



## **Ethno - Medicinal Studies of Finima Nature Park - A Protected Tropical Rain Forest**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Authors OPC, AAA and ATO designed the study, carried out data collection and performed the statistical analysis. Authors OPC and JNO wrote the first draft of the manuscript. Authors OPC, ATO and AAA managed the analyses of the study and final draft. Author JNO managed the literature searches. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Objective:** This study was aimed at conducting a pilot survey of the ethno-medicinal plants in Finima Nature Park (FNP), Bonny, Nigeria, to elicit common medicinal plants and their uses.

**Method:** A set of structured questionnaire was used to obtain information from three key informants (Traditional Medicine Practitioners-TMPs) and 62 household heads on the local medicinal utilization of plants in FNP. Plant utilization and preferences, perceived conservation status and use values were documented.

**Results:** Eighty-three (83) plant species belonging to 45 Botanical families were frequently collected from FNP for local medicinal purposes. Rubiaceae was the most abundant (8%) plant family while the plant forms showed trees (46%), herbs (23%), shrubs (21%) and ferns (3%). Plant parts used for local medicine included leaves (44%), stem/barks (21%), roots (16%), whole plant (5%), fruits (5%), seeds (6%), tubers (2%) and flowers (1%). Infectious diseases were the most treated (30%), urogenital and endocrine diseases - such as thyroid (15%) and abdominal diseases (11%). Oral (62%) and dermal (30%) constitutes the main modes of administration. *Rauvolfia vomitoria* Afzel. had the highest use value (3.5 - 4) while *Ocimum gratissimum* Linn., *Vernonia*

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*amygdalina* Delile and *Alchornea cordifolia* Schumach. & Thonn had the least (1). Perceived conservation status of medicinal plants by respondents revealed scarce (9%), threatened (31%) and abundance (60%).

**Conclusion:** Finima Nature Park (FNP) is a repository of medicinal genetic resource and as such, its conservation should be upheld.

**Keywords:** Ethno-medicine; Finima Nature Park; medicinal plants; use value.

## 1. INTRODUCTION

Plants provide vital sources of medicine, which are beneficial in treating a wide range of human illnesses and conditions [1]. Ang-Lee et al. [2] reported that the World Health Organization (WHO) and other researchers averred that substantial population in the developing countries relies on plants for their basic health care. In developing nations, rural communities depend substantively on herbal medicines to meet their primary health care needs [3]. In Africa for instance, lots of people use the herbal medicine because it remains the cheapest and mostly preferred hence sizeable population ignore modern medicine [4]. Herbal medicine is mostly used in the treatment of malaria among most children in rural communities of Mali, Ghana, Zambia and Nigeria [5]. In Nigeria, several studies [1,3,6,7,8] have shown that herbal medicine are effective in the treatment of cough, malaria, diarrhea, impotency, leprosy, catarrh, tooth ache, ulcer, hypertension, etc. In Countries such as India and Myanmar, several literatures [9-11] further shows that the utility of the traditional medicine meet primary health care needs of its populace; while in South America, documented evidences [12-14] further reveals how the knowledge of ethno-medicine is utilized in the health care system. Industrialized nations in recent times embraced herbal medicines as complementary and alternative therapies [15]. WHO [16] revealed that herbal remedies utilization is gaining traction in the industrialized countries. Return of complementary and alternative medicine in Europe, North America and the Caribbean cuts across all social classes [17]. Chinese traditional herbal preparation account for 30–50% of the total medicinal consumption for debilitating diseases; while a significant number of people (70%) living with HIV/AIDS use traditional medicine in London, San Francisco and South Africa [5]. As at 2003, the yearly global market for herbal medicine was estimated at US \$60 billion [16].

Sustainable raw material supply to measure up the rising interest and usage of herbal medicines

globally will largely depend on commercial cultivation of valuable medicinal plants. Large scale production of important medicinal plants occurs in China to support export of traditional Chinese medicine which rose from 2.08 billion USD in 2013 (One Belt One Road (OBOR) countries only which comprise some Eurasian nations such as China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan) to 114.21 billion USD in 2015 globally [18,19]. Most African nations especially Nigeria still depend on wild sources of plant materials in the preparation of herbal medicines [20], a condition that threatens species survival in the wild. Rural communities in sub-Sahara West Africa collect medicinal plants from protected and free areas such as Forest Reserves, Nature Parks, Agricultural and fallow lands. Amusa et al. [21] reported the dependence of Borgu people on medicinal plants collection from the Kainji Lake National Park in Nigeria. Studies and documentation of important medicinal plants genetic resources in protected forest lands is laudable to facilitate research into their conservation and sustainable production for domestic and export markets.

