

Ethnobotanical Leaflets 10: 113-120. 2006.

Ethnobotanical Study of Economic Trees: Uses of Trees as Timbers and Fuelwoods in Ilorin Emirate of Kwara State, Nigeria

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Issued 23 April 2006

ABSTRACT

A survey of the five local government areas that make up Ilorin Emirate in Kwara State, Nigeria, revealed extensive use of economic trees as timber woods and fuel woods. The forest resources are indiscriminately exploited by the poor inhabitants who solely depend on the forest to earn their livelihood. Tree species such as *Pterocarpus erinaceus*, *Parkia biglobosa*, *Prosobis africana*, *Trichilia emetica*, *Anogeissus leiocarpus*, *Danielia oliveri*, *Khaya senegalensis*, *Tectonia grandis*, *Milicia excelsa* and *Vitellaria paradoxa* are popular among the inhabitants as fuelwoods, with *Vitellaria paradoxa* being the most frequently used. Among timber woods, *Pterocarpus erinaceus* is the most highly demanded by artists, casket builders and furniture workers. The hitherto harmonious relationships between the people and the plants whereby the people of a particular culture use plant to cure many inherent diseases and for other natural benefits have been defeated. Presently, the relationships have turned to destruction of many forests and endangering of many species of trees. Thus many forests have been turned to mere woodlands in the study areas.

INTRODUCTION

The definition of ethnobotany varies from author to author, but major terms stand out in all; people and plants. Ethnobotany is therefore defined as the study how people of a particular culture and religion make use of indigenous plants, and how they classify, identify and relate to the plants (Ford 1978; Veilleux and King 2005). Ethnobotanists explored how plants are used by the people for such things as food, shelter, medicine, clothing, hunting, and religious ceremonies. Plants in this view cater for all the basic, essential needs of human being. But recent events have shown that too much dependence on the forests had resulted in extinction of many species of plants and animals alike. As a result of deforestation, between 50 and 100 (Myers 1991) or 137 (Urguhart et al. 2005) species of animal and plant are lost worldwide each day. Also other organisms are losing species they depend upon, and thus face extinction themselves. Of great concern is the rate which deforestation is occurring. Currently, 12 million hectares of forests are cleared annually. At this rate almost all

tropical forests could be lost by the year 2050, except for isolated areas in Amazonia, the Zaire basin, and few protected area within parks and reserves. Some countries such as Ivory Coast, Nigeria, Costa Rica and Sri Lanka are likely to lose all their tropical forests by the year 2010 if no conservation steps are taken (Myers, 1985; Leach and Mearns, 1988; Hisham and Sharma, 1991; Lean and Hinrichsen 1992; Collin 2001). In the mean time, one of the devastating effects of the indiscriminate removal of the forest resources is decrease in biodiversity and genetic resources.

Oladele (1988) reported that ethnobotany is a field of study in which taxonomists have taken interest in recent years. This can be traced to the fact that, of the tens of millions of species believed to be on Earth, scientists (especially taxonomists) have only given name to about 1.5 millions of them, and even fewer of the species have been studied in depth (Urguhart et al. 2005). Thus, the loss of species will have great impact on the planet Earth. The world is losing species that might show how to prevent cancer or help to find a cure for AIDS (Acquired Immune Deficiency Syndrome). The use of plants as medicine is not only limited to traditional aboriginal people but according to Myers (1991) as at 1991 over 25% of the world's pharmaceutical products were derived from tropical plants.

Meanwhile, there is little or no scientific information on the Nigerian forests that revealed the extent of destruction of forest and its resources. Based on this, this study aimed at carrying out ethnobotanical study in some selected LGAs in Kwara State, Nigeria (Table 1), with intention of assessing the level of forest consumption and/or destruction in these areas.

MATERIALS AND METHODS

Study Areas and Materials

Five out of sixteen local government areas (LGAs) in Kwara State, Nigeria were selected for ethnobotanical study. These LGAs are Asa, Ilorin-East, Ilorin-South, Ilorin-West and Moro, they made up of Ilorin Emirate Area. In these areas settlements that can be described as urban, semi urban and rural are common features (Table 1). During the course of study, about 31 economic trees belonging to 16 families were encountered (Table 2).

