



Documentation and Conservation of Wild Edible Plants in Ado- Ekiti Region of Ekiti State, Nigeria



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ABSTRACT

A survey of wild edible plants was carried out in Ado-Ekiti region with the aim of documenting wild edible plants species (WEPs) in the study area, determine their abundance and propose strategies that would help in the conservation of the rare species. A rapid appraisal method was used. Visits were made to four randomly selected communities in the region where semi-structured questionnaire guide was used to elicit information from the respondents. Interviews were also carried out with groups of respondents as well as key informants. A total of 47 WEPs which belonged to 32 families were identified in the region. The various ethnobotanical utilizations of the WEPs were defined. The species were not cultivated hence respondents depended on wildlings of the species. The abundance scale used in this study revealed that 10 of the WEPs were presently rare. Strategies that would conserve the rare species were proposed.

Keywords: Wild edible plants, Conservation, Nigeria.

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1. INTRODUCTION

Wild edible plants (WEPs) are plants that grow spontaneously in self-maintaining populations in natural or semi-natural ecosystems and exist independently of direct human action [1]. They are endowed with one or more parts that can be used for food [2] and / or medicine. WEPs are locally available especially during the times of drought or conflict-driven famine. They tolerate water stress better than their domesticated relatives through the possession of an innate resilience to rapid climate change, which is often lacking in exotic species. The gathering and use of wild plants is part of the cultural history of a community hence they form part of the people's local identity and traditions [3] dishes made of wild foods are often identified as functional foods that is foods with medicinal properties [4].

Also WEPs provide greater benefits to vulnerable populations. They are low-input, low cost option for increasing nutrition and decreasing the need to spend limited cash resources on food [5] and medicine. Their

use is based on local ecological knowledge. In Nigeria, deforestation has caused a severe reduction in the population of wild species. This gross reduction has also resulted to sharp decline and / or loss in the local knowledge about WEPs [6]. At present, there is lack of accurate database on the available botanicals in the country [7]. Recent initiative tends to suggest that the biodiversity erosion of these species should be prevented.

Consequent on the above, it is now expedient that information of WEPs are documented, conserved and passed on from generation to generation. This study aimed at documenting WEPs in the study area, determine their abundance and propose strategies that would help in the conservation of the rare species.

2. MATERIALS AND METHODS

2.1. The Study Area

Ado-Ekiti region (7⁰40'N, 5⁰15'E) constituted the present Ado Ekiti Local Government area of Ekiti State, Nigeria. The region has a tropical humid hot climate with two seasons, rainy and dry seasons. The rainy season lasts from March to October and the dry seasons, November to February [8]. The soil composition of the area consisted of high percentages of sands, silt and clay [9]. The population, according to the 2006 census was 308, 621 [10]. The people are majorly of the Ekiti sub-ethnic group of Yoruba.

2.2. Methods

Four communities located within the region were randomly selected. Communities selected were Igbo Aso, Ago Aduloju, Arewa and Ilasa. In each community, ten respondents were randomly selected and interviewed with the aid of semi-structured questionnaire matrix. The interviews which were aimed at accessing the traditional knowledge of the respondents on the WEPs, were conducted with fairly open framework, focused and two-way communication.

The WEPs and their edible parts were identified. Their method(s) of preparation and usage were identified and recorded. Voucher specimens of the identified species were collected and later deposited at the herbarium of the Department of Plant Science and Biotechnology, Ekiti State University, Ado-Ekiti, Nigeria. The relative abundance of the species in the communities sampled was determined using the time taken to physically sight the species in each community. The species were considered abundant when sighted in less than 1hour, moderately abundant when sighted within 1 and 2 hours and rare when sighted above 2 hours.

Group interviews were conducted in order to determine group consensus and define respondents' indigenous knowledge on the species. Each group was made up of at least four respondents. Key informants made up of Officials of Agriculture Development Project and Forestry Division were identified and interviewed. Secondary information was obtained from records and internet.

3. RESULTS AND DISCUSSION

A total of 47 WEPs were identified. These species belonged to 32 families. Table 1 revealed that the families Asteraceae and Euphorbiaceae had six and five species respectively, families Amaranthaceae and Mimosaceae have three species each and families Clusiaceae and Sterculiaceae had two species each. Other families had one species each (Table1). Most of these species were uncultivated but grow widely in the wild.

