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# **Ethnobotanical Survey of Flora and Fauna Species in Kainji Lake National Park New-Bussa Local Government Area, Niger State, Nigeria**

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### **Author's contribution**

*The sole author designed, analysed, interpreted and prepared the manuscript.*

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## **ABSTRACT**

This study was carried out to identify the Ethnobotanical uses of flora and fauna species in Kainji Lake National Park New-Bussa Local Government Area, Niger State, Nigeria. The study objectives were to document knowledge and generate data on identification and uses of Plant species and animal species in Borgu and Zogurma sector of the park. Ethnobotanical surveys based on interviews from the park rangers, plant taxonomist and zoologist staff of the park and Botanical survey was carried out based on sample plots. A stratified random sampling was used to select sample sites within the two sector of the Park, based on flora and fauna sub-classification. A total Ten (10) plots of 100m x 100m strips were demarcated within the two sectors. In each plot a total of four (4) 20m x 20m sub-plots were randomly selected for identification of Flora and Fauna resources in both the two sector of the park. Results from Flora resources shows a total of 45 plants species belonging to 21 families were selected.in both the two sector. Family- Leguminosae and Combretaceace were the dominant family in terms of number of species represented. The species are multipurpose and are exploited to satisfy different subsistence needs. Bark and Leaf are the most commonly used Flora parts for medicinal in KLNP. Results from Fauna resources shows that Family-Bovidea and Felidae are the most dominate in the Mammal species, Family-Pythonidea is

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dominate in Reptile species, Birth has different family and species. Alestidae and Cyprinidae are the dominates in fish found in KLNPN while Family-Mochokidae and Bagridae are the most dominates in the fresh-water fish species in Kainji Lake (Northern Nigeria).

**Keywords:** *Ethnobotanical survey; plant taxonomist; zoologist; flora and fauna resources.*

## 1. INTRODUCTION

Ethnobotany is the scientific study of relationship that exists between people and plants. It interfaces between indigenous people and their wild exploit of plants around them, which is a significant aspect of biological diversity conservation. Ethnomedicinal plants are utilized for the treatments of diseases and disorders like dysentery, skin diseases, hypertension, headache, boils and blisters, rheumatism and gout, arthritis, piles, jaundice, haemorrhoids, ophthalmic diseases, fever, toothache, diarrhea, bone fracture, cough, insect and snake bites, worm infection, cuts and wounds, cold and catarrh, bronchitis, asthma, leprosy etc [1]. It is also the study of interrelations between humans and plants; however, it implies the study of indigenous or traditional knowledge of plants. It involves indigenous plant classification, cultivation, used as food, medicine and shelter [2].

Fauna species are the most important component of the ecosystem and they provide a wide array of environmental services such as; keeping balance in Kainji Lake Park through pollinating a variety of different plant species, dispersing seeds, controlling pest population and reducing the damage caused by different pest species, scavenging carcasses and recycling of nutrient back into the soil. Fauna species are not only confined to specific habitat but they also make use all the area within and outside the National park in search for food, shelter and reproduction.

Kainji Lake National Park is rich in fauna species such as Mammals 65 species, 30 species of Reptiles, 350 species of Birds and 82 species Fishes. Mammals in the park are in diverse due to the richness of plant communities; they are versatile and are major component of ecosystem e.g pollination, seed dispersal, food source, pest control and nutrient cycling. In addition to ecological importance, mammals provide benefit to human being, e.g recreation, food, income and research United Nation Environment Programme [3]. Reptiles are also important component of the ecosystem through which they control various

pest of the park which may cause sever damages e.g termite, beetles, mice, rats etc. reptiles are highly sensitive species i.e they become vulnerable due to land use changes and habitat alteration [4]. Bird species are functional group of National park as seed disperse mechanism, pollinators, predators, pest control and scavengers. They are associated with vegetative structure and composition [4].

Flora species remained an integral part of human society throughout history [3]. The savanna woodland of the Borgu sector is dominated by different plant species such as *Burkea africana*, *Terminalia avicennioides* and *Deterium microcarpum*. Bellow the quartzite ridges *Isobertina tomentosa* predominate and down the hillside are *Diospyros mespiliformis*. The Zugurma sectors is like Guinean forest-savanna mosaic having tree cover, overgrazed and eroded. Trees common in the watercourse of the park are *Azelia africana*, *Vitelaria paradoxa*, *Parkia clappertonia*, *Deterium microcarpum*, *Terminalia schimperiana*, *Deniella oliveri* and *Khaya senegalensis* [3]. After food and shelter a suitable remedy is plant for curing various diseases [5]. Traditional medicine is as indigenous medicine been derived from plant used to maintain health, diagnose, treat physical and mental health illness differently from allopathic medicine based on theories, beliefs and experience [6]. Traditional medicines have been in used with great contributions to human health worldwide [7]. According to [8], 60-80% of the population used trees and plant species in every country of the developing world. The practice of traditional medicine is widely spread in China, India, Japan, Pakistan, Sri Lanka, Thailand and Korea [9]. China account 40% of all health care delivery and used to treat roughly 200 million patients annually [10].

