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Inventory of medicinal plants diversity in Atan Okansoso village, APA, Badagry, Lagos state, Nigeria

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Abstract

This research work was conducted at APA town, a sub-urban area of Badagry West Local Council Development Area of Lagos State, Nigeria. The aim was to identify plant species used for medicinal purposes in the study area and recommend strategies for their conservation. Six plots were randomly selected in the study area and the transect method was used. A total of one hundred and three (101) species belonging to fifty-two (52) families were identified. These include trees, shrubs, climbers, creepers, and herbs. The medicinal plants identified are used for the treatment of various diseases and ailments. They are also used as anti-inflammatory, insecticides, and pesticides. Effective conservation strategies for these plants include training on proper collection techniques, allocation of communal land to begin medicinal plant farms, commercialization of these plants and encouraging the indigenes to participate effectively in the conservation efforts made by the Government and other concerned bodies.

Keywords: Medicinal plants, transect method, diseases and ailments, conservation

1. Introduction

The use of plants for medicines is by far the biggest use of plants in term of the number of species specifically targeted. Plants provide the predominant ingredients of medicines in most traditional systems and have been the source of inspiration for several major researches. In addition to patient safety issues, there is the risk that a growing herbal market and its great commercial benefit might pose a threat to biodiversity through the over harvesting of the raw material for herbal medicines and other natural health care products. These practices, if not controlled, may lead to the extinction of endangered species and the irreversible destruction of natural habitats and resources.

It is estimated that 70-80% of people worldwide rely chiefly on traditional, largely herbal medicine to meet their primary healthcare needs ^[1].

The scale of trade in medicinal plants ranges from local to international. Much of this trade is unrecorded or poorly documented in official statistics ^[2]. Due to the poor documentation, decision makers usually have little awareness of consumption of medicinal plants, or of the problems of sustainability and the sometimes deleterious impacts on natural habitats of wild collection. The main threats for the medicinal plants populations are over-harvesting and habitat loss, including habitat conversion/land use change as well as poor conservation decisions ^[3].

In Nigeria, medicinal plants are found to grow naturally in the forest, bushes and marginal land along the canal and in other places. Many such medicinal plants especially the aromatic herbs are grown in the home garden or as crop field either in sole cropping or inter cropping systems and rarely as plantation crop, home gardens is increasingly a focus of medicinal plant propagation. From the conservation point of view, many of our traditional medicinal plants are now getting extinct, some are endangered and some are totally threatened due to over exploitation. Due to destruction of forests and overgrazing of remote and marginal lands, expansion of industry and urbanization as well as the excessive harvesting of wild rare and endangered plants biological diversity of medicinal plants are being reduced day by day. The scientific search and documentation of plants that have medicinal properties or value dated back to 1950 during the colonial rule in Nigeria. Seeds, roots, bark and whole plants were taken from Nigeria to England for analysis.

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Since then scholars and scientists in Nigeria have been carrying out several researches on the use of indigenous medicinal plants all over the country [4-6].

There is insufficient information and understanding when it comes to Nigeria's indigenous medicine practitioners⁷. Efforts should be made to protect and conserve the worst affected and most economically important species in their natural habitats.

Controlled access to biodiversity thus conserved and cultivated for extraction and marketing will result in the sustainable use of the resource base and will play an important role in raising the living standard and alleviating poverty amongst the rural poor. Hence, this study aims at identifying, documenting and provide strategies for the conservation of medicinal plants in the study area.

