or whenever a quick cash option is required (McSweeney,

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\*Corresponding Author: [mndanjuma.geog@buk.edu.ng](mailto:mndanjuma.geog@buk.edu.ng)

2003). Forest resources are of great economic significance to both the rural and urban population especially the poor.

This is particularly so in sub-Saharan Africa, where most of the countries have large rural populations that depend on natural resource exploitation for their livelihood (Pimental *et al.*, 1997). According to Bryon and Arnold (1997) majority of rural households in developing countries and a large proportion of urban households, depend on plant and animal products of forests to meet part of their nutritional needs. Pimental *et al.*, (1997) estimated that about 250 million people in Africa depend on the forest, while Roper and Roberts (1999) put the figure at 500 million. It is estimated that 90% of the world's poor depend on forests for at least a portion of their income (World Bank, 2000).

Anderson *et al.*, (2006) argued that in Africa, 600 million people have been estimated to rely on forests and woodlands for their livelihoods, while another study in India estimated that 50 million people are directly depended on forests for their livelihood subsistence (Kaimowitz, 2003). Wass (1995) reported that Kenya's indigenous forests are home to many communities whose livelihoods depend on the natural resource. Approximately 2.9 million people live adjacent to forests in Kenya. This is over a tenth of the total population. Another study shows that in Central Africa, forest communities generate 67% of their total income from hunting and gathering (Cernea and Schmidt-Soltau, 2006). This illustrates how vulnerable forest resources will be in the near future. Inoni (2009) maintained that rural dwellers depend on natural resources for wild fruits and nuts, rattan cane, poles for agricultural implements and for staking yams, thatch for building, game and firewood; which is the most important source of energy for cooking and heating, as well as for cash income, for most rural households in Delta State of Nigeria.

## STUDY AREA

Yankari Game Reserve, in Bauchi State, has long been considered the cornerstone of the protected areas in Nigeria: a place where lions and elephants roam the bush for visitors to easily see and admire. This park has alternated between federal control, as a national park, and state control as a game reserve a status it has held since 2006 (David, 2008). Yankari Game Reserve lies in the southern part of the Sudan Savanna. It lies between Lat 8.0°N and 9°36''N as well as Long 10°40'E and 10.40'E. It is composed of savannah grassland with well-developed patches of woodland. It is also a region of rolling hills, mostly between 200m and 400m (Ogunlami, 2000). Kariyo Hill is the highest point at 640m. The Reserve's main entrance is at Mainamaji village, about 29 km from Dindima. It is located within the Duguri, Pali and Gwana districts of Alkaleri LGA, Bauchi State. This

LGA has a population 208,202 people occupying a total land area of 7,457.78 km<sup>2</sup> (Olokesusi, 1990).

Annual rainfall in the Reserve is between 900mm and 1,000mm. The rainy season is from May to September. Temperatures range between 18°C and 35°C. During the dry season, the Harmattan wind blows from the Sahara, often bringing dusty skies and night temperatures fall as low as 12°C. The hottest period falls in March and April, when temperatures can rise above 40°C in the day (YNP, 2000), Figure 1.

