

IDENTIFICATION AND UTILIZATION OF ETHNO VETERINARY PLANT SPECIES IN BAUCHI STATE

***WAKILI, ADAMU; & **AWWAL LADAN**

*Tetfund Center of Excellence for Integrated Farming Systems, Federal Polytechnic, PMB 0321 Bauchi, Bauchi State – Nigeria. **Department of Biological Sciences, Abubakar Tafawa Balewa University, Bauchi, Bauchi State Nigeria

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ABSTRACT

With the help of questionnaires, Ethno Veterinary species and their medicinal values in addition to their Relative abundance scale of occurrence were identified from nine randomly selected Local Government Areas of Bauchi State. The study reveals that Seventeen (17) plant species(trees, shrubs and herbs) from Eleven (11) Botanical families are being used to cure animals health challenges: Trpanosomiasis, worms and Ectoparasites, Diarrhea, Liver problem, Cough, Bloat, Lumpy Skin Diseases and, Foot and Mouth diseases. Fabaceae was most represented by three (3) species. Others were three families represented by two species each. Combretaceae was represented by *Anogeissus leiocarpus* and *Terminalia laxiflora*, Ceasalpiniaceae was represented by *Detarium Macrocarpum* and *Isobertinia doka* while Cucurbitaceae was represented by *Mormordica foetida* and *Mormordica charantia*. The families of Anonaceae, Zingiberaceae, Burseraceae, Solanaceae, Euphorbiaceae, Meliaceae and Olacaceae were represented by a species each. Parts of the trees being used to prepare the animals' herbal medicine are leaf, bark, root and fruit. The results also show that out of the seventeen (17) medicinal species identified, 08 are rare, 04 are occasional, 03 are frequent, and only one was abundant and very abundant respectively in Bauchi State. Establishment of more plantations of medicinal species and control grazing were recommended among others.

Keywords: Medicinal - Trees – Grazing - Rare species - Abundant species

Author for correspondence: awakili@fptb.edu.ng 08029409211

INTRODUCTION

The importance of forest to mankind should not be over emphasized. The term is used to describe a community of plants in which trees are dominant and which are characterized by closed canopy (Tella et al., 2023). The existence of these plants community can either be of natural origin or artificially made. All forms of forest perform functions which are all aimed at meeting human demand through the provision of valuable resources: medicine, timber, forage, fuel wood, fruits, barks, roots, leaves, minerals etc. and their ability to conserve and protect human environment (Akpan and Adamu, 2015). For many decades, the natural forest had been the major source of animals' medicine inform of leaves, bark and roots which greatly contributed to animals' well being and improve production for home use and foreign trade (Wakili.2024a)

Fast and present generations were supported by vegetation close to their locality through the provision of resources (woody and non-woody resources). For example, it was reported that about 124 tree species were used as a source of fuel wood, fodder, timber, pulp and fibre, and medicine by the people living around the forested area of Madya Pradesh in India (Purashothaman *et al.*, 2000). About 50 plant species were found to be used as a solution to socio economic problems of people living around Maladumba Lake and forest reserve in Misau, Bauchi state Nigeria (Abdullahi et al, 2010).

Forest in the tropical developing countries are extensively used for grazing, fuel wood collection and other numerous subsistence needs by rural people even inside protected areas (PAs) that have been priotized for biodiversity conservation (kothari et al, 2022).

The destruction of forest and wood lands accelerates soil degradatio0n, erosion, flood, and loss of biodiversity (Wakili et al, 2009; Wakili, 2024b).

The explosion of the population of cattle rearers and their cattle being experienced in Nigeria and many parts of the developing world made extraction of floral resources for animals' care inevitable. The supply of orthodox veterinary drugs is grossly inadequate, erratic and above all, the prices are in most cases beyond the reach of herders. This necessitate the use of floral resources to address animals' health challenges (Gefu and Amodu, 2014).

As a result of these reasons among others, there is the need to identify particular group of forest tree species being used for a particular purpose and therefore the design of this research work in order to identify;

1. Ethno Veterinary plant species in Bauchi State
2. Medicinal uses of Ethno Veterinary plant species among the ruminant farmers,

3. Relative abundance scale of occurrence of Ethno Veterinary plant species in Bauchi state, and
4. Threats to the existence of Ethno Veterinary plant species in Bauchi State

METHODOLOGY

Study Area.