According to World Health Organization (WHO), more than 3.5 billion people in the developing world rely on medicinal plants as components of their healthcare [11]. The vast majority of people (70-80%) in Africa consulting Traditional Medical Practitioners (TMPs) for their healthcare [12]. Ethiopia posses about 6000 species of vascular plant having different topography and climate

condition [13]. About 80% of human population and 90% of livestock rely on traditional medicine in the country [14].

## 2. METATERIALS AND METHODS

### 2.1 The Study Area

The study was carried out in Kainji Lake National Park, New Bussa Local Government Area of Niger State. The park is located at latitude 9° 45' and 10°23'N and between longitudes 3° 40' and 5° 47'E. It is made up of two sectors (Borgu and Zugurma) situated in Borgu and Kaiama/Baruten Local Government areas of Niger and Kwara States respectively. It covers a total land area of 5,340.82sqkm (2,062.10 sq mi). The park has 3 district sectors which are Zugurma, Borgu Niger and Borgu Kwara sectors. The park has 4 ranges: Doro range, Kali range, Oli range/ Oli camp and Kubine range which is subdivided into two (Luma and Dekala outpost). Abubakar *et al.*, [15] reported that the park is subdivided into 4 departments which are; park protection and conservation, finance and administration, Tourism and park engineering and maintenance departments. The Borgu Game Reserve is mostly made up of savanna forest and has an area of 3,929 km<sup>2</sup>(1,517 sq mi), while the Zugurma Game Reserve is smaller at 1,370km<sup>2</sup>. These

two parks were separated by Kainji Lake a 136 km (85 mi) long reservoir. The Zugurma sector has no access road and only the Borgu sector is used for tourism.

#### 2.1.1 Climate and topography of the study area

Kainji Lake National Park has a yearly cycle of dry and wet weather based on Northern Savanna climate. The wet season begins from late April to October while the dry season is from November to April with a temporary harmattan period between mid-December and February. Several parts of the Park are naturally linked and partitioned by a network of beautiful hills, valleys, rivers and streams that empty into the river Niger. These natural features provide advantage for tourism/anti-poaching activities in the park. The main rivers are Oli, Timo, Menai, Doro, Manyara and Numan Zorugi. The temperature during the dry season is about 37°C and drops to about 28°C during the wet seasons being influenced predominantly by the north-east harmattan wind [16]. The mean annual rainfall is 1200mm. The amount of rainfall increases to the south-east from Borgu towards Niger valley. This is due to the leeward nature of the park site being east of Yoruba hills. The number of rainy days averages about 200.