In this context, the study area of this research is the Finima Nature Park (FNP), a protected area managed by the Nigeria Liquefied Natural Gas (NLNG) company. The Park is a repository of diverse wetland fauna and flora; the adjoining communities access the park to collect important medicinal plants, fruits and vegetables. It is a reserve composed mainly of fresh water forest and mangrove vegetation. Preponderance of complex biodiversity of the park makes it a useful tourist resource and justifies the purpose for conservation. Only a handful of researches exist on the status of the park. Akanni and Luiselli [22] studied some features of community ecology of amphibians and reptiles in FNP; while Ijeomah et al. [23] document its potential for tourism, hence there are no documented evidences of the medicinal value of the park. This work is therefore designed to document the important medicinal germplasm of the park and their use values.

## 2. MATERIALS AND METHODS

### 2.1 Study Area

Finima Nature Park is located in Bonny Local Government Area of Rivers State, in the Niger Delta Region of Nigeria. It is located between latitude 7°3'0" and 7°16'30"E and Longitude 4°21'0" and 4°30'0"N (Fig.1). A report by the Nigeria Liquefied Natural Gas (NLNG) [24] showed that the NLNG situated in the Finima partners with the community and demarcated it as a forest reserve. Finima Nature Park was established in the year 2011 with the aim of keeping the integrity of the forest, its biodiversity and the regular functioning of the natural environment to provide and protect the human settlements. The park covers 1000 hectares and provides a golden opportunity to show genuine commitment of the community and the Niger Delta at large to contribute to environmental conservation. According NLNG [24], the Park's vegetation is composed of the rain forests and mangrove swamps, likewise an ecologically significant zone of sandy soil with fresh water ponds and tall trees between the swamps and the beach. This Park's diversity reveals a good tropical wetland ecosystem, which is unique for educational and research activities. The reserve provides habitat for certain wildlife species with high conservation values (variety of bird species, reptiles and mammals). Abundant fauna in the park include Mona monkeys (*Cercopithecus mona*); African Fish Eagle (*Haliaeetus vocifer*); and White-face whistling duck (*Dendrocygna viduata*). The NLNG in partnership with Bonny Environmental Consultants' Committee (BECC), Nigerian Conservation Foundation (NCF) and Niger Delta Wetlands Centre (NDWC) are stakeholders in strengthening the conservation consciousness of the populace.

### 2.2 Data Collection

The field survey targeted medicinal plants species available in the nature park. Three (3) popular Traditional Medicine Practitioners (TMPs) among the local inhabitants were selected from three different communities adjoining the forest reserve. The TMPs were engaged on field work in different days and schedules to ascertain independent response/information obtained on different plant species. Verbal pre-informed consent was obtained from the practitioners and dwellers before the interview and subsequent transect walk through the park for medicinal plant species

identification. TMPs were paid tokens for their time and service rendered after the exercise. Interviews were conducted using guided semi structured questionnaires. Gathering of data on medicinal plants usage in the study area was done according to a minor alteration of Martin's procedure [25,26]. The study included villages within 1 – 5Km from the nature park. Before administering questionnaires among the settlers around the park. A total of three (3) key informants and 62 households (with knowledgeable individuals on medicinal plants utilization) were selected from neighbouring villages, to be interviewed. The informants included traditional healers and primary collectors who are the custodians of indigenous knowledge on herbal medicines and dwellers of adjoining communities. Existing transect lines used as forest trails were used. The TMPs were asked to give information on local medicinal utilization of medicinal plants within five metres (5m) range on each side of the transect. The information obtained were carefully recorded taking traditional healers as guides, specimens of cited medicinal plants were collected for proper identification.