Bauchi state has a land area of 49,259.01 km² with a population of 4.6million people and located between latitude 9° 30' and 12° 30' north of the equator and longitude 8° 50' and 11° east of the Greenwich meridian. The state has a typical tropical climate marked clearly by the dry and rain seasons. The average annual rainfall is 700mm in the northern part and 1300mm in the southern parts. The wettest months are July, August and September, dry season start in November and ends in April. This is a period of harmattan, when the dust loaded North East trade wind from Sahara desert has a marked drying effect on the vegetation and the general climate of the state. Bauchi state is one of the states in northern part of Nigeria that span three district vegetation zones, namely, the Northern Guinea Savannah, Sudan Savannah and Sahel Savannah with Sudan Savannah dominating. Guinea Savannah become manifest as one move along a belt that stretches from extreme western part of the state to the extreme southern part covering local government areas of Toro, Tafawa Balewa, Dass and Bogoro. The Sudan Savannah type of vegetation covers L.G.As of Ningi Warji, Darazo, Kirfi, Alkalari and Bauchi respectfully. The Sahel zone also known as Semi desert type, becomes manifest from the middle of the state as one moves from south to the north. The character vegetation of the zone is isolated stance of thorny shrubs interspersed by short trees (BSOD, 2024)

DATA COLLECTION, SAMPLING TECHNIQUE AND ANALYSIS

Structured questionnaires were used in data collection. Views of nomadic and sessile Fulani's were sought. Verbal interviews were also held with the targeted respondents. The questionnaires were designed such that the needed information can be extracted from the target respondents. The important items of the questionnaire cover identification of ethno veterinary medicinal plants, health challenge being addressed and part(s) of the plant being used as medicine. Other aspects include the level of commitment of herders in the areas of planting these medicinal plant species in the past and their intention to take part in future for environmental continuity. Personal contact was used as a means of administering of the questionnaires. Completed questionnaires were retrieved back from the respondents after two weeks. The identification of the target

respondents was made possible with the intervention of livestock and forestry units of the department of Agriculture and Natural Resources and the leadership of herders association of the affected local government areas.

Out of the twenty local government areas of Bauchi state, nine were randomly selected using stratified random sampling technique in which the state was stratified according to the three ecological zones: Northern Guinea Savannah, Sudan Savannah and Sahel Savannah. The L.G.As selected were Toro, Dass and Bogoro from Northern Guinea Savannah, Alkaleri, Darazo and Ningi from Sudan Savannah and Katagum, Gamawa and Dambam from Sahel Savannah. A total of twelve questionnaires were distributed within each of the selected L.G.As and therefore, one hundred and eight questionnaires were used to extract the needed information from the respondents, out of which there were hundred responses. The collected information were coded and subjected to descriptive statistics in order to classify the responses based on proportion.

RESULTS AND DISCUSSION

Table 1: demographic information of respondents

Variable	Frequency	Percentage
Marital status		
Married	95	95
Single	05	05
Total	90	100
Sex		
Male	100	100
Female	00	00
Total	100	100
Age group		
21-30	18	18
31-40	32	32
41-50	36	36
51-60	10	10
Above 60	04	04
Total	100	100
Monthly income (N)		
Below 15000	23	23
15001-25,000	25	25
25,001-35,000	45	45
35,001-45,000	07	07
Above 45,000	00	00
Total	100	100
Occupation		
Cattle rearing	30	30
Sheep and Goat rearing	25	25
Cattle, Sheep and Goat rearing	45	45
Total	100	100

Identification of Ethno Veterinary plant species in Bauchi State

Field survey of etho Veterinary plant species in Bauchi State reveals that senenteen floral resources are being used to cure domestic faunal resources in Bauchi State. These plant species are representative of eleven Botanical families. The family with the highest number of species is Fabaceae represented by *Acacia nilotica*, *Prosopis africana* and *Piliostigma thoningii*. Three families were represented by two species each. Combretaceae was represented by *Anogeissus leiocarpus* and *Terminalia laxiflora*, Ceasalpiniaceae was represented by *Detarium Macrocarpum* and *Isobertinia doka* while Cucurbitaceae was represented by *Mormordica foetida* and *Mormordica charantia*. The families of Anonaceae, Zingiberaceae, Burseraceae, Solanaceae, Euphorbiaceae, Meliaceae and Olacaceae were represented by a species each as *Anona senegalensis*, *Aframomum corrorima*, *Bosweillia dalzielii*, *Brugmansia suaveolens*, *Ficus sycormorus*, *Khaya sengalensis* and *Ximenia americanum* respectively (table 2). Wakili, 2022 reported thirty six tree species which are being used as forage tree species in Bauchi State. Accordingly, the species were found to be from nineteen botanical families with Mimosaceae been most represented by seven species, Combretaceae and Caesalpiniaceae were represented by five species each; the families of Bambacaceae, Moraceae and Rhamanaceae were represented by two species, each. The families of Meliaceae, Sterculiaceae, Anonaceae, Sapotaceae, Bignosaceae, Verbenaceae, Myrtaceae, Papilionaceae, Leguminaceae, Rutaceae, Balanitaceae, Anarcadiaceae and Burseraceae were represented by a species each; *Khaya senegalensis*, *Sterculia setigera*, *Anona sengalensis*, *Vitellaria paradoxa*, *Kigelia africana*, *Vitex doniana*, *Syzyguim guinense*, *Pterocarpus erinaceus*, *Tamaridus indica*, *Fagara zanthoxyloides*, *Balanites aegyptiaca*, *Sclerocarya birrea* and *Bosweillia dalzielii* respectively. The report of Mohammed et al.,2024 indicated eight tree species which are being used as both forage and medicinal. These species were *Daniella oliveri*, *Khaya senegalensis*, *Anogeissus leiocarpus*, *Ficus sycormorus*, *Detarium Macrocarpum*, *Adansonia digitata*, *Ziziphus mauritiana* and *Terminalia glaucescens*