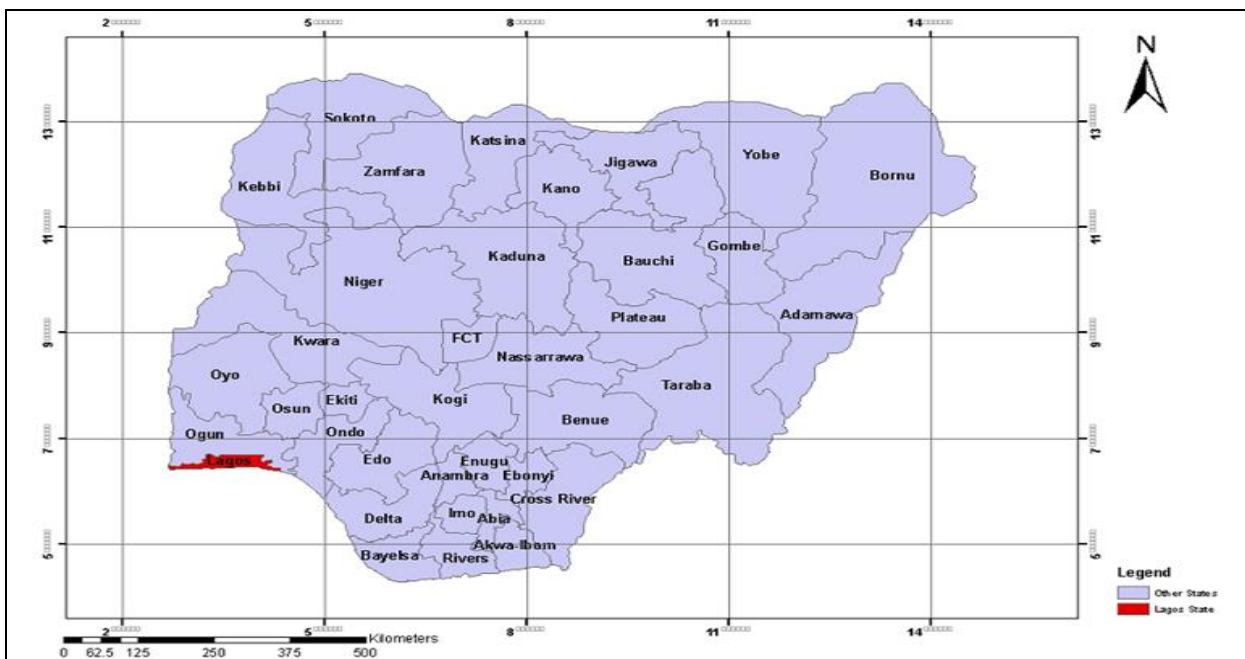


Fig 1: Map of Nigeria showing Lagos State

Materials and Methods

Study site

The study was conducted at Apa town Latitude: 6.43333; Longitude: 2.81667. (Atan Okansoso village). Atan Okansoso village, an outpost of Apa town serves as a fishing and farming community. The vegetation of the area is predominantly secondary forest, Open grass land/shrub like vegetation, with several palms and other economical trees in the area. Data collection for the study was done between July

and August 2011.

The GPS (Global Positioning System) reading of the study area was first taken and four cardinal points were identified and summarily recorded. 6 plots were then randomly selected in the study area and a transect line were evenly cut, using a 30 m² measuring tape a 10 m x 10m line was then drawn. The medicinal plants found within each sample plot were then recorded accordingly noting the frequency, botanical name and position of such species.