### MAP OF NIGERIA SHOWING KAINJI LAKE NATIONAL PARK

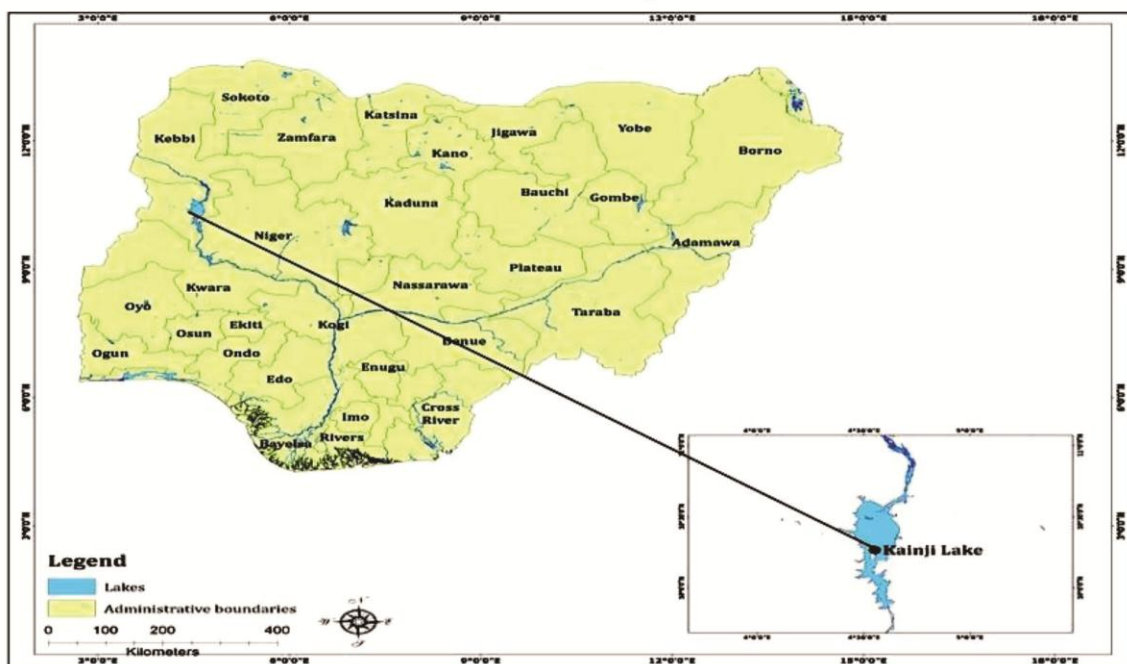


Fig. 1. Map of Nigeria showing Kainji lake national park

## Ethnobotanical Survey of Flora and Fauna Species in Kainji Lake National Park

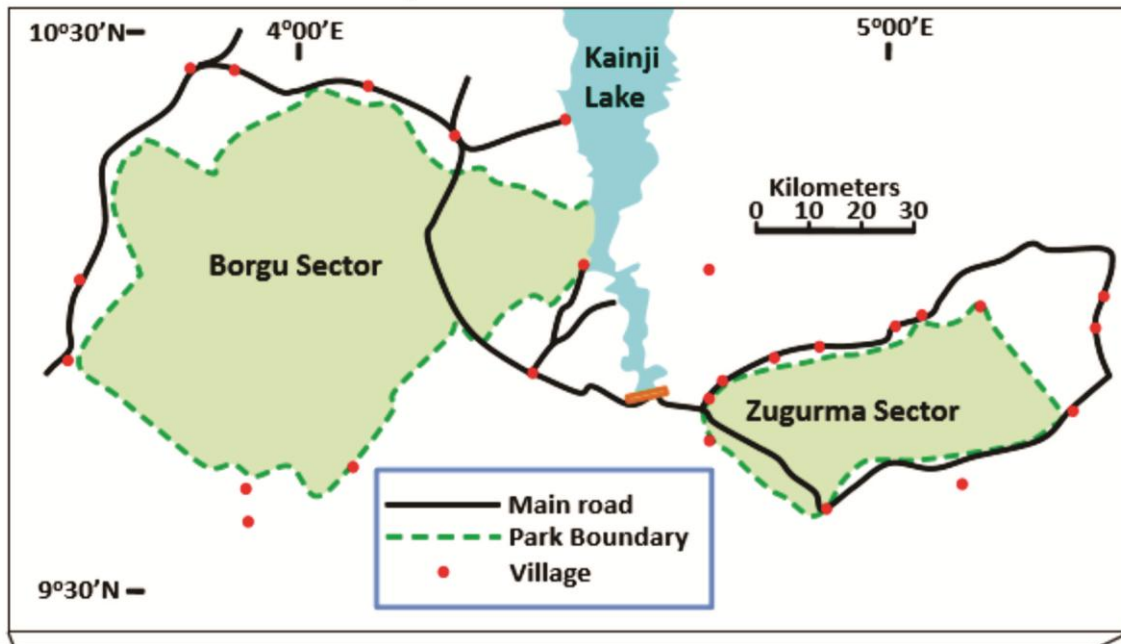


Fig. 2. Google image of the sampling location

### 3. RESULTS

The study was conducted from January - December, 2012. It was carried out base on the approval from Kainji Lake National Park Authorities. Field work consists of two parts:

- 1) Ethnobotanical survey based on interviews from the park ranges, plant taxonomist and zoologist staff of the park.
- 2) Botanical survey based on sample plots.

#### 3.1 Data Collection

A stratified random sampling was used to select sample sites within Borgu and Zugurma sector of the Park. This was done based on flora and

fauna sub-classification. A total Ten (10) plots of 100m x 100m strips were demarcated within the two sectors. In each plot a total of four (4) 20m x 20m sub-plots were randomly selected for identification of flora and fauna in both the two sector of the park. Samples of flora and fauna collected from each of the sub-plots were identified with the taxonomists and zoologist in the team using participatory rural appraisal techniques [17,18]. Frequency of each species was taken as a measure of its occurrence within the sub-plots.

Population Density

$$= \frac{\text{Total number of an individual species from all sampled plots}}{\text{Total area of sample plots (m}^2\text{)}}$$

### ETHNOBOTANICAL SURVEY OF FLORA SPECIES IN KAINJI LAKE NATIONAL PARK NEW-BUSSA LOCAL GOVERNMENT AREA OF NIGER STATE

Table 1. Ethnobotanical survey of flora species in Kainji lake national park

Family Names	Species Names	Vernacular Names (HAUSA)
Anacardiaceae	<i>Lannea acida</i> A. Rich.	Faru
	<i>Lannea schimperi</i>	Babban bara, Faru
Annonaceae	<i>Annona senegalensis</i> Pers.	Guadardajii
Bignoniaceae	<i>Kigelia africana</i> (Lam.) Benth.	Pahina
	<i>Sterospermum erinaceous</i>	Jiri
	<i>Sterospermum kunthianum</i>	Sansami