Table 2. Ethno Veterinary plant species in Bauchi State

Scientific Names	Family	Local Names
1. <i>Anogeissus leiocarpus</i>	Combretaceae	Marke
2. <i>Anona senegalensis</i>	Anonaceae	Gwandar Daji
3. <i>Acacia nilotica</i>	Fabaceae	Gabaruwa
4. <i>Aframomum corrorima</i>	Zingiberaceae	Kumfa
5. <i>Albizia schimperiana</i>	Fabaceae	Albiziyya
6. <i>Bosweillia dalzielii</i>	Burseraceae	Ararrabi
7. <i>Brugmansia suaveolens</i>	Solanaceae	Buruga
8. <i>Detarium Macrocarpum</i>	Caesalpiniaceae	Taura
9. <i>Ficus sycormorus</i>	Euphorbiaceae	Baure
10. <i>Isobertlinia doka</i>	Caesalpiniaceae	Doka
11. <i>Khaya sengalensis</i>	Meliaceae	Madaci
12. <i>Mormordica foetida</i>	Cucurbitaceae	Garafuni
13. <i>Mormordica charantia</i>	Cucurbitaceae	Garafunin Daji
14. <i>Prosopis Africana</i>	Fabaceae	Kirya
15. <i>Piliostigma thoningii</i>	Fabaceae	Kargo
16. <i>Terminalia laxiflora</i>	Combretaceae	Zindi
17. <i>Ximenia americanum</i>	Olacaceae	Tsada

Source: Field survey 2025

Ethno Veterinary Plant Species and Livestock Health Challenges in Bauchi State

The identified floral resources were found to be used in addressing a variety of health challenges in Bauchi State. The health challenges being treated with floral resources are Lumpy Skin Diseases (LSD), Diarrhea, Hepatitis (Liver related problems), Cough, Stomach related problems

Foot and mouth disease, Ectoparasite, Jundice, Cancer, Pneumonia, Trapanosomiasis and Bloat. The part(s) of the plants being used to prepare the medicine are the bark, leaf, fruit and root. The bark can either be soaked in water or dried and powdered before administered to the animals affected. The dried powdered bark can as well be mixed with bran or saltlick and given to the animal. Leaves are crushed and soak in water and after filtering with sieve or cloth, the water is given to the animal.

Table3. Ethno veterinary plant species and Health Challenges being addressed in Bauchi State

Species	problems cured	parts(s) used
1. <i>Khaya sengalensis</i> (Meliaceae)	1. Trypanosomiasis 2. Worms 3. stomach pain	bark bark bark
2. <i>Terminalia laxiflora</i>	1. Diarrhea	bark and leaves
3. <i>Detarium Macrocarpum</i>	1. Laziness 2. Liver problem	bark bark
4. <i>Anogeissus leiocarpus</i> (Combretaceae)	1. Diarrhea 2. Cough 3. ectoparasite	bark bark and leaves bark and leaf
5. <i>Acacia nilotica</i> (Fabaceae)	1. Foot and mouth disease	bark and fruits
6. <i>Prosopis africana</i> (Fabaceae)	1. Liver problem	bark
7. <i>Bosweillia dalzielii</i> (Boseraceae)	1. Liver problem 2. Cancer	bark bark powder
8. <i>Isobertinia doka</i>	Diarrhea	bark and leaves
9. <i>Anona senegalensis</i> (Anonaceae)	Diarrhea	bark and leaves
10. <i>Mormordica foetida</i> (Cucurbitaceae)	Jundice	leaf
11. <i>Albizia schimperiana</i> (Fabaceae)	Pneumonia	bark and root
12. <i>Piliostigma thonningii</i> (Fabaceae)	Bloat	bark and leaf
13. <i>Brugmansia suaveolens</i> (Solanaceae)	Diarrhea	leaf and bark
14. <i>Ximenia americanum</i> (Olacaceae)	skin disease(LSD)	bark
15. <i>Mormordica charantia</i> (Cucurbitaceae)	Liver problem(hepatitis)	leaf and vines
16. <i>Aframomum corrorima</i> (Zingiberaceae)	pneumonia and bloat	leaf and bark
17. <i>Ficus sycormorus</i>	Skin Diseases(LSD)	Bark Sap