Field Trips and Questionnaire Administration

Field trips were taken to the study areas which include towns, villages and hamlets in these areas. Wood users were the real targets of the researchers. Questionnaires were structured in such a way that data on how forest and its resources were consumed and destroyed by the people were adequately revealed. The respondents to the questionnaire include artists, carpenters, garri producers, artifacts, charcoal makers, house wives, blacksmiths, food sellers, mortal makers, bread bakers, foresters, saw millers, casket builders, furniture workers, tree fellers, farmers, local wine brewers, wood sellers. These categories of people use woods either as timbers and/or fuel woods. A total of 400 questionnaires were distributed and administered but only 252 were returned. Field trips, distribution and administration of the questionnaires covered two months of March and August, 2005.

Frequency of Fuel woods and Timbers

Frequency of consumption of each tree species was determined as a percentage of the number

of respondents using it as fuel wood or as timber in relation to the total number of respondents that used fuel woods and timbers.

RESULTS AND DISCUSSION

The 252 questionnaires that were returned showed that male and single respondents are the most active participants in exploitation of the forest resources (Table 3). Though female and married also aid in this act but to low extent. The impact of educational background is also a factor; people with primary and secondary certificates and those without formal education do more harm to the forests than their counterparts with higher certificates. Most people do not realized that they are destruction of forest as any negative effects basically because they are illiterates; lacking basic educational background. Ironically, the exploitation of the forests is done mostly by non-indigenes of the study areas. They constituted about 73.81% as compared to indigenous explorers which constituted just 26.19% (Table 3). These frequencies can be attested to because the indigenes of Ilorin Emirate are predominantly cloth weavers, pot makers and small-scale traders.

Almost all dry-woods are used as fuel, but some are more preferred probably because of certain qualities they possessed. Tree species such as *P. erinaceus*, *P. biglobosa*, *P. Africana*, *T. emetica*, *A. leiocarpus*, *D. oliveri*, *K. senegalensis*, *T. grandis*, *M. excelsa* and *V. paradoxa* are the used fuel woods in Ilorin-Emirate Areas. The latter is the preferred, used by almost all fuel wood users; it constituted about 75% frequencies of the total fuelwoods used in the study area (Table 4). Earlier studies by Oladele and Yisa (1989) and Ogunkunle and Oladele (2004) also confirmed this. The former presumed that this may be due to its (*V. paradoxa*) high burning capacity and efficiency, being an oily plant that produces the commercial sheanut from which shea butter is extracted. The bread bakers, food sellers, garri producers, charcoal makers, house wives and host of other fuel wood users confirmed this fact while maintaining that *V. paradoxa* burns well with considerable heat and produces a lot of charcoal, less ashes and smoke. In the same vain, charcoal obtained from *V. paradoxa* had been emphatically selected as the best. Apart from like of formal education, continuous and persistent use of wood as fuel may due to high level of poverty of the ordinary people, and high cost of kerosene, gas and electric stove. It is cheaper and easy to fetch and use wood as fuel than the alternatives.

On the other hands, the artists, wood carvers, casket builders, furniture workers and mortal makers preferred to use *P. erinaceus*, *A. Africana*, *T. grandis*, *D. oliveri*, *G. arborea*, *K. senegalensis*, *M. excelsa*, *I. doka*, *A. leiocarpus*, *C. pentandra*, and *P. africana* as timbers. These species are categorized as being of grade based on their properties like durability, attractiveness and resistance. Species such as *L. lanceolata*, *H. acida*, *T. emetica*, *P. biglobosa*, *A. lebeck* and *V. paradoxa* are seldom used as timber woods (Table 5). *P. erinaceus* is the most frequently used timber. Heavy demands for paper products by establishment such as Nigerian Paper Mill, Jebba, a government-owned, had consequently affected availability of timber species particularly *G. arborea* in the study areas. Meanwhile, about ten species have been identified as most endangered species in Ilorin-Emirate (Table 6) because of frequency at which they are removed from the forest. Though governments gave permission to some tree fellers, there are some illegal tree fellers called

“payapayaba”. These group of fellers destroyed many immature trees on daily basis. The most painful aspect of this act is that the tree planting is too low in comparison to the rate of tree felling. Carter and Gronow (1992) and Ogunkunle and Oladele (2004) attributed this attitude to the unavailability of time and land, lack of knowledge in tree planting, sex barriers, age barrier, availability of trees in abundance in the natural forest or bush, no remuneration for planting tree and so on, in studies in Dolakha and Dhankuta districts of Asia and Ogbomoso in Nigeria respectively. Meanwhile what remain as forests in Ilorin-Emirate Area are in the rural area, the metropolis are without forests any more. The problem is much that some species are endangering (Table 6), and if care is not taken they may go into extinct.

