ROLES OF URBAN FORESTRY IN WILDLIFE CONSERVATION: CASE OF SELECTED LOCATIONS IN BORGU LOCAL GOVERNMENT AREA OF NIGER STATE, NIGERIA

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ABSTRACT

The study investigated the roles of urban forestry in wildlife conservation in Borgu Local Government Area of Niger State, Nigeria. Data were obtained through field survey and use of structured questionnaire. The data obtained was analyzed using descriptive statistics. The result revealed that most of the respondents were within the age group of 31 and 40 years (46.7%), married (65.4%) and had tertiary education (74.8%). The result also showed that valuable trees species such as shea butter (Vitellaria paradoxa), locus bean (Parkia biglobosa) and Baobab tree (Adansonia digitata) that are considered endangered in the wild due to deforestation were found in the study area. Among the associated wild animals species sighted in the study areas were cattle egret (18.4%), grey hornbill (15.3%), senegal coucal (13%), bee-eater (12.3%), bush fowl (7.7%), weaver birds (7.7%), touraco bird (6.9%), wood pecker (5.3%) flying squirrel (4.6%), morning dove (4.6%), lizard buzzard (3%) and common falcon (0.7%). The observed activities of these animals include singing, feeding, resting, nesting, flying, playing and mating. Government through the ministry of environment and department of forestry should give serious attention to urban trees and associated animal's conservation, and also ensure public enlightment on trees planting and management.

Keywords: **Benefits, forestry, shrubs, tree, wild animals**

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INTRODUCTION

Urban population explosion in developing countries has brought with it a wide range of challenges and has puts pressures on scarce natural resources, infrastructure and the environment, which has led to social tensions among different interest groups. Other problems include shortage of food, energy and wood for construction, deteriorating air quality as a result of pollution, high temperatures and psychological stress. The way out is conservation of trees and shrubs in urban areas. And this could be achieved through the practice of urban forestry. Urban forestry is also one of the promising means of conserving wild animals. It provides foods, shelter and cover for wild animals. This study was conducted with the aim of identifying the roles of urban forestry in wildlife conservation.

Urban forest refers to all forest crops, both public and private, which is found growing in cities, towns and other urban communities. In a wider sense, it may include any kind of woody plant vegetation growing in and around human settlements (Borokini, 2012). Fuwape and Onyekwelu (2011) listed six types of urban forests in West Africa cities to include (i) semi-private space like green space in residential and industrial areas (ii) designated parks, street, trees and road side plantations (iii) public green areas, green parks botanical gardens, recreational gardens (iv) public and private tree plantations on recants lots, green areas, belt, woodlands and peri-urban tree plantations (v) range lands and forests close to urban. Urban forestry can therefore be defined as the planning, establishment, protection and management of trees and associated plants individually, in small groups, or under forest conditions to ensure their optimal contributions to psychological, sociological and economic well-being of urban society (Salbitano *et al*, 2016 and Babalola, 2011).

Trees are important part of land resources that require adequate management for their sustainable utilization. Urban trees and shrubs contribute to quality of life in towns and cities. They enhance environmental, aesthetics and wildlife values of urban areas. To this extent, a study on the roles of urban forestry in wildlife conservation is important to generate data on urban trees and

shrubs and their importance to humans as well as their benefits to domestic and wild animal in New Bussa and its environs. Thus, the general objective of this study is to assess the roles of urban forestry in wildlife conservation in New Bussa, Niger State. The specific objectives of the study were to identify various trees and shrubs species in the study area; examine various wild animals species associated with these trees and shrubs and the various activities they carry out on them; examine other benefits of these trees and shrubs to residents in the study area.

METHODOLOGY

Study Area

The study was conducted in four different locations in New Bussa, Niger State, Nigeria. These include Federal College of Freshwater Fisheries New Bussa, Federal College of Wildlife Management New Bussa, Federal College of Fresh water Fishery, New Bussa, Niger State, Kainji dam Area and Dogongeri. New Bussa is the headquarters of Borgu Local Government Area of Niger State. It has a mixed ethnic group such as Bussa, Kamberi, Boko, Yoruba, Hausa and Igbo. It lies between latitude 9^0 51' and 11^0N and longitude 2^0 and 4^0 31'E. The annual rainfall ranges from 1000-1500mm. The average monthly temperature is 43^0C and the mean annual relative humidity is 60%. The rainy season is characterized by strong wind, heavy torrential down pour and violent thunder storms. The harmattan season starts in November and continues till early February. However, the cooled dry harmattan abruptly ends in late February and followed by a period of uncomfortable and intense heat accompanied by hot air.