<i>Bixaceae</i>	<i>Cochlospermum tinctorium</i> A. Rich.	Rawaya
<i>Burseraceae</i>	<i>Boswellia dalzielii</i> Hutch.	Ararrabi
	<i>Boswellia odoranta</i>	Ararrabi
<i>Celastraceae</i>	<i>Maytenus senegalensis</i> (Lam.) Exell	Namijintsada
<i>Chrysobalanaceae</i>	<i>Parinari polyandra</i> Benth.	Sassabani
<i>Combretaceae</i>	<i>Anogeissus leiocarpus</i> (DC.) Guill. &Perr.	Marike
	<i>Combretu mmolle</i> R. Br. ex G. Don	Ugadamo
	<i>Combretum nigricans</i> Lepr. exGuill. &Perr.	Ciiriiri
	<i>Terminalia macroptera</i> Guill. &Perr.	Kwandari
	<i>Terminalia schimperiana</i> Hochst.	Baushe
	<i>Terminalia glaucescens</i> <i>Terminalia avicennioides</i>	Baushe Baushe
<i>Ebenaceae</i>	<i>Diospyros mespiliformis</i> Hochst. ex A. DC.	Kanya
<i>Leguminosae</i>	<i>Acacia seyal</i> Delile	Dushe
	<i>Azelia africana</i> Sm.	Kawo
	<i>Burkea africana</i> Hook.	Kolo
	<i>Daniellia oliveri</i> (Rolfe) Hutch. &Dalziel	Maje
	<i>Detarium microcarpum</i> Guill. &Perr.	Taura
	<i>Entada africana</i> Guill. &Perr.	Tawaosa
	<i>Isobertinia doka</i> Craib&Stapf	
	<i>Parkia biglobosa</i> (Jacq.) R. Br. ex G. Don	Doruwa
	<i>Piliostigma thonningii</i> (Schumach. &Thonn.) Milne-Redh.	Kalugo
	<i>Prosopis africana</i> (Guill. &Perr.) Taub.	Kiriya
<i>Pterocarpus erinaceus</i> Poir.	Madobia	
<i>Tamarindus indica</i> L.	Tsaamiyan	
<i>Lamiaceae</i>	<i>Vitex doniana</i> Sweet	Dainyaa
<i>Loganiaceae</i>	<i>Strychnos pinosa</i> Lam.	Kokiya
<i>Malvaceae</i>	<i>Adansonia digitata</i> L.	Kuka
	<i>Grewia mollis</i> Juss.	Dargaji
	<i>Sterculiasetigera</i> Delile	Kukuki
<i>Meliaceae</i>	<i>Khaya senegalensis</i> (Desr.) A. Juss.	Madaci
	<i>Psedocedrela kotschyi</i>	Tunaa
<i>Moringaceae</i>	<i>Moringa oleifera</i>	Zogale
<i>Olacaceae</i>	<i>Ximenia americana</i> L.	Jimikarfiri
<i>Phyllanthaceae</i>	<i>Bridelia ferruginea</i> Benth.	Kishi
<i>Polygalaceae</i>	<i>Securidaca longependunculata</i>	Uwar-magunguna
<i>Rubiaceae</i>	<i>Crossopteryx febrifuga</i> (Afzel. ex G. Don) Benth.	Kashin-awaki
	<i>Gardenia aqualla</i> Stapf& Hutch.	Gaudar-daji
	<i>Nauclea latifolia</i> Sm.	Kokia, Tuwun biri
<i>Sapotaceae</i>	<i>Vitellaria paradoxa</i> C.F. Gaertn.	Kadanya
<i>Hymenocardiaceae</i>	<i>Hymenocardia acidiae</i>	Jan-yaro

Source: Field survey, 2012

### 3.2 Medicinal Plants

Information on the medicinal plants of KLNP is presented in Table 2. This includes; local names, types of ailments treated, parts of plant used, preparations and administration procedures. About twenty-seven (27) ailments were recorded. *Crossopteryx febrifuga* for the revival of dying domestic animals. (*Annona senegalensis*), Juice applied on affected area of wounds. Most plants are used for treating more than one ailment, while preparations often involve the inclusion of

ancillary items such as alligator pepper (*Aframomum melegueta* K. Schum.), potash and ginger (*Zingiber officinale* Roscoe). *Vitellaria paradoxa*, Cream used to massage affected area. The most widely used parts of the plants in this region are the bark, followed by the leaves and roots. Seeds and fruits are not commonly used in preparations of decoctions for treating ailments. The mode of administration ranges from drinking or bathing with the preparations, chewing and sitting atop the prescription among others.

**Table 2. Medicinal uses of plants surveyed in Kainji lake national park**

<b>Species</b>	<b>Part used</b>	<b>Ailment treated</b>	<b>Preparation</b>	<b>Administration</b>
<i>Acacia seyal</i> Delile	Bark	Toothache, body pain	Bark is cooked alone	Fluid is drunk
<i>Adansonia digitata</i> L.	Bark	Toothache, cough	Bark is soaked in water	By drinking and bathing with water
<i>Annona senegalensis</i> Pers	Leaf	Wounds	Young shoots and leaves are squeezed to generate juice	Juice applied on affected area of wounds
<i>Anogeissus leiocarpus</i> (DC.)Guill. &Perr.	Bark	Stomach ache and worms	Bark is dried, ground, then boiled	Fluid is drunk
<i>Boswellia dalzielii</i> Hutch.	Bark,Leaf	Piles, stomachache and worms	Bark is dried, pounded then soaked in water. Leaves and bark maybe boiled together	Fluid is used for bathing twice a day
<i>Bridelia ferruginea</i> Benth.	Root,Stem	Dysentery, whooping cough	Root is cooked. Stem is chewed	Alligator pepper is inserted in the stem and chewed
<i>Burkea africana</i> Hook.	Leaf,Bark	Stomach ache, body weakness and joint pain	Bark and leaves are boiled together or the bark is soaked alone	Fluid is used for bathing. The soaked bark is drunk
<i>Combretum nigricans</i> LeexGuill. &Perr.	Root	Rheumatism	Roots are ground and mixed with potash	Applied on affected area
<i>Crossopteryx febrifuga</i> (Afzel. ex G. Don) Benth.	Fruit, Bark	Reviving domestic animals; Stomach disorders	Fruit is ground and mixed with potash. Bark is cooked with potash	A dying animal is revived by drinking this concoction
<i>Daniellia oliveri</i> (Rolfe)Hutch. &Dalziel	Bark	Dysentery	Bark is soaked in water	Fluid is drunk
<i>Detarium microcarpum</i> Guill. &Perr.	Bark, Root,	Dysentery, joint pain	Bark and roots are cooked together.	Fluid is used for bathing and is

