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THREATENED MEDICINAL PLANTS OF KANO FLORA AND THE NEED FOR URGENT CONSERVATION

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Abstract

The sustainable utilization and conservation of medicinal plants could be best achieved by involving the traditional practitioners. Thus, this study was aimed at identifying medicinal plant species that have become threatened and are at risk of becoming endangered for urgent conservation action. Informal interviews were used to collect data from traditional medical practitioners in Kano State, Nigeria. The data collected included the local names of the threatened medicinal plants, possible causes of the threat and efforts made by the respondents to conserve the plants. Findings from the study showed that thirty one (31) plant species belonging to nineteen (19) families were said to be threatened. Acacia nilotica, Acacia seyal, Anogeissus leiocarpus, Albizia chevalieri, Aristolochia albida, Balsamodendron africanum, Burkea africana, Ceiba pentandra, Cissus quandrangularis, Ficus sycomorus, Kigelia africana, Lannea microcarpa, Terminalia avicennoides, Mitragyna inermis, Prosopis africana and Securidaca longipedunculata were the most frequently mentioned plant species. The respondents attributed this loss to urbanization, deforestation, expansion of agricultural activities and unsustainable collection of the plants. Therefore, there is need by all stakeholders to initiate conservation programs to save these plants from becoming endangered.

Keywords*: Conservation; Traditional practitioners; Medicinal plants; Endangered plants.*

Introduction

Medicinal plants are plants which provide health promoting characteristics, temporary relief and/or curative properties. They are believed to be an important source of new chemical substances with potential therapeutic effects [1]. It was reported by the World Health Organization (WHO) that over 80% of the World's population depend mainly on plants and plant extracts for health care [2].

Most of the medicinal plants that are used today are collected from the wild. The continued exploitation of these important plants has decreased the population of many species in natural habitat [3].

A species is considered endangered if there is a reduction in population size in time, numbers (estimated to be less than 2,500 mature individuals) and if projected extinction of at least 20% within 20 years [4]. An endangered species is unlikely to survive if the factors posing the threat persists [5]

Many medicinal plants face extinction and/or severe genetic loss, but detailed information is lacking especially in developing countries. For most of the endangered medicinal

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plant species, no conservation action has been taken [6]. It is therefore necessary to initiate systematic cultivation and conservation of medicinal plants in order to conserve biodiversity and to protect endangered and threatened plant species [7].

The Nigerian Red List has a total number of 189 plant species, out of which 138 are categorized as vulnerable, while 18 are endangered, 16 are critically endangered, 16 are at low risk and 1 species belongs to the data deficient category [8]. Almost 20 years ago, the Federal Environmental Protection Agency compiled a list of 18 Nigerian plant species requiring urgent conservation attention [9]. However, the endangered species act should be broadened to include many more plant species, especially those now considered as threatened [8].

The conservation and sustainable utilization of medicinal plant species could be best achieved by involving those people who own, manage or make use of these plants, and this include the traditional medical practitioners, herb sellers, traditional birth attendants, health workers, researchers etc [10]. Therefore, this study was aimed to identify and document medicinal plant species that are threatened and are at risk of becoming endangered for urgent conservation attention in Kano State, Nigeria.

Materials and Methods

Study Area

The study was conducted in Kano State, Nigeria. The State is popularly known as the centre of commerce. It borders Katsina, Jigawa, Bauchi and Kaduna States to the Northwest, Northeast, Southeast and Southwest respectively (Figure 1). Kano State is located on 11°30' N and 8°30' E coordinates, with a mean height of about 472.45m above sea level. According to 2006 census, Kano is the most populous State in Nigeria with a population of 9,383,682 [11, 12].