### 2.3 Plant Identification and Processing of Specimens

Plant identification was partly carried out in the field based on field manuals for plant identification [26-28]. Few medicinal plant specimens not properly identified on the field were later identified by Prof Omokhua G.E (Head of Herbarium Unit) and deposited at Forestry Department, University of Port Harcourt. Accuracy of species scientific names was also checked using botanical keys.

### 2.4 Data Analysis

Descriptive statistics tables using frequencies and percentages were used to summarize data in Microsoft excel 2013. The ailments treated by the medicinal plants were sorted into different categories adopting Iwu [29] and Tugume et al. [26] methods. Estimates of each species  $S$  use values for each informant  $i$ ,  $UV_i$ , as proposed by Phillips and Gentry [30] is defined as:

$$UV_{is} = \sum U_{is} / n_{is}$$

Where  $UV$  is use value,  $U$  is the number of uses mentioned in each event by informant  $i$ , and  $n$  is the number of events for species  $s$  with informant  $i$ . The plants were classified into life forms such

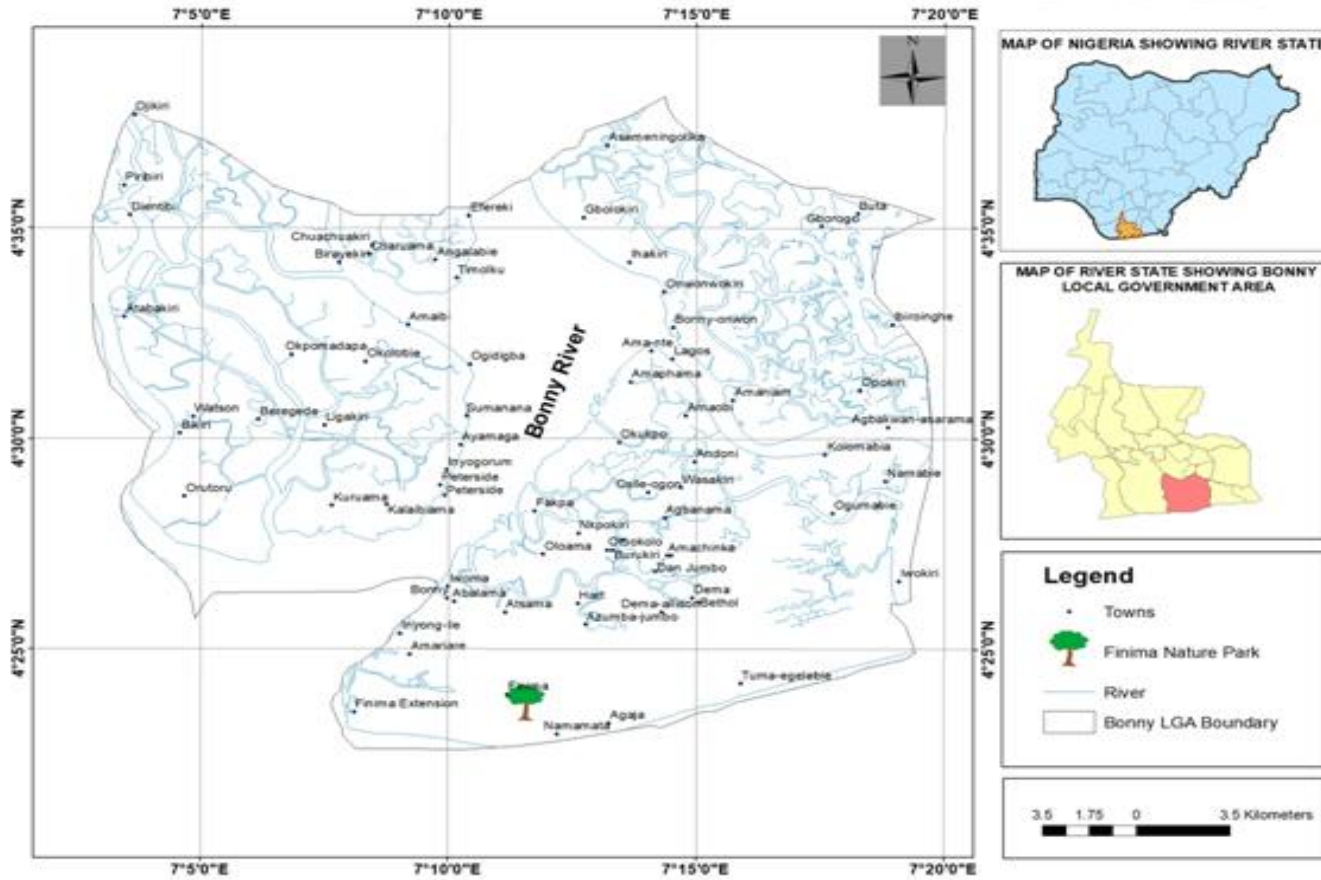


Fig. 1. Map of bonny showing the study area in the Niger Delta Region of Nigeria

as Tree, Shrub, Herb and climber while the conservation status was based on the informants' perception.

### 3. RESULTS AND DISCUSSION

Table 1 indicates medicinal plant species, plant family, form/habit, parts used, and ailment treated, mode of administration, use value and conservation status in Finima Nature Park. A total of 83 medicinal plants species represented by 45 families were encountered. Plants are used to treat ailments such as malaria, typhoid, hemorrhoid (pile), rheumatism, eye defects and stomach imbalances. Rubiaceae family contributed the highest plant species 8% (7). Findings in this work compares favourably with the other ethno-medicinal studies [3] in terms of species and family abundance of medicinal plants.