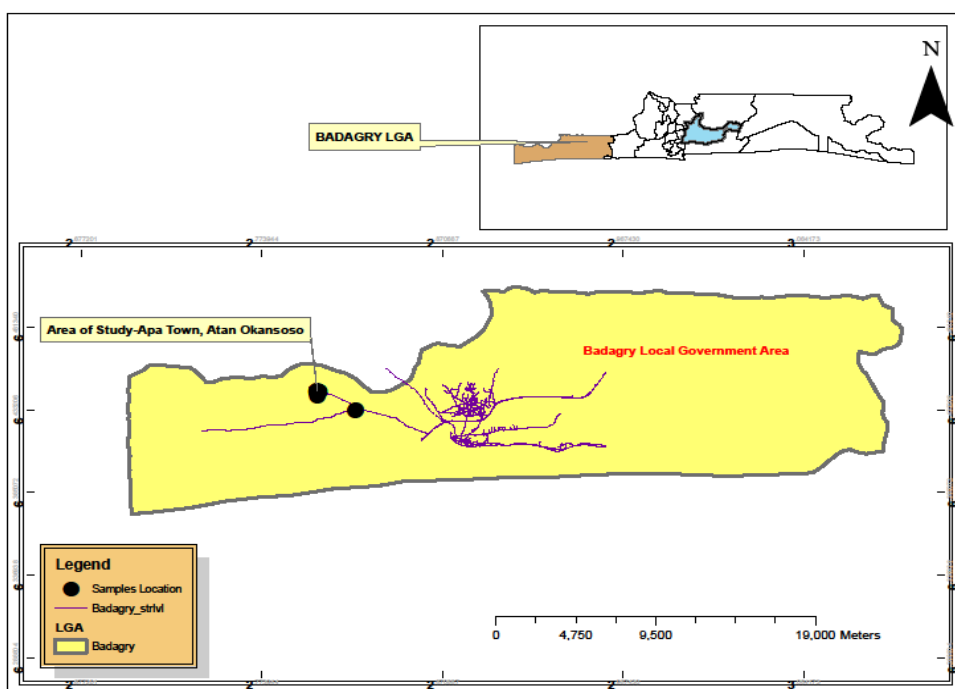


Fig 2: Map of Lagos State showing Badagry West Local Government Area (insert the study area) ~ 177 ~

Data Collection and analysis

The services of 3 field assistants and 2 plant taxonomists were employed, alongside the Natives who provide onsite guide, medicinal plants identification as well as information on how they are used. All medicinal plants not identified in the field were then taken to University of Lagos Herbarium for proper identification and cataloging.

Secondary data were collected from different sources according to needs. Data and information were collected from CD-Rom, the Internet, relevant Textbooks, Journals, previous Researches, Surveys, Reviews and Reports on medicinal plants conservation.

MS-Excel and SPSS programs were used to process all collected information by microcomputer. Descriptive statistics such as frequency, percentage distribution, frequency of distribution, relative frequency, frequency of occupation, density, relative density, abundance, relative abundance, Sorensen coefficient of community similarity index, were used to analyse data. In addition, graphs, tables, figures and images were used to interpret the findings.

Land sat imagery of the study area was acquired and processed using ENVI and ARCGIS 9.3 Version software to classify the vegetation of the study area.

Results And Discussion

The vegetation of the study area is an Open grass land and shrub in characteristics surrounded by palm tree and light forest vegetation. The area is also liable to seasonal flood.

Medicinal Plants Found In the Study Area

One hundred and ninety three (193) medicinal plants consisting of 101 species were found in the study area. They include *Asystasia gangetica* belonging to Acanthaceae family, *Ipomoea involucre* belonging to Convolvaceae family, *Calapogonium mucunoides* belonging to Leguminosae family, *Dioscorea dumetorum* belonging to Dioscoreaceae families. Others include *Sporobolus pgramidalis* belonging to Poaceae family, *Corchorus aestuans* belonging to Tiliaceae family, *Stachytmapheta cagennensis* belonging to Verbenaceae family and *Aframomum melegueta* belonging to Zingiberaceae family (Table 1)

Table 1: Medicinal Plants in the Study Area.