The major function of ethnobotany, as identified early, is to draw a kind mutual relationship between the people in an area and the plants. The plants provide for the people the three basic needs of man namely food, cloth and shelter while the people on the other hands jealously guide and protect the plants against destructions. But as the world populations keep increasing especially in the third world countries, the rate of illiteracy and poverty are concurrently increasing too. These are therefore recognized as the prime factors that changed the mutualism between human and plants to that of parasitism whereby man took all from the forests with little or no any form of replenishment. Though, many laws and by-laws are promulgated forbidding indiscriminate removal of forest resources. These measures have little or no effect at all on the activities of the forest destroyers. The authors of this paper rather suggest that more attentions should be paid to improvement of economical status of the people, and ensure provision of accurate, effective and sustainable education of the populace. If these are vigorously pursued, there will be strict compliance to the governments’ laws and regulations regarding felling and planting of trees.

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Table 1. Urban, semi-urban and rural settlements in the study areas.

S/n	Study areas	Urban settlements	Semi-urban settlements	Rural settlements
1	Asa LGA		Afon (H)	Otte, Budo-Egba, Koroke, Aladere mogaji, Lasaju, Agbona, Oja-Iya, Sosoki, Temidire, Alapa, Ilaji Garuba, Akunyun, Laluba, Ogbondoroko, Bakase
2	Ilorin-East LGA	Balogun Gambari wards, Mogaji Are ward,	Oke-Oyi (H), Apata-Yakuba	Ile-Apa, Lajiki, Budo-Are, Iponrin, Morafa-Oja
3	Ilorin-South LGA	Balogun Fulani Ward,	Fufu (H), Tanke, University of Ilorin main campus	Akanbi ward, Oke-Ogun, Okaka
4	Ilorin-West LGA	Oja-Oba (H), Balogun Alanamu ward, Balogun Ajikobi ward		Wara, Egbejila, Osin
5	Moro LGA		Bode Saadu (H), Shao, Jebba	Ipaye, Malete, Oloru

H= Headquarters; LGA= Local Government Area

Table 2. List of economic tree species commonly encountered in the study areas.

S/n	Species	Common names	Family
1	<i>Adansonia digitata</i> L.	Baobab	Bombaceae
2	<i>Azalia africana</i> Sm. Ex Pers.	African mahogany	Leguminosae-Caesalpinaceae (F.)
3	<i>Albizia lebeck</i> (L.) Benth	East India walnut, Lebeck tree, Frywood, Koko	Leguminosae-Mimosaceae (F.)
4	<i>Anacardium occidentale</i> L.	Cashew	Anacardiaceae
5	<i>Anogeissus leiocarpus</i> (D.C.) Guill. & Perr.	Kane	Combretaceae
6	<i>Azadirachta indica</i> A. Juss	Neem	Meliaceae
7	<i>Cassia sieberana</i> D.C.	Marga, uruhogo	Leguminosae-Caesalpinaceae (F.)

8	<i>Ceiba pentandra</i> (L.) Gaertn.	Kapok tree, silk cotton tree	Bombaceae
9	<i>Cocos nucifera</i> L.	Cocnut, Narel	Arecaceae
10	<i>Daniela oliveri</i> (Rolfe)	Daniela	Leguminosae-Caesalpinaceae (F.)
11	<i>Elaeis guineensis</i> Jacq.	African oil palm	Arecaceae
12	<i>Eucalyptus torelliana</i> F. Muel	Eucalypt	Myrtaceae
13	<i>Ficus sur</i> Forssk.	Broom cluster fig	Moraceae
14	<i>Hymenocardia acida</i> Tul.	Kampalaga	Hymenocardiaceae
15	<i>Isoberlinia doka</i> Craib & Stapf	Abogo	Leguminosae-Caesalpinaceae (F.)
16	<i>Gmelina arborea</i> Roxb.	Gmelina, White teak	Verbenaceae
17	<i>Khaya senegalensis</i> (Desr.) A. Juss	African mahogany, Bisselon, Gambian mahogany, Senegal mahogany	Meliaceae
18	<i>Lophira lanceolata</i> Tiegh. ex Keay	African oak, Azobe	Ochnaceae
19	<i>Mangifera indica</i> L.	Mango	Anacardiaceae
20	<i>Milicia excelsa</i> (Welw.) C.C. Berg	Iroko, Tule	Moraceae
21	<i>Parkia biglobosa</i> (Jacq.) Benth. ex G.	Locust bean tree	Leguminosae-Mimosaceae (F.)
22	<i>Prosopis Africana</i> (Guill. & Perr. Rich) Taub.	African mesquitye	Leguminosae-Mimosaceae (F.)
23	<i>Pterocarpus erinaceus</i> Poir.	African gum, kino tree, African rose-wood, African teak	Leguminosae-papilionaceae (F.)
24	<i>Syzygium guineese</i> (Willd.) D.C.		Myrtaceae
25	<i>Tectonia grandis</i> L. f.	Teak	Verbenaceae
26	<i>Terminalia catappa</i> L.	Tropical almond, wild almond	Combretaceae
27	<i>T. laxiflora</i> Engl.		Combretaceae
28	<i>T. superba</i> Engl. & Diels	Limba, Afara, Ofram	Combretaceae
29	<i>Trichilia emetica</i> Vahl.	Natal mahogany	Meliaceae
30	<i>Vitellaria paradoxa</i> Gaertn. f.	Shea butter tree	Sapotaceae
31	<i>Vitex doniana</i> Sweet.	Black plum, lufulu	Vernaceae