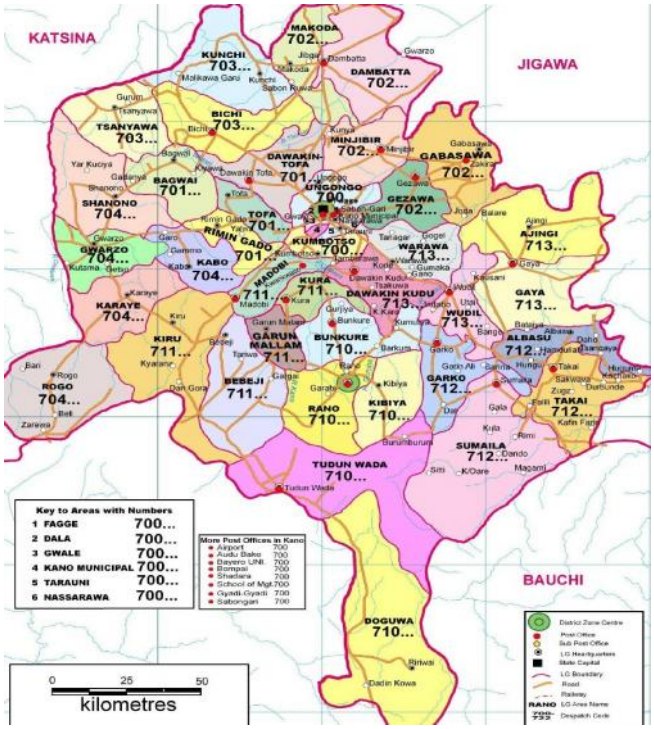

Fig. 1. Map of Kano State, Nigeria

Data Collection

Informal interviews were administered on traditional medical practitioners. The data collected included the local names of the plant species that are said to be threatened and possible causes of the threat. The species and family names were validated taxonomically in the plant list (www.plantlist.org) and "Hausa names for plants and trees" by Roger Blench. The respondents were also asked whether they conserve and cultivate medicinal plants used in their practice rather depend on wild collection.

Results

Respondents Identity

A total number of thirty traditional medical practitioners were interviewed in the study area. All the respondents are Hausa people and as such the interviews were done in Hausa language. Majority of them were male (91%) and within the age range of 40-50 years (46%). The result is summarized in Table 1.

Table 1. Demographic Characteristics of the Respondents

S/N	Variable	Specification	Percentage (%)
1	Age	40-50	46
		51-60	36
		> 60	18
2	Sex	Male	91
		Female	9
3	Marital status	Married	100
4	Educational status	No certificate	70
		Primary	30

Threatened Medicinal Plant Species

A total number of thirty one important medicinal plant species were said to be threatened. The most frequently mentioned plant species were *Acacia nilotica, Acacia seyal, Anogeissus leiocarpus, Albizia chevalieri, Aristolochia albida, Balsamodendron africanum, Burkea africana*, Ceiba pentandra, *Cissus quandrangularis*, *Ficus sycomorus*, *Kigelia africana*, *Lannea microcarpa*, *Terminalia avicennoides*, *Mitragyna inermis*, *Prosopis africana* and *Securidaca longipedunculata* (Table 2).

The respondents attributed the loss of these plants to urbanization, deforestation, expansion of agricultural activities and unsustainable collection of the plants. Also, only few of the respondents are making efforts to conserve and cultivate the plants used in their practice.

Table 2. Threatened Medicinal Plants of Kano Flora

S/N	Family Name	Plant Name	Common Name	Local Name
1	Amaranthaceae	*Ceiba pentandra*	Silk cotton tree	Rimi
2	Anarcadiaceae	*Lannea microcarpa*	Tree grapes	Faru
3	Asteraceae	*Aspilia helianthoides*	Aspilia	Kalankuwa
4	Aristolochiaceae	*Aristolochia albida*	Dutchman's pipe	Duman duste
5	Bignoniaceae	*Kigelia africana*	Sausage tree	Rawaya
6	Burseraceae	*Balsamodendron africanum*	Myrrh	Dashi
7	Capparaceae	*Capparis tomentosa*	Woolly caper bush	Kabdodo
8	Caesalpinaceae	*Burkea africana*	Wild syringe	Namijin kirya
		Cassia arareh	Cassia	Marga
9	Combretaceae	*Anogeissus leiocarpus*	Chewing stick tree	Marke
		Combretum glutinosum	Kattakara	Kattakara
		Terminalia avicennoides	Baushe	Baushe
10	Convolvulaceae	*Evolvulus alsinoides*	Morning glory	Kafi malam
11	Fabaceae	*Acacia nilotica*	Gum Arabic tree	Bagaruwa