S/N	Botanical Name	Common Name	Family
1	<i>Acalypha fimbriata</i> . Schumach. & Thonn.	Jinwinni	Euphorbiaceae
2	<i>Adenia venenata</i> Forssk	Yaga	Passifloraceae
3	<i>Aframomum melegueta</i> K. Schum	Ata-ire	Zingiberaceae
4	<i>Amaranthus mexicana</i> Linn.	Efo tete	Amaranthaceae
5	<i>Amaranthus spinosus</i> Linn.	Tete elegun	Amaranthaceae
6	<i>Annona muricata</i> Linn.	abo-elegun	Annonaceae
7	<i>Anthocleista vogelii</i> Planch	Sapo	Loganiaceae
8	<i>Artocarpus altilis</i> Fosberg	Jaloke	Moraceae
9	<i>Aspilia africana</i> C.D. Adams	Yunyun	Compositae
10	<i>Asystasia gangetica</i> Linn.	Lobiiri	Acanthaceae
11	<i>Basilicum polysiachyon</i> Linn.	Ewuro ata	Labiatae
12	<i>Boerhavia coccinea</i> Mill.	Olowojeja	Nytaginaceae
13	<i>Borreria scandens</i> Linn.	Isakoro	Asteraceae
14	<i>Brachiaria deflexia</i> Schumach.	Yoyoka	Poaceae
15	<i>Bridelia micrantha</i> (Hochst) Baill	Ira	Euphorbiaceae
16	<i>Burkea africana</i> Hook.f	Apasa	Caesalpiniaceae
17	<i>Bysocarpus coccineus</i> Schum. and Thonn	Amuje wewe	Connaraceae
18	<i>Caladium bicolor</i> (Aiton) Britton and P.Wilson	Eje-jesu	Araceae
19	<i>Calapogonium mucunoides</i> (Benth.) Benth. ex Hemsl	Apalofa	Leguminosae
20	<i>Capraria biflora</i> Linn.	Eekan-awodi	Scrophulariaceae
21	<i>Capsicum annum</i> Linn.	Ata rodo	Solanaceae
22	<i>Carica papaya</i> Linn.	Ibepe	Caricaceae
23	<i>Chromolena odorata</i> Linn.	Akintola taku	Compositae
24	<i>Cissus quadrangularis</i> Linn.	Ogbakiiki	Vitaceae
25	<i>Citrus sinensis</i> Linn.	Osanmimu	Rutaceae
26	<i>Clerodendrum volubile</i> P.Beauv.	Dagba	Verbenaceae
27	<i>Cnestis ferruginea</i> DC	Akara aje	Connaraceae
28	<i>Cocos nucifera</i> Linn.	Agbon	Palmae
29	<i>Cola nitida</i> (Vent.) Schott & Endl.	Obi gbanja	Sterculiaceae
30	<i>Colocasia esculenta</i> (Linn.) Schott	Koko	Araceae
31	<i>Commelina diffusa</i> Linn.	Itopere	Commelinaceae
32	<i>Corchorus olitorius</i> Linn.	Ewedu	Tiliaceae
33	<i>Corchorus aestuans</i> Linn.	Ogo	Tiliaceae
34	<i>Corchorus tridens</i> Linn.	Ewedu	Tiliaceae
35	<i>Crescentia cujete</i> Linn.	Igi igba	Bignoniaceae
36	<i>Croton lobatus</i> Linn.	Eru	Euphorbiaceae
37	<i>Culcasia scandens</i> P. Beauv	Agunmona	Araceae
38	<i>Cyathula prostrata</i> Linn.	Shawere pepe,	Amaranthaceae
39	<i>Cyperus esculentus</i> Linn.	Ofio	Cyperaceae
40	<i>Dalbergia saxatilis</i> Hook.f	Ogundu	Leguminosae
41	<i>Deinbollia pinnata</i> Schum. & Thonn	Ogiri-egba	Sapindaceae
42	<i>Desmodium gangeticum</i> Linn.	Ewe-emo	Leguminosae
43	<i>Dioscorea dumetorum</i> (Kunth) Pax	Esuru	Dioscoreaceae