Species	Part used	Ailment treated	Preparation	Administration
	Leaf		Leaves are cooked alongside other plants	also drunk
<i>Entada africana</i> Guill. & Perr.	Root	Gonorrhea, piles and worms	Roots are cooked alone	Fluid is drunk
<i>Grewia mollis</i> Juss.	Bark	Cuts and wounds	Bark is pounded with the addition of a little water	Applied fresh, directly on the affected area
<i>Khaya senegalensis</i> (Desr.) A. Juss.	Bark	Piles and stomachache	Bark is pounded and soaked in water	Fluid is drunk
<i>Kigelia africana</i> (Lam.) Benth.	Root, Bark, Fruit	Reduction of high blood pressure, stomach ache, yellow fever	Roots, bark and fruit are peeled and cooked to make a concoction	The concoction is drunk
<i>Lannea acida</i> A. Rich.	Bark	Blood tonic	Bark is soaked in water	Fluid is drunk daily
<i>Maytenus senegalensis</i> (Lam.) Exell	Root, Leaf	Toothache	Root and leaves are cooked together	Fluid is used to wash mouth both morning and night
<i>Nauclea latifolia</i> Sm.	Root, Leaf	Waist, stomach and back pain	Root is boiled in water	Fluid is used to bath and drink
<i>Parinari polyandra</i> Benth.	Leaf, Bark	venereal disease (such as syphilis)	Leaves and bark are cooked together	Fluid drunk or bark chewed
<i>Parkia biglobosa</i> (Jacq.) R. Br. ex G. Don	Root	Yellow fever	Root cooked with potash	Fluid is drunk
<i>Piliostigma thonningii</i> (Schumacher & Thonn.)	Leaf, Root	Back ache, dysentery, cough	Leaves and roots are cooked with ginger and	Bathe and drink the fluid. For piles soak
Milne-Redh.		and piles	alligator pepper	sitting in the fluid of the prepared concoction
<i>Prosopis africana</i> (Guill. & Perr.) Taub.	Leaf, Stem	Toothache	Leaves and stem cooked together, or cut stem is chewed	Fluid drunk or stem chewed
<i>Pterocarpus erinaceus</i> Poir.	Bark	Unsteady menstruations, blood tonic	Bark boiled with potassium	Fluid is drunk
<i>Sterculia setigera</i> Delile	Bark	Increase blood in the body	Bark cooked	Fluid is drunk morning and

Species	Part used	Ailment treated	Preparation	Administration
<i>Strychnos pinosa</i> Lam.	Root	Hernia	Root dried with other plant species and ground into powdery form	Mixed with pap and drunk.
<i>Tamarindus indica</i> L.	Fruit	Ease digestion	Fruit soaked in water until dissolved	Fluid is drunk
<i>Terminalia macroptera</i> Guill.&Perr.	Bark	Cough	Bark dried, ground and mixed with water	Fluid is drunk
<i>Strospernum kunthianum</i>	Leaf	Medicinal cure	Leaves are cooked with water	Drink the water
<i>Strospernum erinacious</i>	Bark and Hard wood	Blood tonic and domestic animal feed on	Bark is cooked	Drink the fluid
<i>Terminalia schimperiana</i> Hochst.	Roots	Venereal diseases such as gonorrhoea	Roots boiled with potassium	Fluid is drunk
<i>Vitellaria paradoxa</i> C.F. Gaertn.	Seed,Bark	Dislocation,Concoction drunk	Seed processed into cream. Bark cooked as concoction	Cream used to massage affected area.
<i>Vitex doniana</i> Sweet	Leaf, Bark	Stomachache	Leaves and bark boiled together	Fluid is drunk
<i>Securidaca longepnduculata</i>	Leaf Bark, Sterm, Root	Dislocation and fracture, Cough	Leaves, sterm, root and barkboiled together	Fluid is drunk from the part boiled

Source: Field survey, 2012



**Plants used for construction purposes in the Borgu and Zugurma Sector of Kainji Lake National Park, Nigeria**

Ten (10) plant species out of the 45 studies from KLNP are used for construction purposes. *Azelia africana*, *Anogeissus leiocarpus*, *Burkea africana*, *Daniellia oliveri*, *Isobertia doka*, *Khaya*

*senegalensis*, *Vitex doniana*. The most common part used is wood. The bark of *Piliostigma thonningii* and *Acacia seyal* are used for rope also the stem of *Cochlospermum tinctorium* is used as rope to tie farm products and to tie pieces of wood together for roofing. Plants like *Isobertia doka*, *Daniellia oliveri* and *Khaya senegalensis* are used.