Table-1. Some WEPs found in Ado Ekiti and their abundance status

S/N	WEP Species	Family	Vernacular Name
1.	<i>Aerva lanata</i> (L.) Juss. Ex Schult.	Amaranthaceae	Efunle
2.	<i>Aframomum melegueta</i> K. Schum	Zingiberaceae	Atare
3.	<i>Ageratum conyzoides</i> L.	Asteraceae	Pakududu
4.	<i>Albizia adianthifolia</i> (Schumach) W.Wight	Mimosaceae	Ayere
5.	<i>Alstonia boonei</i> De willd	Apocynaceae	Ahun
6.	<i>Amaranthus lividus</i> Linn.	Amaranthaceae	Keke omo adie
7.	<i>Amaranthus viridis</i> L.	Amaranthaceae	Tete- atetedaye
8.	<i>Ananas comosus</i> (L) Merr	Bromeliaceae	Ekinkun (Ibile)
9.	<i>Artocarpus altilis</i> (Parkinson) Forsberg	Moraceae	Berefuutu
10.	<i>Blighia sapida</i> K. D. Koniig	Sapindaceae	Isin
11.	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Etipa elila
12.	<i>Brachystegia eurycoma</i> Harms	Caesalpiniaceae	Eku
13.	<i>Bridelia ferruginea</i> Benth	Euphorbiaceae	Ira
14.	<i>Buccolzia coriacea</i> Engl.	Capparaceae	Obi ata/alata
15.	<i>Carpolobia lutea</i> G. Don	Polygalaceae	Otupe, Atetedaye
16.	<i>Chrysophyllum albidum</i> G. Don	Sapotaceae	Agbalumo
17.	<i>Citrus aurantium</i> L.	Rotaceae	Ganiganin
18.	<i>Cola millenii</i> K. Schum	Sterculiaceae	Obi edun
19.	<i>Cola verticillata</i> (Thonn.) Stapf	Steculiaceae	Obi abidan
20.	<i>Costus afer</i> Ker. Gawl	Costaceae	Irekeomode
21.	<i>Crassocephalum crepidioides</i> (Benth.) S. Moore	Asteraceae	Rorowo
22.	<i>Crassocephalum rubens</i> (Juss. ex Jacq.) S. Moore	Asteraceae	Ewe ebolo/ ebire
23.	<i>Croton zambesicus</i> Mull. Arg.	Euphorbiaceae	Ajekobale
24.	<i>Cucurbita pepo</i> L.	Cucurbitaceae	Elegede
25.	<i>Culcasia scandens</i> P. Beauv.	Aroceae	Agunmona
26.	<i>Cylicodiscus gabunensis</i> Harms.	Mimosaceae	Odekowose
27.	<i>Dracaena mannii</i> Baker	Dracaenaceae	Peregun
28.	<i>Garcinia kola</i> Heckel	Clusiaceae	Orogbo
29.	<i>Gossypium arboreum</i> L.	Malvaceae	Owu
30.	<i>Harungana madagascariensis</i> Lam ex. Poir	Clusiaceae	Arunje
31.	<i>Heliotropium indicum</i> L.	Boraginaceae	Apariigun
32.	<i>Ipomea involucreta</i> P. Beauv.	Convolvulaceae	Alukerese
33.	<i>Irvingia gabonensis</i> (Ausrg, Lecomte ex O' Rorke) Baill	Irvingiaceae	Oro
34.	<i>Khaya ivorensis</i> A. Juss	Meliaceae	Gedu
35.	<i>Launea taraxacifolia</i> (Willd.) Amin ex. C. Jeffrey.	Asteraceae	Yanrin
36.	<i>Mallotus subulatus</i> Mull. Arg.	Euphorbiaceae	Pepe
37.	<i>Microdesmis puberula</i> Hook. F. ex Planch	Pandaceae	Aapata
38.	<i>Parkia biglobosa</i> (Jacq.) R. Br. ex G. Don	Mimosaceae	Iru
39.	<i>Plukenetia conophora</i> Mull. Arg.	Euphorbiaceae	Asala
40.	<i>Pterocarpus mildbraedii</i> Harms	Papilionaceae	Oha
41.	<i>Solanum nigrum</i> L.	Solanaceae	Efoodu
42.	<i>Sparganophorus sparganophora</i> (L) C. Jeffrey.	Asteraceae	Ewuro-odo
43.	<i>Spondias mombin</i> L.	Anacardiaceae	Ibo
44.	<i>Talinum fruticosum</i> (L) Juss	Portulacaceae	Egunre
45.	<i>Tragia benthami</i>	Euphorbiaceae	Esinsin
46.	<i>Vernonia amygdalina</i> Delile	Asteraceae	Ewuro
47.	<i>Xylopiiia ethiopica</i> (Dunal) A. Rich	Annonaceae	Erunje