44	<i>Dissotis rotundifolia</i> (Sm.) Triana	Awede	Melastomataceae
45	<i>Elaeis guineensis</i> Jacq	Ope	Palmae
46	<i>Eleusine indica</i> Linn.	Ese-kannakanna	Poaceae
47	<i>Emilia coccinea</i> G. Don	Odundun-owo	Compositae
48	<i>Entada Africana</i> Guill. & Perr.	Ayunre	Leguminosae
49	<i>Euphorbia hirta</i> Linn.	Oro elewe	Euphorbiaceae
50	<i>Euphorbia prostrata</i> Linn.		Euphorbiaceae
51	<i>Glyphae brevis</i> (Spreng.) Monach.	Atori	Tiliaceae
52	<i>Gongronema latifolium</i> Benth.	Aunjeadiye	Asclepiadaceae
53	<i>Hedranthera barteri</i> (Hook. f.) Pichon	Agbo omode	Apocynaceae
54	<i>Heliotropium indicum</i> Linn.	Ogbe ori akuko	Boraginaceae
55	<i>Hyptis suaveolens</i> Linn.	Ewe aefon	Labiatae
56	<i>Ipomoea batatas</i> (L.) Lam	Anamo	Convolvaceae
57	<i>Ipomoea involucrata</i> P.Beauv.	Ododo-odo	Convolvaceae
58	<i>Irvingia gabonensis</i> Baill	Oro	Irvingiaceae
59	<i>Jatropha curcas</i> Linn.	Botuje	Euphorbiaceae
60	<i>Jatropha gossypifolia</i> Linn.	Botuje pupa	Euphorbiaceae
61	<i>Justicia flava</i> (Forssk.) Vahl	Odian	Acanthaceae
62	<i>Ludwigia abyssinica</i> A. Rich	Ako-ewuro-odo	Onaceae
63	<i>Lycopersicon esculentum</i> Mill.	Tomati	Solanaceae
64	<i>Magaritaria discoidea</i> (Baill.) Webste	Odan	Euphorbiaceae
65	<i>Manihot esculenta</i> Crantz	Ege	Euphorbiaceae
66	<i>Mariscus alternifolius</i> Vahl.	Alubosa eranko	Cyperaceae
67	<i>Molugo spp</i> Linn.	Kujekuje	Moluginaceae
68	<i>Morinda lucida</i> Benth.	Oruwo	Rubiaceae
69	<i>Mormordica charantia</i> Linn.	Ejinrin	Cucurbitaceae
70	<i>Mucuna sloanei</i> Fawcett & Rendle	Yerepe	Leguminosae
71	<i>Musa paradisiaca</i> Linn.	Ogede agbagba	Musaceae
72	<i>Musa sapientum</i> Linn.	Ogede were	Musaceae
73	<i>Nephrolepis bisserata</i> (Sw.) Schott	Owuro	Nephrolepidaceae
74	<i>Newbouldia laevis</i> Seem.	Akoko	Bignoniaceae
75	<i>Ocimum basilicum</i> Linn.	Efinrin wewe	Labiatae
76	<i>Ocimum gratissimum</i> Linn.	Efinrin-nla	Labiatae
77	<i>Pavetta corymbosa</i> (DC.) FN Williams	Idofun-igbo	Rubiaceae
78	<i>Persea Americana</i> Mill.	Pia	Lauraceae
79	<i>Petiveria alliacea</i> Linn.	Awogba	Phytolaccaceae
80	<i>Phaulopsis falcisepala</i> C.B.Clarke	Apa-ogbe	Acanthaceae
81	<i>Phyllanthus amarus</i> Schum. & Thonn	Eyin olobe	Euphorbiaceae
82	<i>Physalis angulate</i> Linn.	Koropo	Solanaceae
83	<i>Platostoma africanum</i> P.Beauv	Tiran	Lamiaceae
84	<i>Psidium guajava</i> Linn.	Gooba	Myrtaceae
85	<i>Rauwolfia vomitoria</i> Afzel	Asofeyeje	Apocynaceae
86	<i>Rytiginia umbrellulata</i> Linn.	Oju-eja	Rubiaceae
87	<i>Schranksia leptocarpa</i> Linn.	Patonmo	Mimosaceae
88	<i>Senna mimosoides</i> Mill.	Rere	Caesalpinioideae
89	<i>Sida acuta</i> Burm.f	Osepotu	Malvaceae
90	<i>Sida linifolia</i> Juss. ex Cav	Osepotu	Malvaceae
91	<i>Smilax krusiana</i> Meisn.	Kasan	Smilacaceae
92	<i>Sporobolus pyramidalis</i> P. Beauv.	Motisan	Poaceae
93	<i>Stachytarpheta cayennensis</i> (L.) Vahl	Obibo	Verbenaceae
94	<i>Sterculia tragacantha</i> Lindl.	Alawefon	Sterculiaceae
95	<i>Synedrella nodiflora</i> Linn.	Tanaposo	Compositae
96	<i>Talinum triangulare</i> (Jacq.) Willd	Gbure	Portulacaceae
97	<i>Telfaria occidentale</i> Hook f.	Ugwu	Cucurbitaceae
98	<i>Triumfetta cordifolia</i> A. Rich	Akee-eri	Tiliaceae
99	<i>Urena lobata</i> Linn.	Akeriri	Malvaceae
100	<i>Urera cordifolia</i> Engl.	Eesin-agbonrin	Urticaceae
101	<i>Vernonia cinerea</i> Linn.	Bojure	Asteraceae