Relative Abundance Scale of Occurrence of Ethno veterinary plant species in Bauchi State

Table 4 depicts the relative abundance scale of occurrence of Ethno veterinary plant species in Bauchi State in which eight species were found to be rare, four species occasional and two frequent. Abundant and very abundant had one species each. The fact that most species (08) were rare in Bauchi State raises questions for alarm. Thus the goods and services expected to be provided by the species might not be possible in the feasible future because of their present status. Accordingly, concerted efforts are needed if we want to secure for the goods and services of these species of plants.

Table 4. A Relative Abundance Scale of Occurrence of Ethnoveterinary plant species in Bauchi state.

Relative Abundance Scale	Forage Tree Species
Rare	<i>prosopis africana</i> , <i>Albizia schimperiana</i> <i>khaya senegalensis</i> <i>Acacia nilotica</i> , <i>Isobertinia doka</i> <i>Ximenia americanum</i> <i>Brugmansia suaveolens</i> <i>Balanites aegyptiaca</i>
Occasional	<i>Aframomum corrorima</i> <i>Anona senegalenses</i> , <i>Mormordica charantia</i> <i>Detarium macrocarpum</i> ,
Frequent	<i>Boswellia dalzielii</i> , <i>Terminalia</i> <i>Laxiflora</i> , <i>Ficus sycormorus</i>
Abundant	<i>Anogeissus leiocarpus</i> ,
Very abundant	<i>Piliostigma thoningii</i>

Threats to Ethno Veterinary plant species in Bauchi State

According to the respondents, many factors are responsible for quick disappearance of important floral resources in Bauchi state: Agricultural

expansion, urbanization, proliferation of new villages, overgrazing, fuelwood collection, debarking of stem and cutting trees for timber making (table 5). These factors poses a threat to the existence of these valuable plant resources. Majority of the respondents (22%) claimed that agricultural expansion is the major culprit behind deforestation in Bauchi State being an agrarian state. This was followed by cutting for fuel wood(18%), urbanization and over grazing followed fuel wood collection (15%) and the the factor with least effect was debarking of stem for medicinal purposes (table5).

Table 5. Threats to Ethno Veterinary plant species in Bauchi State

Variables	Frequency	Percentage
Agricultural expansion	22	22.00
Urbanization	15	15.00
Proliferation of new villages	10	10.00
Overgrazing	15	15.00
Fuel wood collection	18	18.00
Charcoal making	10	10.00
Debarking for medicinal purposes	02	02.00
Cutting for timber	08	08.00
Total	100	100

CONCLUSION AND RECOMMENDATIONS

Ethno-botanical survey of animals' medicinal plant species in Bauchi state reveals that seventeen (17) species are being used to treat animals health challenges by herders. These species came from eleven (11) Botanical families with Fabaceae most represented by three (3) species. Others were three families represented by two species each. Combretaceae was represented by *Anogeissus leiocarpus* and *Terminalia laxiflora*, Ceasalpiniaceae was represented by *Detarium Macrocarpum* and *Isobertia doka* while Cucurbitaceae was represented by *Mormordica foetida* and *Mormordica charantia*. The families of Anonaceae, Zingiberaceae, Burseraceae, Solanaceae, Euphorbiaceae, Meliaceae and Olacaceae were represented by a species each. These species were found to cure such health problems as trapanosomiasis, liverosis, diarrhea, worms, cough, foot and mouth diseases, bloat and lumpy skin diseases. However, these species are currently under a serious threats from such factors as agricultural expansion overgrazing, urbanization, fuel wood cutting and debarking for medicinal

purposes. For these species to be secured and protected from ecological extinct the following are hereby recommended:

- That there is the need for concerted efforts in the area of enrichment planting involving medicinal trees,
- That there should be establishment of more plantations of medicinal plants,
- That there is an urgent need for controlled grazing to guard against overgrazing
- Awareness workshop be periodically organized among the herders on proper way(s) of managing the remaining vegetation
- Seedlings of the medicinal plants be made available to rural areas at little or no cost
- That the identified ethno veterinary plants should be screened phytochemically for increased values

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