Source: Field Study, 2015

Field observation made within the study region revealed that some of the species have been domesticated, though at low rate. These include *A.artilis*, *B. sapida*, *S. mombins* and *V. amygdalina*. The

various ethnobotanical utilizations of the WEPs are shown in Table 2. Field observation revealed that respondents were quite familiar with the medicinal values of plant species in their environment thus confirming the earlier observations of [Dahlberg and Trygger \[11\]](#); [Bruschi et. al. \[12\]](#) and [Corrigan et. al. \[13\]](#). The abundance scale used in this study revealed that 10 of the WEPs were presently rare (Table 3).

Table-2. Ethnobotanical Utilization of WEPs in Ado-Ekiti Region

S/N	WEP Species	Parts Used	Food and / or Medicinal Value(s)
1.	<i>A. adianthifoliat</i>	Leaves	Convulsion, Fever
2.	<i>A. altilis</i>	Leaves, Fruits	Hypertension, Diabetes
3.	<i>A. boonei</i>	Stem bark	Malaria
4.	<i>A. comosus</i>	Leaves	Typhoid fever
5.	<i>A. conyzoides</i>	Leaves	Dizziness
6.	<i>A. lanata</i>	Leaves	Back pain
7.	<i>A. lividus</i>	Leaves	Vegetable
8.	<i>A. melegueta</i>	Leaves, Seeds	Malaria, Typhoid fever, Measles
9.	<i>A. viridis</i>	Leaves	Dysentery, Inflammation, Constipation
10.	<i>B. eurycoma</i>	Stem bark	Rheumatism
11.	<i>B. coriacea</i>	Stem bark, Roots, Fruits	Headache, Cough, Infertility problems
12.	<i>B. diffusa</i>	Leaves, Roots	Diuretic, Diabetes
13.	<i>B. ferruginea</i>	Stem bark, Leaves	Cough, Malaria
14.	<i>B. sapida</i>	Fruits	Ophthalmic, Conjunctivitis
15.	<i>C. afer</i>	Leaves	Stroke
16.	<i>C. albidum</i>	Leaves, Fruits	Diabetes, Fever
17.	<i>C. aurantium</i>	Fruits	Weight loss
18.	<i>C. crepidioides</i>	Leaves	Vegetable Blood purifier
19.	<i>C. gabunensis</i>	Stem bark	Back pain
20.	<i>C. lutea</i>	Leaves	Gonorrhoea, Malaria, Anti-ulcer
21.	<i>C. millenii</i>	Seeds	Fever, Dysentery
22.	<i>C. pepo</i>	Seeds	Bedwetting
23.	<i>C. rubens</i>	Leaves	Vegetable, Constipation, Laxative
24.	<i>C. scandens</i>	Stem bark	Tooth ache, Inflammation
25.	<i>C. verticillata</i>	Fruits	Heart problems
26.	<i>C. zambesicus</i>	Fruits	Epilepsy, Menstrual cycle problems, Dysentery
27.	<i>D. mannii</i>	Leaves	Pile
28.	<i>G. arboreum</i>	Seeds	Malaria
29.	<i>G. kola</i>	Fruits	Cold, Diabetics
30.	<i>H. indicum</i>	Leaves	Diabetes
31.	<i>H. madagascariensis</i>	Leaves	Gonorrhoea
32.	<i>I. gabonensis</i>	Seed	Loss of weight
33.	<i>I. involucrate</i>	Leaves	Stroke, Dizziness, Hypertension
34.	<i>K. ivorensis</i>	Stem bark	Typhoid fever
35.	<i>L. taraxacifolia</i>	Leaves	Vegetable, Diabetics, Tooth ache
36.	<i>M. puberula</i>	Stem bark	Foetus development
37.	<i>M. subulatus</i>	Leaves	Stomach troubles
38.	<i>P. biglobosa</i>	Fruits, Seeds	Pile
39.	<i>P. conophora</i>	Fruits	High blood pressure, Tooth ache
40.	<i>P. mildbraedii</i>	Leaves	Malaria
41.	<i>S. mombin</i>	Leaves, Stem bark, Fruits	Cough,