## METHODOLOGY

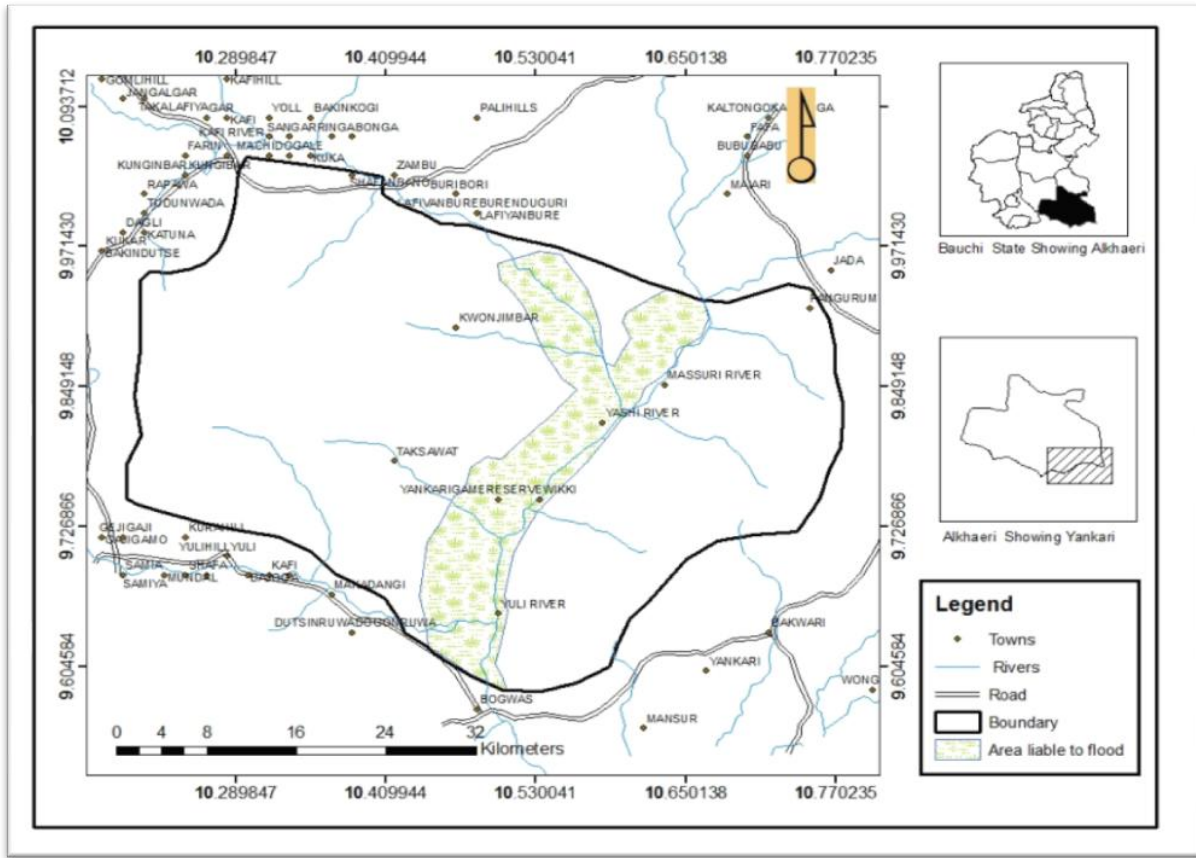
### Population

The total population of the study villages is estimated at 21900 persons. The composition is of Fulani, Hausa and Kanuri tribes who engage two major livelihood activities including farming and rearing and some secondary activities such as dyeing.

### Sampling Procedure

Yankari Game reserve is surrounded by over 200 host communities (Aaron, 1993). Thus, fifteen (15) Communities were statistically selected to represent surrounding villages of the study area. These are as follows:

- 1). Jada Community, which is in Maimadi Ward, Fali District, Alkaleri Local Government Area, Bauchi State. It has an estimated population of 500, consisting mainly of Hausa and Fulani. The predominant occupation of the people is farming and rearing.
- 2). Badara Village, which is in Kunginbar Ward of Duguri District, Alkaleri Local Government Area, Bauchi state. It has an estimated population of 1500. The Settlement pattern is scattered with average household size of 20, and the predominant occupation of the people is farming.
- 3). Dan Community, which is in Dan Ward of Duguri District Alkaleri Local Government Area, Bauchi state. Dan ward has an estimated population of 3000 with an average household size of 18 per house. The predominant occupation of the people is farming. The settlement pattern is linear.
- 4). Walakerol Community, which is in Futuk Ward of Gwana District, Alkaleri Local Government Area,
- 5). Bauchi State: The settlement pattern is nucleated in nature. The community has an estimated population of 3000 of mainly Fulani and Kanuri.
- 6). Gajigamu Community, which is in Yuli Ward of Duguri District, Alkaleri Local Government Area, Bauchi State. It has an estimated population of 600 people of mostly Dugurawa tribe. The house types are mud thatched roof. The people of Gajigamu are mostly hunters and farmers.
- 7). Dogon ruwa Community, which is in Yuli Ward of Duguri District Alkaleri Local Government Area Bauchi State. It has an estimated population of 1000 of mostly Dugurawa people. The predominant occupation of the people is farming and hunting.
- 8). Bogga Community, which is in Mansur Ward of Gwana District, Alkaleri Local Government Area Bauchi State. It has an estimated population of 800 people who are mostly Fulani. The



**Figure 1:** The Study Area

predominant occupation of the people is rearing and farming.

9). Wundo Community, which is in Yalo Ward of Gwana District, Alkaleri Local Government Area Bauchi state. The community has an estimated population of 600 of mostly Fulani tribes. The predominant occupations of the people are rearing and farming.