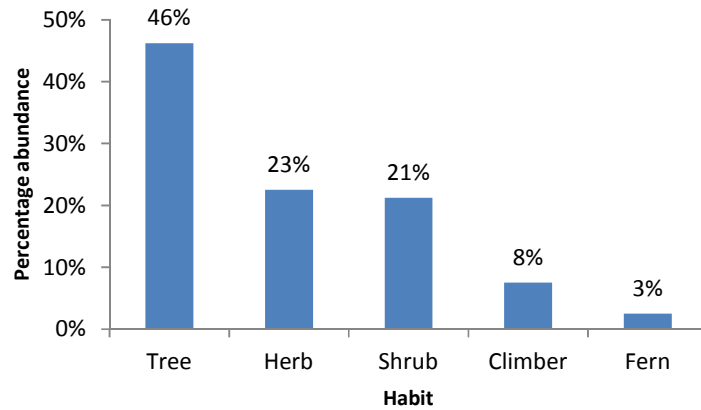
*Elaeis guineensis* is used to treat 10 ailments while many species were used to manage only one ailment each. Several authors have also documented the ability of a single medicinal plant species in treating a wide range of ailments [9,10,12,13,17].

Fig. 2 shows the percentage abundance of medicinal plant form in the study area. Five medicinal plant forms were identified and include; fern, climber, shrub, herb and tree. Ferns accounted for 3%; Climbers accounted for 8%; Shrubs (21%); Herbs (23%) and Trees (46%) of the medicinal plants in the study area.

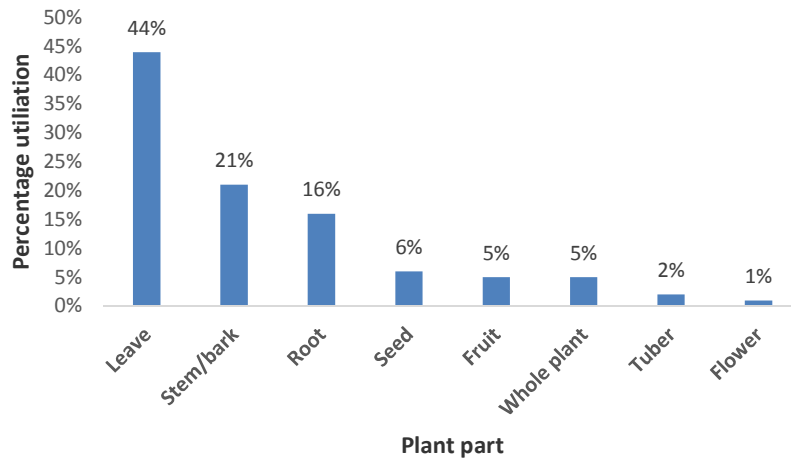
A total of eight (8) plant parts were employed in preparing the herbal medicines in the study area as shown in Fig. 3. Leaves had a usage of 44%; stem/bark (21%); roots (16%); seed (6%); whole plant (5%); fruit (5%); tuber (2%) and flowers (1%). Some researchers have documented the use of different plant parts in herbal medicine globally; Samoisy and Mahomoodally [31] recorded 9 plant parts; Ahmad [32] reported 12 plant parts while Mutheea et al. [33] recorded 5 plant parts in his region of study. This implies that the plant part used in treating ailments by the different ethnic groups is a function of their knowledge gained by experience and through recommendation by traditional healers [33]. Leaves are known to accumulate active components of most herbal preparations in high concentrations which relief disease condition in patients [34,35]; while parts such as stem/bark, roots, fruits, whole plant, latex and seeds are minor source of these components and hence used to a lesser extent [35]. Elufioye et al. [36]