**ETHNOBOTANICAL SURVEY OF FAUNA SPECIES IN KAINJI LAKE NATIONAL PARK NEW-BUSSA LOCAL GOVERNMENT AREA OF NIGER STATE**

**Table 3. Ethnobotanical survey of fauna species in Kainji lake national park**

*Mammals/ Reptile/Birds/Fishes*

S/N	Animals	Species Names	Family Names
<b>A</b>	<b>Mammals</b>		
1	Roan Antelope	<i>Hippotragus equines</i>	<i>Bovidea</i>
2	Western Hartebeest	<i>Alcelaphus buselaphus</i>	<i>Bovidea</i>
3	Senegal Kobs	<i>Kobus kob</i>	<i>Bovidea</i>
4	Bush Buck	<i>Tragelaphus scriptus</i>	<i>Bovidea</i>
5	Reed Buck	<i>Redunca arundinum</i>	
		<i>Redunca fulvorufula</i>	<i>Bovidea</i>
		<i>Redunca redunca</i>	
6	Grimms Duiker	<i>Sylvicapra grimmia</i>	<i>Bovidea</i>
7	Buffalo	<i>Bison bison</i>	<i>Bovidea</i>
8	Warthog	<i>Phacochoerus africanus</i>	<i>Suidae</i>
9	Red-flaked Duiker	<i>Cephalophus rufilatus</i>	<i>Bovidea</i>
10	Hippopotamus	<i>Hippopotamus amphibius</i>	<i>Hippopotamidae</i>
11	Lion	<i>Panthera leo</i>	<i>Felidae</i>
12	Leopard	<i>Panthera pardus</i>	<i>Felidae</i>
13	Spotted Hyena	<i>Crocuta crocuta</i>	
	Brown Hyena	<i>Hyaena brunnea</i>	<i>Hyaenidae</i>
	Striped Hyena	<i>Hyaena hyaena</i>	
14	Baboon	<i>Papio Anubis</i>	<i>Cercopithecidae</i>
15	Patas Monkey	<i>Erythrocebus patas</i>	<i>Cercopithecidae</i>
16	Green Monkey	<i>Chlorocebus sabaeus</i>	<i>Cercopithecidae</i>
17	Cheetah	<i>Acinonyx jubatus</i>	<i>Felidae</i>
18	Serval Cat	<i>Leptailurus serval</i>	<i>Felidae</i>
19	African Civet	<i>Civettictis civetta</i>	<i>Viverridae</i>
20	Marsh Mongoose	<i>Atilax paludinosus</i>	<i>Herpestidae</i>
21	Oribi	<i>Ourebia ourebi</i>	<i>Bovidea</i>
22	Genet	<i>Viverra genetta</i>	<i>Viverridae</i>
23	Water Buck	<i>Kobus defassa</i>	<i>Bovidea</i>
		<i>Kobus ellipsiprymnus</i>	
24	Caracal Cat	<i>Caracal caracal</i>	<i>Felidae</i>
<b>B</b>	<b>Reptiles</b>		
1	Cobra	<i>Naja naja</i>	<i>Elapidae</i>
2	Nile Monitor Lizard	<i>Varanus niloticus</i>	<i>Varanidae</i>
3	Royal Python	<i>Python regius</i>	<i>Pythonidae</i>
4	Terrapin	<i>Malaclemys terrapin</i>	<i>Emydidae</i>
5	Rock Python	<i>Python sebae</i>	<i>Pythonidae</i>
<b>C</b>	<b>Birds</b>		
1	African fish eagle	<i>Haliaeetus vocifer</i>	<i>Accipitridae</i>
2	Hadada Ibis	<i>Bostrychia hagedash</i>	<i>Threskionithidea</i>
3	Francoline	<i>Francolinus ptilopachus</i>	<i>Phasianidea</i>
4	Secretary Bird	<i>Sagittarius serpentarius</i>	<i>Sagittariidae</i>