10). Mainamaji Community is located at the gate of Yankari Game Reserve and is in the Kungimbar Ward of Duguri District, Alkaleri Local Government Area Bauchi state. It has an estimated population of 1800 of mostly Kanawa and Fulani. The predominant occupation of the people is rearing and farming.

11). Kwala Community, which is in Fali Ward of Fali District, Alkaleri Local Government Area Bauchi State. Kwala Community has an estimated population of 500 with mostly Bolawa and Kanuri tribes. The predominant occupation of the people is farming.

12). Kungibar Sarki Community is in Kungibar Ward of Duguri District, Alkaleri Local Government Area Bauchi state. It has an estimated population of 900, mostly Dugurawa people. The predominant occupations of the people are rearing and farming.

13). Yalwan Duguri Community, which is in Dan Ward of Duguri District, Alkaleri Local Government Area Bauchi state. It has an estimated population of 3500, mostly Dugurawa people. The predominant occupation of the people is rearing and farming.

14). Tumoro Community, which is in Fali Ward of Fali District Alkaleri Local Government Area Bauchi state. It has an

estimated population of 1200, mostly Fulani. The predominant occupations of the people are rearing and farming.

15). Alkalerin Yalo Community, which is in Yalo Ward of Gwana District, Alkaleri Local Government Area Bauchi state. It has an estimated population of 300, mostly Fulani. The predominant occupations of the people are rearing and farming.

16). Kuka Community, which is in Kungimbar Ward of Duguri District, Alkaleri Local Government Area Bauchi State. It has an estimated population of 2700, mostly Kanawa people. The predominant occupations of the people are dying and farming. A total of 150 respondents consisting of Fulani and Hausa tribes were selected using stratified systematic sampling technique.

### Data Collection and Analysis

Research employed the use of questionnaires and Focus Group Discussion (FGD) instruments to solicit information forest resources, livelihoods and conservation efforts of the people living within the reach of the reserve. A total of 300 questionnaires were administered to two sets of 150 respondents each obtained from the communities and staff of the Game Reserve. Out of the 150 administered to the Communities, one hundred and forty six (146) were returned while a total of one hundred and forty three (143) were returned by the staff. Data obtained was analyzed using percentage as it is basically in nominal scale.

**Table 1:** Age of the Respondents

| Age   | Reserve Officials | Communities |     |      |
|-------|-------------------|-------------|-----|------|
|       | F                 | %           | F   | %    |
| 21-30 | 35                | 24.5        | 25  | 17.1 |
| 31-40 | 41                | 28.7        | 51  | 34.9 |
| 41-50 | 48                | 33.6        | 47  | 32.2 |
| 51-60 | 19                | 13.3        | 23  | 15.8 |
| Total | 143               | 100         | 146 | 100  |

Source: Field work (2014)

**Table 2:** Important Occupation on the Community

| Types of Livelihoods Options | Respondents |            |
|------------------------------|-------------|------------|
|                              | F           | %          |
| Farming/rearing              | 72          | 49.3       |
| Farming/hunting              | 35          | 24.0       |
| Farming/trading              | 32          | 21.9       |
| Civil servant                | 4           | 2.7        |
| Others                       | 3           | 2.1        |
| <b>Total</b>                 | <b>146</b>  | <b>100</b> |

Source: Field work (2014)  
Main Livelihood Activities of People around Yankari Game Reserve

## RESULTS AND DISCUSSIONS

### Age of Respondents

The age of respondents in the area was taken so as to understand the role of various groups on conservation of the reserve. This is imperative because researches show that there is variation in terms of commitment to conservation as one surveyed age group. The young are active, but careless on conservation while the old are weak and concerned.

Table 1 shows that, the reserve officials are mostly between the age of 21 and 40 years, which accounts for more than half of the respondents. Most of the respondents from the communities are between the ages of 31-40 and 41-50. The result show a fair distribution of ages among respondents which indicated that the youth are still active and eager to conserve the Majority of people living in and around Yankari Game Reserve are predominantly farmers and cattle herders (Karau, 2011). reserve despite global reports projecting continuous migration of people of that age groups. He estimated that about 95 % are farmers and cattle herders, while 3% of the people are salary employers and 2% are business earners. This heightens the tempo of a lot of pressures to be mounted on the reserve by surrounding communities through logging, grazing, farming and clearing Table 2.