Species of medicinal plants in the study area are diverse they include climbers, creepers, herbs, shrubs and trees. A total of 18 Climbers, 4 Creepers and 59 Herbs were observed, others are 12 Shrubs, 14 Tree species.

Table 2: Species Family and Frequency

S/N	Family	Frequency
1	Leguminosae	14
2	Euphorbiaceae	13
3	Asteraceae	10
4	Compositae	10
5	Malvaceae	9
6	Acanthaceae	8
7	Rubiaceae	8
8	Tiliaceae	8
9	Musaceae	7
10	Palmae	7
11	Poaceae	7
12	Apocynaceae	6
13	Araceae	6
14	Convolvaceae	6
15	Labiatae	6
16	Cyperaceae	5
17	Lamiaceae	5
18	Solanaceae	5
19	Amaranthaceae	4
20	Bignoniaceae	3
21	Myrtaceae	3
22	Sterculiaceae	3
23	Annonaceae	2
24	Boraginaceae	2
25	Caesalpiniaceae	2
26	Commelinaceae	2
27	Connaraceae	2
28	Cucurbitaceae	2
29	Onaceae	2
30	Scrophulariaceae	2
31	Urticaceae	2
32	Verbenaceae	2
33	Asclepiadaceae	1
34	Caricaceae	1
35	Dioscoreaceae	1
36	Irvingiaceae	1
37	Loganiaceae	1
38	Melastomataceae	1
39	Mimosaceae	1
40	Moluginaceae	1
41	Moraceae	1
42	Nephrolepidaceae	1
43	Nyctaginaceae	1
44	Passifloraceae	1
45	Phytolaccaceae	1
46	Portulacaceae	1
47	Rutaceae	1
48	Sapindaceae	1
49	Smilacaceae	1
50	Sruilacaceae	1
51	Vitaceae	1
52	Zingiberaceae	1

Family Leguminosae had the highest number of species (14 species) followed by Euphorbiaceae with 13 species, Asteraceae had 10 species, Malvaceae had 9 species while Acanthaceae, Palmae and Labiatae had 8, 7 and 6 species respectively. On the other hand, Ten (10) families have two species each while twenty (20) families are represented by one species respectively.

Dominant Species Per Plot

Eight (8) Species belonging to 7 Families were observed in the study area as the dominant species, (Table 3) they include *Aspilia africana* belonging to Asteraceae Family, *Amaranthus mexicanus* belonging to Amaranthaceae family, *Kyllinga erecta* belonging to Cyperaceae family, others include *Veronica cinerea* belonging to Asteraceae Family.