S/N	Animals	Species Names	Family Names
<b>A</b>	<b>Mammals</b>		
5	Guinea Fowl	<i>Numida meleagris</i>	<i>Numididae</i>
6	Ground horn bill	<i>Bucorvus leadbeateri</i>	<i>Bucorvidae</i>
7	Ostrich	<i>Struthio camelus</i>	<i>Struthionidae</i>
8	Nigeria National Bird	<i>Balearica pavonina</i>	<i>Gruidae</i>
9	Bustard	<i>Lissotis melanogaster</i>	<i>Otididae</i>
10	Doves	<i>Columba livia</i>	<i>Columbidae</i>
11	Bee-eaters	<i>Merops viridissimus</i>	<i>Meropidae</i>
12	Stone Partridge	<i>Ptilopachus petrosus</i>	<i>Odontophoridae</i>
<b>D</b>	<b>FISH</b>		
1	Nile perch	<i>Alestes dentex</i>	<i>Alestidae</i>
2	Catfish	<i>Clarias gariepinus</i>	<i>Clariidae</i>
3	Silver catfish	<i>Chrysichthys nigrodigitatus</i>	<i>Bagridae</i>
4	Electric catfish	<i>Malapterurus paradoxoglanis</i>	<i>Malapteruridae</i>
5	Tiger fish	<i>Hydrocynus vittatus</i>	<i>Alestidae</i>
6	Mormyrid fish	<i>Gnathonemus petersii</i>	<i>Mormyridae</i>
7	Spotted trunkfish	<i>Lactophrys bicaudalis</i>	<i>Ostraciidae</i>
8	Grass eaters	<i>Ctenopharyngodon idella</i>	<i>Cyprinidae</i>
9	Snapper fish	<i>Lutjanus gibbus</i>	<i>Lutjanidae</i>
10	Mugil fish	<i>Mugil cephalus</i>	<i>Mugilidae</i>
11	Tilapia fish	<i>Oreochromis niloticus</i>	<i>Cichlidae</i>
12	West African lungfish	<i>Protopterus annectens</i>	<i>Lepidorsirenidae</i>
13	Barbels fish	<i>Labeobarbus bynni</i>	<i>Cyprinidae</i>
14	Butterfish	<i>Peprilus paru</i>	<i>Stromateidae</i>
15	Glass catfish	<i>Kryptopterus vitreolus</i>	<i>Siluridae</i>
16	Fresh water sardine	<i>Sardinella tawilis</i>	<i>Clupeidae</i>
17	Snake head	<i>Channa orientalis</i>	<i>Channidae</i>

Source: Field survey, 2012

Table 4. Fresh water fish species in Kainji lake (Northern Nigeria)

S/N	SPECIES NAMES	FAMILY NAMES	HABITATS
1	<i>Alestes dentex</i>	<i>Alestidae</i>	Pelagic
2	<i>Auchenoglanis occidentalis</i>	<i>Bagridae</i>	Demersal
3	<i>Bagrus bajad</i>	<i>Bagridae</i>	Demersal
4	<i>Bagrus docmak</i>	<i>Bagridae</i>	Benthopelagic
5	<i>Brycinus macrolepidotus</i>	<i>Alestidae</i>	Pelagic
6	<i>Brycinus nurse</i>	<i>Alestidae</i>	Pelagic
7	<i>Chrysichthys autatus auratus</i>	<i>Bagridae</i>	Demersal
8	<i>Chrysichthys nigrodigitatus</i>	<i>Bagridae</i>	Demersal
9	<i>Clarias anguillaris</i>	<i>Clariidae</i>	Demersal
10	<i>Clarias gariepinus</i>	<i>Clariidae</i>	Benthopelagic
11	<i>Clarotes laticeps</i>	<i>Bagridae</i>	Demersal
12	<i>Gymnarchus niloticus</i>	<i>Gymnarchidae</i>	Demersal
13	<i>Heterobranchus bidorsalis</i>	<i>Clariidae</i>	Demersal
14	<i>Heterotis niloticus</i>	<i>Osteoglossidae</i>	Demersal
15	<i>Hydrocynus forskalii</i>	<i>Alestidae</i>	Pelagic
16	<i>Labeo senegalensis</i>	<i>Cyprinidae</i>	Benthopelagic
17	<i>Lates niloticus</i>	<i>Centropomidae</i>	Benthopelagic
18	<i>Malapterurus minjiriya</i>	<i>Malapteruridae</i>	Demersal
19	<i>Mormyrus macrophthalmus</i>	<i>Mormyridae</i>	Benthopelagic
20	<i>Mormyrus rume</i>	<i>Mormyridae</i>	Demersal
21	<i>Oreochromis niloticus niloticus</i>	<i>Cichlidae</i>	Demersal
22	<i>Parailia pellucid</i>	<i>Scchilbeidae</i>	Benthopelagic
23	<i>Pellonula leonensis</i>	<i>Clupeidae</i>	Pelagic
24	<i>Polypterus bichir lapradei</i>	<i>Polypteridae</i>	Demersal

S/N	SPECIES NAMES	FAMILY NAMES	HABITATS
25	<i>Polypterus endlicheri endlicheri</i>	<i>Polypteridae</i>	Demersal
26	<i>Polypterus senedalus senegalus</i>	<i>Polypteridae</i>	Demersal
27	<i>Sarotherodon galilaeus galilaeus</i>	<i>Cichlidae</i>	Demersal
28	<i>Schilbe mystus</i>	<i>Schilbeidae</i>	Demersal
29	<i>Sierrathrissa leonensis</i>	<i>Clupeidae</i>	Pelagic
30	<i>Synodontis batensoda</i>	<i>Mochokidae</i>	Benthropelagic
31	<i>Synodontis budgetti</i>	<i>Mochokidae</i>	Benthropelagic
32	<i>Synodontis clarias</i>	<i>Mochokidae</i>	Benthropelagic
33	<i>Synodontis gambiensis</i>	<i>Mochokidae</i>	Benthropelagic
34	<i>Synodontis membranaceus</i>	<i>Mochokidae</i>	Benthropelagic
35	<i>Synodontis ocellifer</i>	<i>Mochokidae</i>	Benthropelagic
36	<i>Synodontis resupinatus</i>	<i>Mochokidae</i>	Benthropelagic
37	<i>Synodontis schall</i>	<i>Mochokidae</i>	Benthropelagic
38	<i>Synodontis vermiculatus</i>	<i>Mochokidae</i>	Benthropelagic
39	<i>Tilapia zilli</i>	<i>Cichlidae</i>	Demersal