42.	<i>S. nigrum</i>	Leaves	Vegetable, Blood purifier
43.	<i>S. sparganophora</i>	Leaves	Vegetable, Cold, Back ache, Children convulsion
44.	<i>T. benthami</i>	Leaves	Miscarriage
45.	<i>T. fruticosum</i>	Leaves	Hypertension, Pile
46.	<i>V. amygdalina</i>	Leaves	Vegetable, Malaria, Diabetics, Stomach ache
47.	<i>X. ethiopica</i>	Leaves, Stem bark, Roots	Dizziness, Rheumatism

Source: Field Study, 2015

Table-3. Checklist of Rare WEPs in Ado-Ekiti Region

S/N	Species
1.	<i>A. boonei</i>
2	<i>A. lunata</i>
3	<i>B. eurycoma</i>
4	<i>C. gabunensis</i>
5	<i>C. zambesicus</i>
6	<i>H. madagascariensis</i>
7	<i>K. ivorensis</i>
8	<i>M. puberula</i>
9	<i>P. mildbraedii</i>
10	<i>X. Ethiopica</i>

Source: Field Study, 2015

The respondents' indigenous knowledge (Table 4) revealed that wildlings of the rare WEPs were available in the study area thus indicating that the preservation of the wild species could be advantageous in the study area. Wildlings preservation could be advocated to ensure their availability in the study area. Respondents were quite aware that all the rare species could be propagated from their seeds. This attributes tend to insinuate that respondents might be able to nurture these species if cultivated as they were quite familiar with the act of cultivating from seeds. Already, the rare species were known to thrive well and their ethnomedicinal values have been established in the study area. These features could enhance their domestication in the study area.

Also, Table 4 revealed that respondents were conscious of the fact that some of the rare species could be propagated from cuttings. These include *M. puberula*, and *P. mildbraedii*. The inherent advantages of this method were analyzed by respondents in Table 4. The potential of viable economic returns and/or production of insect resistant and durable woody product guaranteed by some of these rare species, as identified by respondents in *K. ivorensis* and *X. ethiopica*, could also be utilized as incentives to the cultivation of the species.

The WEPs, like the previous observation of [Kayode and Agude \[14\]](#) have considerable advantages to the aboriginal communities in terms of ready availability, affordability even to the resource poor, effective with no side effects when used as medicine. The forest that has continued to serve as their major source of supply is being deforested wantonly. [Kayode and Omotoyinbo \[15\]](#) observed that the supply from the forest is no longer sustainable due to the unprecedented deforestation, increase use of fire in farm preparations and increase in land fragmentation in the study area. Similarly, harvesting methods utilized on these species are mostly

predatory and annihilative [16]. Thus the need to embark on both in-situ and ex-situ conservation measures on these species cannot be over-emphasized. These according to Shinwari and Khan [17] will offer twin advantages of protecting the species in their natural habitats as well as the production of viable individuals for re-introduction to natural environment. Also, most of the species should be domesticated. The public should be enlightened on the dangers inherent in the genetic erosion of these species.

Table-4. Conservation Potentials of Respondents' Indigenous Knowledge on WEPs in Ado-Ekiti Region

Respondents' Knowledge	Indigenous Conservation Potentials	WEPs
Wildlings of WEPs in Table 3 are available in study area	(a) Preservation of wildlings on farmlands should be encouraged. (b) Transplantation of wildlings (for cultivation) should be encouraged	All WEPs in Table 3 above.
Could be propagated by seeds	(a) Cultivation of WEPs is possible in the study area as respondents were quite familiar with cultivation from seeds (b) Sources of supply of planting propagules are guaranteed.	All WEPs in Table 3 above.
Could be propagated from cuttings	(a) Cultivation of propagules of desirable character could be enhanced (b) Fast growth is assured (c) Shorter 'gestation' period is assured.	<i>M. puberula</i> , <i>P. mildbraedii</i>
WEPs thrive well in forest areas	The study area is located in the rainforest vegetation hence the species are suitable for cultivation in the study area	All WEPs in Table 3 above.
Thrive very well in the river banks	Riverbanks abound tremendously in the study area	<i>A. boonei</i> , <i>H. madagascariensis</i>
Flowers towards the end of dry season	Seeds are quite abundant for cultivation at the onset of rains	<i>H. madagascariensis</i>
Produce termite-resistant wood	Promising economic returns assured as wood will be of high demands	<i>X. ethiopica</i>
Produce wood good for construction and furniture	Promising economic returns assured as wood will be of high demands	<i>K. ivorensis</i> , <i>X. ethiopica</i>
Have medicinal importance	Incentive to its conservation and/or domestication	All WEPs in Table 3 above.

Source: Field Study, 2015

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