Schrankia leptocarpa, *Bacilicum polystachylon*, *Musa paradisiaca*, *Petiveria alliacea* belonging to the families

Mimosaceae, Lamiaceae, Musaceae, and Phytolaccaceae respectively.

Table 3: Dominant Species per Plot

Plot	Dominant Species	Local Name	Family	Status
1	<i>Aspilia Africana</i>	Yunyun	Asteraceae	Herb
2	<i>Amaranthus Mexicana</i>	Efo tete	Amaranthaceae	Herb
3	<i>Cyperus esculentus</i>	Ofio	Cyperaceae	Herb
3	<i>Veronia cinerea</i>	Bojure	Asteraceae	Herb
4	<i>Aspilia Africana</i>	Yunyun	Asteraceae	Herb
4	<i>Schrankia leptocarpa</i>	Patonmo	Mimosoideae	Climber
5	<i>Aspilia Africana</i>	Yunyun	Asteraceae	Herb
5	<i>Bacilicum polystachylon</i>		Lamiaceae	Herb
6	<i>Musa paradisiacal</i>	Ogede agbagba	Musaceae	Herb
6	<i>Petiveria alliacea</i>	Soro igbo	Phytolaccaceae	Herb

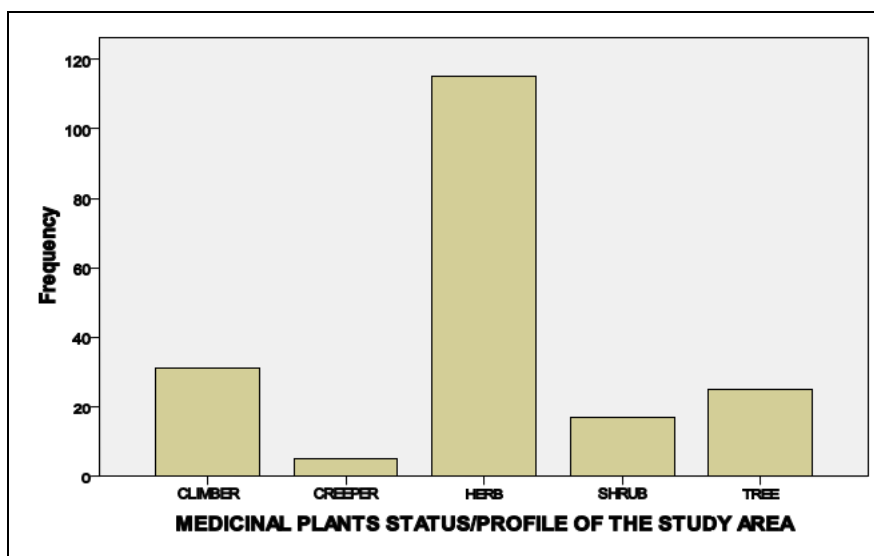


Fig 3: Habits of Medicinal Plants in the Study Area

Frequency of Distribution (Fd)/ Relative Frequency (Rf)

The frequency of plant distribution on the study area ranged between 1 and 65. *Aspilia africana* was the most encountered, followed by *Musa paradisiaca* (44), *Cocos nucifera* (8) while 23 others have a frequency of 1 plant each.

Relative Frequency (RF) however ranged between 0.14 and 9.31, *Croton lobatus* had a relative frequency of 0.42 while *Aframomum melegueta* had 0.57. others include *Platostonia africanum* (1.13), *Desmodium gangeticum* (2.11) while the duo of *Calapogonium mucunoides* and *Cyathula prostrata* have a RF of 3.43 each.

Number of Plots (Np) / Frequency of Occupation (Fo)

Out of the six (6) plots sampled it was observed that *Calapogonium mucunoides* appeared in all of the 6 plots, while *Eleusine indica* was found in 5 plots, others are *Cyperus esculentus* (4 plots), *Psidium guajava* (3 plots), *Annona muricata* (2 plots) and *Smilax krusiana* (1 plot).