Source: Fishbase.org, 2003

#### 4. DISCUSSION

Studies have analyzed indigenous knowledge of plants and animals use in Kainji Lake National Park which is also beneficiary among different communities of the park (e.g., Kala 2005, Rijal 2008). In this study, ethnobotanical knowledge have been acquired on the importance of flora and fauna resource which is useful to the park and scientific research. Kainji Lake National Park have learned to utilize the resources (flora and fauna species) around them in many ways. Three categories of use were identified viz; flora and fauna species, medicine.

#### 5. CONCLUSION

It is concluded that from the findings of this study, KLNP officials provides the basis of the resource (Flora and Fauna) in the protected area given the proceeding findings of this study, it is clear that the protection of biodiversity, which is one of the prime management objectives of the KLNP, this is best achieved by park rangers. In essence, rangers and hunters participate in the management, integrating the aspirations and goal of the park which enable the existence of the Park to be in an effective way of enlisting their support in biodiversity management and protection also to manage the use of unique ecosystem that preserve, conserve the natural heritage. Furthermore, there is the need to devise sustainable harvesting techniques for wild populations of plant and animals species from buffer zone areas in order to address the demand and aspiration of the park. Sustainable harvesting combined with cultivation can help improve yields of harvested species in buffer zones, and it may reduce pressure on protected

areas. Further research could be geared toward more identification of flora and fauna resource in KLNP as migration by fauna enables new species into the park, animal droppings (Births) bring new species of flora and flooding encourages more fish, trees species into the park.

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#### COMPETING INTERESTS

Author has declared that no competing interests exist.

#### REFERENCES

1. Adebayo AA, Tayo BC, Adegoke AA, Okoh AI, Ajibesin KK. Rationalizing some medicinal plants used in the treatments of skin diseases. *African Journal of Microbiology Research*. 2010; 10:958-963.
2. Maurice M. Iwu. *Advance in Phytomedicine*. 2002;1:321-324.
3. Kainji Lake National Park. United national environment programme: World conservation monitoring centre; 2007. Archived from 30 September 2007. Retrieved 11 May 2012.
4. Wetland wildlife resource of Nigeria, FAO; 2019. Retrieved 12 May 2019.

5. WHO. Traditional medicine: Growing needs and potentials; 2002.
6. WHO. Traditional medicine; 2012. Available:<http://www.who.int/mediacentre/factsheets/fs134/en>
7. WHO. Traditional medicine; 2008. Available:<http://www.who.int/mediacentre/factsheets/fs34/en>
8. Sofowora A. Medicinal plants and traditional medicine in Africa, John Wiley & Sons, New York, NY, USA; 1982.
9. Park HL, Lee HS, Shin BC, et al. Traditional medicine in China, Korea, and Japan: A brief introduction and comparison. Evidence-Based Complementary and Alternative Medicine. 2012; 9. Article ID 429103
10. WHO. Consultation meeting on traditional medicine and modern medicine: Harmonizing the two approaches. (WP)TM/ICP/TM/001/RB/98-RS/99/GE/32(CHN)); 1999.
11. Balick JM, Cox PA. Plants, people and culture: The science of ethnobotany. New York: Scientific American Library, a division of HPHLP;1996.
12. Cunningham AB. African medicinal plants: Setting priorities at the interface between conservation and primary healthcare. People and Plants Working Paper 1. Paris; 1993.
13. IBC. Ethiopian third national report. Tech, Rep., IBC, Addis Ababa, Ethiopia; 2012. Available:[http://www.fao.org/pgrfa-gpa-archive/eth/Reports/Third Report.pdf](http://www.fao.org/pgrfa-gpa-archive/eth/Reports/Third%20Report.pdf)
14. PGRC. Country report to the FAO international technical conference on plant genetic resources. Tech. Rep; 1996.
15. Abubakar THA, Aliyu WM, Stopford EPG. Appraising the rural communities impact on Kainji Lake rd National park in: Proceeding of 23 Annual Conference of Forestry Association of Nigeria (FAN). 1993;209- 217.
16. Development Research Bukeam-DRB. Report on ecological survey for Kainji lake national park. Submitted to project preparation Manager; Local Empowerment and Environmental Management Project (LEEMP). 2003;126.
17. Freudenthal S, Narrowe. Focus on people and trees. A guide to designing and conducting baseline studies for community forestry. Minor Field Studies No. 47. Swedish University of Agricultural Sciences. International Rural Development Centre. Uppsala; 1991.
18. ^ “ Kainji National Park. Federal Republic of Nigeria. Retrived 11 May 2019.

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