Most of the trees are either used for firewood, house construction and medicinal purposes (Karau, 2011). Protected areas in Nigeria harbour most of the remaining interesting biodiversity, but these areas vary in the amount of actual protection occurring on the ground. Some national parks, including Cross River and Gashaka-Gumti, have enclave villages in their midst, and all protected areas are closely surrounded by communities that continue to expand their agricultural practices in ever increasing patches of disturbance (Davis, 2008). Therefore, the reserve is plays an important role in sustaining rural livelihood to the neighbouring communities. This corresponds with the work of McSweeney, (2003), Byron and Arnold, (1999), and Inoni, (2009). Table 3 show trees in Forest Reserve are used for various uses such as food, medicine animal fodder and for tourism. This is line with report of World Commission on Forests and Sustainable Development (1998) which stated that, apart from meeting the economic needs of rural people for food and shelter, forests are also a major source of both industrial wood products and fuel wood. In the wooded areas of Thailand, for example, 60% of all food comes directly from the forests. Food from trees is sometimes staple and more frequent. However, it is needed as a supplement for dietary diversity and nutrition (FAO, 2007).

Table 4 shows that, 43.8% strongly agree that the Communities around the park are contributing in securing the reserve. On the other hand 6.8% strongly agree that people from the Communities are posing threats to the forest products. But 20.5% strongly do not agree with the statement.

## CONCLUSION

Yankari Game Reserve integrates and facilitates the socioeconomic well being of the Communities. It plays an important role in sustaining rural livelihood around the YGR. Seven groups were identified as the major user groups. These are the firewood collectors, herbalists, posts and poles collectors, hunters, fruits and cash crops collectors, cattle herders and employed personnel's from neighbouring communities. Farming and livestock rearing are the most important and most common occupations of the people living adjacent to the Reserve. Residents derive most of their basic income through subsistence farming. Factors influencing the continued exploitation in the reserve include proximity to the Forest, unemployment, and tradition.

## RECOMMENDATIONS

1). Alternative livelihood such as a GEF-supported project that is working with communities around Yankari State Game Reserve to package drinking water should be encouraged through policies.

**Table 3:** Forest Resources and their Role on Rural Livelihood around Yankari Game Reserve

| Role to the Community                                    | Strongly Agree |      | Agree |      | Do Not Agree |      | Strongly do not agree |      |
|--|----------------|------|-------|------|--------------|------|-----------------------|------|
|  | F              | %    | F     | %    | F            | %    | F                     | %    |
| Food   | 58             | 39.7 | 67    | 45.9 | 17           | 11.6 | 11.6                  | 2.7  |
| Medicine   | 48             | 32.9 | 60    | 41.1 | 33           | 22.6 | 22.6                  | 3.4  |
| Construction/Roofing                                     | 42             | 28.8 | 48    | 32.9 | 33           | 22.6 | 22.6                  | 15.8 |
| Animal Fodder  | 39             | 26.7 | 57    | 39.0 | 25           | 17.1 | 17.1                  | 17.1 |
| Farming  | 19             | 13.0 | 34    | 23.3 | 75           | 51.4 | 51.4                  | 12.3 |
| Employment Provision                                     | 48             | 32.9 | 74    | 50.7 | 20           | 13.7 | 13.7                  | 2.7  |
| Provides social amenities and infrastructural facilities | 35             | 24.0 | 46    | 31.5 | 30           | 20.5 | 20.5                  | 24.0 |
| Attracts Migrant   | 52             | 35.6 | 81    | 55.5 | 6            | 4.1  | 4.1                   | 4.8  |

**Source:** Field work (2014). Forest Resources and Rural Livelihoods in the Area

**Table 4:** Role of Communities on Protection of Yankari Game Reserve

| Community Views to YGR Protection              | Strongly Agree |      | Agree |      | Do Not Agree |      | Strongly do not agree |      |
|--|----------------|------|-------|------|--------------|------|-----------------------|------|
|  | F              | %    | F     | %    | F            | %    | F                     | %    |
| Community contribute in securing the reserve   | 64             | 43.8 | 78    | 53.4 | 1            | 0.7  | 3                     | 2.1  |
| Community pose threats to the reserve products | 10             | 6.8  | 23    | 15.8 | 83           | 56.8 | 30                    | 20.5 |

**Source:** Field work (2014). Participatory Forest Protection in Yankari Game Reserve

2). Alternative domestic energy source for households should be provided so as to reduce the amount of firewood harvested in the reserve. This can be achieved through improving Briquetting technologies of the local people and provision of improved cooking stoves which consumes low energy.

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