The frequency of occupation in percentage (%) ranged between 16.67% and 100 % with an average of 62.46 %.

Density (D) / Relative Density (Rd)

This is expressed as Number of Plants of a Particular Species divided by the Total Area sampled multiplied by 100. the density of plants in the study area ranged between 0.16 and 10.83 with an average of 2.25.

The relative density however ranged between 0.12% and 9.33%. 23 Plants have a relative density of 0.12 %, *Basilicum polysiachyon* have a RD of 2 %, *Musa paradisiaca* (6.31%) and *Aspilia africana* (9.33%).

Sorensen Coefficient of Similarity Index (Cs)

This is a method of directly comparing diversity of different plots in the study area. It usually compares the number of species common to all areas sampled.

The computed Sorensen coefficients of similarity index to compare the occurrence of the different medicinal plant in each plot revealed that (Cs) coefficient ranged between 0.56 and 0.11.

The highest coefficient was obtained between plots 1 and 2 (Cs, 0.56) followed by plots 1 and 4 (Cs, 0.47) while the least was between plots 3 and 6, and 5 and 6 with (Cs, 0.11) respectively. It was also observed that the closer the plot to each other the higher the similarity and the farther apart the lower the similarity.

Conclusions

There are many important medicinal plants species found in the study area and this could be a good raw materials source for manufacturer of modern medicine in Nigeria. Such bio prospecting in this area would lead to income generation of the indigenes/rural populace. Medicinal plants identified also have marketing potentials; therefore efforts should be geared towards creating an enabling environment. The knowledge of the use of these medicinal plants should also be properly preserved so that such would not be lost.

Deforestation is a major problem in the study area, this should be discouraged and afforestation practices be encouraged in the area. Flooding should also be controlled in the area, as this destroys many medicinal plants in the area. Construction works and developmental projects should consider plants

species found in the study area and proper analysis done before commencement of such projects. Wherever applicable environmental impact assessment of such project should be carried out in accordance with the various relevant laws of the land. Many of the indigenes in the study area have medicinal plants planted in their compound. This should be further encouraged in the area. Land should be allocated for the establishment of medicinal plant farm in the area in order to conserve the already identified medicinal plants. The government both at the Local and State levels should be involved in ensuring that these precious resources are well conserved. Further research should also be encouraged on both in-situ and ex-situ research procedures as done in the study area.

References

1. World Health Organization. National policy on traditional medicine and regulation of herbal medicines. Report of WHO global survey. (NLM Classification: WB 925), WHO Press, Geneva, Switzerland. 2005, 168
2. Norton BG. Biodiversity and Environmental values: In search of a universal ethic. *Biodiversity and Conservation* 2000; 9(8):1029-1044.
3. Nigeria Natural Medicine Development Agency. Nigeria Medicinal Plants and Traditional Medicine Practice, Abstracts of Published Research Findings on Nigeria Medicinal Plants and Traditional Medicine Practice', NIMR Publications, Abuja, Nigeria. 2009; 2:380.
4. Sofowora AA. Medicinal Plants and Traditional Medicine in Africa. John Wiley and Sons Ltd., New York. 1984, 256.
5. Iwu MM. Handbook of African Medicinal Plants, London, CRC Press. 1993, 435.
6. Olowokudejo JD, Kadiri AB, Travih VA. An Ethnobotanical Survey of Herbal Markets and Medicinal Plants in Lagos State of Nigeria. *Ethnobotanical Leaflets* 2008; 12:851-865.
7. Iroegbu PE. Knowledge of Herbal Resources and Development of Practitioners in Nigerian Society (Part 2), Grant McEwan College University Studies, Edmonton, Alberta, Canada, 2006, 121-123.