Data Collection

Field Inventory: A survey of trees and shrubs was carried out with the view to determine their distribution and status. All living trees and shrubs were recorded by species and classified based on their families. All wild animals sighted and their activities were also recorded in the field data sheet.

Data on the Benefits of trees and shrubs: Data on the benefits of trees and shrubs were obtained with the use of questionnaire.

Sampling Technique

A random sampling was adopted to collect data in the study area. Four locations were randomly selected. Proportional allocation was used in administering the questionnaire i.e. % of the people in each location were interviewed. A total of 107 copies of questionnaire were administered (Table 1).

TABLE 1: SAMPLE FRAME FOR FIELD SURVEY

S/No	Selected locations	Estimated population	Number of respondents
1	Federal College of wildlife	250	5
2	Federal College of Freshwater Fisheries technology	1200	24
3	Kainji dam Area	1900	38
4	Dogongeri	2000	40
	Total	5,350	107

Data Analysis

Data were analyzed using descriptive statistics. Descriptive statistics (frequency and percentage) employed to describe demographic characteristics of the respondents and identify various tree, shrubs and wild animal species in the study area; and examine benefits of these trees and shrubs to respondents.

RESULTS AND DISCUSSION

Socio-economic characteristics of respondents

Table 2 presents the socio-economic characteristics of the respondents. The result shows that (46.70%) of the respondents were within the age group of 31 and 40 years, 37.3% were within the age group of 20 and 30 years. 12.10% were within the age group of 41 and 50 years, while only 1.90% were within the age group of 1 and 20 years. This indicates that majority of the respondents were young and active. The result supports the findings of Faleyimu and Akinyemi

(2014) who reported that young and agile people engaged in urban forestry. 74.80% of the respondents were male, while only 25.50% were female indicating that more male involved in urban forestry in the study area. The result also shows that majority (65.40%) were married, 29.90% were single, while only 4.70% were widow. Majority (74.80%) of the respondents had tertiary education, 18.70% had secondary education, 4.70% had primary education, while only 1.90% had no formal education. This indicates that the respondents were highly educated and can easily understand adopt any innovation in urban foresty. Fifty-six percent of the respondents had household size of 6-9, 28.00% had household size of 2-5 while only 15.90% had household size of 10 and above.

TABLE 2: SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENTS

Variable	Frequency	Percentage
Sex		
Male	80	74.80
Female	27	25.20
Marital status		
Single	70	65.40
Married	32	29.90
Widow	05	04.70
Age (years)		
1-20	02	1.90
20-30	40	37.40
31-40	50	46.70
41-50	15	14.00
Educational level		
No formal education	02	1.90
Primary education	05	4.70
Secondary education	20	18.70
Tertiary	80	74.80
Household size		
2-5	30	28.00
6-9	60	56.00
>9	17	15.90

Source: Field survey, 2021.

Tree and shrub species in selected locations within the town

In table 3, most (63.60%) of the locations had between 1-10 trees, 28% had between 11-20 trees, while only 8.40% had more than 20 trees in their areas. The result also shows that Mango tree (*Mangifera indica*) (32.70%) was predominant. This was followed by *Citrus aurantifolis* (13%), *Parkia biglobosa* (Locust bean), Masquarade tree and Pawpaw, all had 6.50%, *Anacardium occidentale* (Cashew), *Vitellaria paradoxa* (shea butter), *Azadiracta indica* (Neem) and Acacia spp, all had 4.70%. *Prosopis africana* (0.90%) was the least retained tree species in the locations (Table 3). This indicates a comparative high diversity and distribution of economic tree and shrub species exist within the study area. This affirms the finding of Konijnendijk *et al*., (2004) that green areas in urban centres have high biodiversity. Most of the trees are multipurpose trees as also pointed out in the work of Alfa and Ancha (2019) and Fuwape and Onyekwelu (2011). Furthermore, about seventy-five percent of the trees occurred naturally in the study area, while only 25.20% (most of which were fruits and ornamental plants) were planted by the people in the areas. 72% of the tree species especially those occurring naturally did not take any regular pattern, while 28% of the tree and shrub species took line planting form. Factors considered when selecting trees and shrubs to be retained and planted include economic (60.70%) and environmental factor (39.20%). About fifty-one percent of respondents maintained the trees and shrubs in their areas, while 48.60% did not maintain the trees and shrub in their locations (Table 3)