		Acacia seyal	Shittah tree	Dimshe
		Acacia sieberiana	Paper bark thorn	Farar kaya
		Erythrina senegalensis	Coral tree	Minjiriya
		Danniellia oliveri	African copaiba balsam	Maje
		Prosopis africana	African mesquite	Kirya
12	Mimosaceae	*Albizia chevalieri*	Jaree-hi	Katsari
13	Moraceae	*Ficus glumosa*	Mountain fig	Kawari
		Ficus sur	Bush fig	Haguguwa
		Ficus sycomorus	White fig	Farin baure
14	Olacaceae	*Ximenia americana*	Yellow plum	Tsada
15	Plantaginaceae	*Scopiara dulcis*	Sweet broom weed	Ruma fada
16	Polygalaceae	*Securidaca longipedunculata*	Violet tree	Sanya
17	Rubiaceae	*Fadogia agrestis*	Black aphrodisiac	Bakin gagai
		Mitragyna inermis	False abura	Giyayya
		Nauclea diderrichi	African peach	Tafashiya
18	Sterculiaceae	*Sterculia setigera*	Karaya gum tree	Kukuki
19	Vitaceae	*Cissus quandrangularis*	Devil's backbone	Tawatsa

Discussion

One of the most important ways in which humans directly reap the benefits provided by biodiversity is through medicinal plants; this is because of the number of species used, the widespread nature of their use and also their contribution to human health [10, 13]. Thus, medicinal plants conservation is a microcosm of plant conservation as a whole [10].

The present study shows that thirty one medicinal plants are under threat in Kano State, Nigeria. These plants are traditionally used for the management of different ailments. *A. nilotica, A. seyal, A. leiocarpus, A. chevalieri, A. albida, B. africanum, B. africana, C. pentandra, C. quandrangularis, F. sycomorus, K. africana, L. microcarpa, T. avicennoides, M. inermis, P. africana* and *S. longipedunculata* were the most frequently mentioned plants. These plant species could be considered as the most threatened and are at higher risk of becoming endangered, as such need to be conserved immediately. Plants conservation ultimately aims at preventing species from becoming extinct, either locally, regionally or globally [14].

Ex-situ and in-situ conservation are the two main methods of conserving biodiversity [15], where the former refers to the conservation of samples of living organisms outside their natural habitat, while the latter refers to the conservation of samples of living organisms in their natural habitat [16].

Botanical gardens and zoos are the oldest and best known methods of ex-situ conservation [17]. Other modern methods of ex-situ conservation where reproductive parts of an endangered species are stored for future reproduction or propagation include seed bank, gene bank, germplasm bank and in-vitro storages [16].

According to [18], botanic gardens are the cheapest means of conserving endangered medicinal plant species; however, conservation of endangered plant species through botanical gardens in Nigeria is not receiving the required attention, rather some of the existing gardens are continually being destroyed to pave way for development of other projects [19].

The respondents attributed the loss of the plants to urbanization, deforestation, expansion of agricultural activities and unsustainable collection of the plants. This finding is in agreement with other authors [8, 20-22]. Also, climate change has been identified as a major force that may drive plant populations to endangerment as it directly affects growth, flowering and other aspects of plant performance [23]. The most profound effect of climate change is perhaps that it will change the geographical distributions of species, which may also lead to extinctions due to the limited colonization capacity of many plant species [19].

The introduction of exotic species may also lead to a serious decline of native species due to altered competitive interactions, detrimental effects of exotic pathogens or hybridization between exotic species and related native species [24].

The respondents were advised to start cultivating plant species used in their profession rather than depend on collection from wild; this can reduce pressure on forest resources [18]. Cultivation is always considered as a measure to take the pressure off wild stocks [25, 26].

Finally, tree planting campaign should be geared not just for preventing desert encroachment and erosion but also towards regeneration of threatened and endangered medicinal plants [27, 28].

Conclusions

The study has identified and documented the threatened medicinal plant species in Kano State, Nigeria. There is need by all stakeholders to initiate conservation programs to save these plants from becoming endangered. The use of legislation to protect rare, vulnerable, threatened and endangered medicinal plant species should be enacted by government at all levels. Public enlightenment campaign should be carried out so that the general public can also help in their conservation. Lastly, similar work should be conducted in each part of the country so as to come up with a regional or national list of threatened medicinal plant species.

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