F = Fabaceae

Table 3. Biodata frequencies of the respondents to the questionnaires.

S/n	Respondents	Frequency (%)
1	Gender : Male	74.00
	Female	26.00
2	Marital status : Single	52.00
	Married	48.00
3	Level of education : Primary school	13.10
	Secondary school	27.78
	Post-secondary schools	22.22
	University	8.35
	No formal education	28.57
4	Origin : Indigenes	26.19
	Non-indigenes	73.81

Table 4. Frequency of the fuelwoods used in Ilorin-Emirate Area of Kwara State, Nigeria.

S/n	Users	Fuelwoods	Frequency (%)
1	Charcoal makers	<i>V. paradoxa</i>	70.00
		<i>P. biglobosa</i>	10.00
		<i>P. africana</i>	5.40
		<i>T. emetica</i>	5.20
		<i>T. senegalensis</i>	2.30
		<i>T. grandis</i>	2.10
		<i>M. excelsa</i>	1.00
2	Food sellers	<i>V. paradoxa</i>	76.20
		<i>A. leiocarpus</i>	7.60
		<i>P. biglobosa</i>	7.20
3	Garr producers	<i>V. paradoxa</i>	68.00
		<i>D. oliveri</i>	12.00
		<i>P. biglobosa</i>	11.20
		<i>A. leiocarpus</i>	8.80
4	House wives	<i>V. paradoxa</i>	74.30
		<i>D. oliveri</i>	10.00
		<i>P. biglobosa</i>	10.00
		<i>A. leiocarpus</i>	5.70
5	Bread bakers	<i>V. paradoxa</i>	80.10
		<i>P. erinaceus</i>	14.30
		<i>P. biglobosa</i>	5.60
6	Blacksmiths	<i>K. senegalensis</i>	62.80
		<i>T. grandis</i>	37.20
7	Turners	<i>P. erinaceus</i>	40.00
		<i>K. senegalensis</i>	40.00
		<i>P. africana</i>	15.60
		<i>S. guineese</i>	4.40

Table 5. Frequency of timber woods used in Ilorin-Emirate Area of Kwara State, Nigeria.

S/n	Users	Timber woods	Frequency (%)
1	Artists/Wood carvers	<i>P. erinaceus</i>	70.00
		<i>A. africana</i>	21.00
		<i>G. arborea</i>	9.00
2	Casket builders	<i>P. erinaceus</i>	68.20
		<i>T. grandis</i>	25.60
		<i>A. Africana</i>	6.20
3	Furniture workers	<i>P. erinaceus</i>	42.00
		<i>D. oliveri</i>	20.20
		<i>A. africana</i>	12.50
		<i>T. grandis</i>	10.00
		<i>K. senegalensis</i>	5.20

		<i>M. excelsa</i>	5.10
		<i>V.paradoxa</i>	5.00
4	Mortal makers	<i>V.paradoxa</i>	45.50
		<i>P. africana</i>	38.40
		<i>P.erinaceus</i>	10.00
		<i>K.senegalensis</i>	6.10

Table 6. Frequency of most endangered tree species in Ilorin Emirate Area of Kwara State, Nigeria.

Species	Frequency (%)
<i>M. excelsa</i>	25.40
<i>T. grandis</i>	20.64
<i>A. africana</i>	12.70
<i>K. senegalensis</i>	7.54
<i>A. leiocarpus</i>	6.74
<i>P. erinaceus</i>	6.74
<i>I. doka</i>	6.35
<i>V. paradoxa</i>	5.16
<i>G. arborea</i>	4.37