TABLE 3: TREE AND SHRUB SPECIES IN SELECTED LOCATIONS WITHIN THE TOWN

	Frequency	Percentage
Number of trees/shrubs		
1-10	68	63.60
11-20	30	28.00
Above 20	9	8.40
Trees /shrubs species		
Vitellaria paradoxa	5	4.70
Mangifera indica	25	32.70
Parkia biglobosa	7	6.50
Termarindus indica	3	2.80
Citrus aurantifolia	14	13.00
Afzelia Africana	1	0.90

Gmelina arborea	3	2.80
Anacardium occidentale	5	4.70
Citrus sinensis	4	3.70
Azadirachta indica	5	4.70
Acacia spps	5	4.70
Polyyaltia imgifilia	7	6.50
(Masquerade tree)		
Adansonia digitata	3	2.80
Gardenia aquala	2	1.90
Ficus thonnigii	2	1.90
Nauclea latifolia	3	2.80
Vitex doniana	3	2.80
Prosopis Africana	1	0.90
Anona senegalensis	2	1.90
Carica papaya	7	6.50
Method of regeneration		
Natural	80	74.80
Artificial	27	25.20
Arrangement		
No regular pattern	77	72.00
Line planting	30	28.00
Factors considered when selecting tree/shrub		
Economic	65	60.70
Environment	42	39.20
Maintenance		
Maintained	55	51.40
No maintenance	52	48.60

Source: Field survey, 2021

Benefits of trees and shrubs in the study area

Result in table 4 shows the benefits of trees and shrubs to the people. Food (28%) is considered the most important benefits. Medicine (18.70%) erosion control (13%) ornamental (12.00%) shade (10.20%), fire wood (7.40%), windbreak (5.60%) and fodder (2.80%) were other benefits highlighted by the respondents. The least benefits derived were pole and timber which had 0.90%.

TABLE 4: BENEFITS OF TREES AND SHRUBS AS IDENTIFIED BY RESPONDENTS

Benefits	Frequency	Percentage
Food	30	28.00
Medicine	20	18.70
Firewood	8	7.40
Fodder	3	2.80
Pole	1	0.90

Timber	1	0.90
Protection/windbreak	6	5.60
Shade	11	10.20
Ornamental	13	12.10
Erosion control	14	13.00

Source: Field survey, 2021.

Associated wild animal species

The associated animals sighted during the field investigation were as follow: Cattle egret (18.40%), Grey hornbill (15.30%) Senegal cocker (13.00%) bee-eater (12.30%), bush fowl (7.70%), weaver birds (7.70%), touraco bird (6.90%), wood pecker (5.30%) flying squirrel (4.60%), morning dove (4.60%), lizard buzzard (3.00%) and common falcon (0.70%) (Table 5). The activities of the animals include singing, feeding, resting, nesting, flying, playing and mating.

TABLE 5: ASSOCIATED WILD ANIMAL SPECIES

Animals sighted	Numbers	Percentage	Activities
Grey horn bill	20	15.30	Singing
Bee eater	16	12.30	Feeding
Senegal cocker	17	13.00	Resting
Touraco bird	9	6.90	Feeding
Bush fowl	10	7.70	Mating
Morning dove	6	4.60	Nesting
Flying squirrel	6	4.60	Playing
Lizard buzzard	4	3.00	Flying
Weavers birds	10	7.70	Nesting
Common falcon	1	0.70	Flying
Cattle egret	24	18.40	Flying
Wood pecker	7	5.30	Feeding

Source: Field survey, 2021.

CONCLUSION

Effectiveness of urban forestry in conservation of trees and shrub and associated wild animals was demonstrated in this study. There is a comparative high diversity and distribution of economic tree and shrub species within the study area. Valuable trees species such as shea butter (*Vitellaria paradoxa),* Locus bean (*Parkia biglobosa*), Baobab tree (*Adansonia digitata)* that are considered endangered in the wild due to deforestation were found in urban areas where they cannot be exploited because of the damage it could cause to buildings and other facilities. Fauna species which inhabit these trees are also preserved. Government through the ministry of environment and Department of Forestry should give serious attention to urban trees and associated animal's conservation and also ensure public enlightenment on tree planting for environmental health.

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