asserts that sustainable utilization of plants parts such as leaves and stem bark in herbal medicine poses no threat on continuous supply from the wild because locally, plant harvesting for medicine is done without severing the plant. However, cases of harvesting whole plant poses a great threat to the conservation and sustainability of medicinal plant [37-39]. Perceived conservation status of medicinal plants collected in FNP revealed 60% of the plants are abundant in the nature park, 31% rare/threatened and 9% of the medicinal plants are seen to be scarce by the informants (Fig. 4). Since some of the medicinal plants were believed to be scarce or threatened by surrounding communities. It is therefore in tandem with Mahunnah [40] who emphasized the importance of conservation of medicinal species with high extinction rate. It was observed that most of the respondents (71%) cultivate some medicinal plants in their homestead as a means of contributing to the conservation effort. This act of conservation has been applauded by several authors [3,41]; meanwhile none of the medicinal plant observed in Finima Nature Park have been listed in the Nation's biodiversity report as being endangered [42]. However, to further strengthen the conservation of medicinal plants in Finima Nature Park, suggestions of IUCN [43] would go a long way and other methods such as taboos, bans, education, cultural/traditional beliefs together with the local community participation have to be documented as the veritable tools [44]. The presence of *Elaeis guineensis* in FNP species list is an indicator that Finima Nature Park is a mixture of both Primary and Secondary forest [45,46].

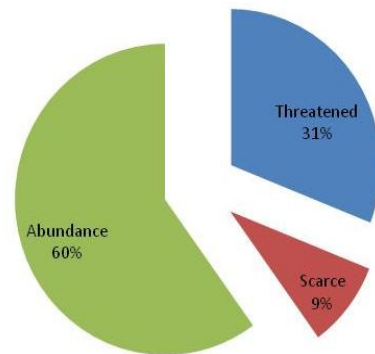
The use values of a plant species provide information about its importance to herb users in therapeutics and its richness in that specific study area [47]. Fig. 5 shows the use value classes and percentage frequency of the plants. About 67% of the medicinal plants had use value of 1 - 1.5; 1.5 - 2 (10%); 2 - 2.5 (15%); 2.5 - 3 (4%); 3 - 3.5 (4%) while only 1% of the plant (*Rauvolfia vomitoria*) had the highest use value of 3.5 to 4. The use value index obtained for *Rauvolfia vomitoria* in this study is relatively high following its usage in the treatment of various diseases; many traditional healers and households are also conversant with the therapeutics potentials of the plant. Samoisy and Mahomoodally [31] recorded a close use value of 2.72 for *Ayapana triplinervis* in the treatment of non-communicable diseases in Rodrigues Island of Indian ocean.



**Fig. 2. Percentage abundance of medicinal plant form in FNP, in the Niger Delta Region of Nigeria**



**Fig. 3. Medicinal plant parts utilization in FNP, in the Niger Delta Region of Nigeria**



**Fig. 4. Perceived conservation status of medicinal plant in FNP by informants**

**Table 1. Utilization of Medicinal Plants collected in Finima nature Park, in the Niger Delta Region of Nigeria**

S/No.	Family	Species	Habit	Part used	Medicinal use	Mode of admin	Use value	Perceived conservation status
1	Amaranthaceae	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	H	Leaves	Malaria	Oral	1	Abundant
2	Anacardiaceae	<i>Mangifera indica</i> L.	T	Leaves or Bark	Malaria	Oral, Dermal	1.2	Endangered
3	Annonaceae	<i>Anacardium occidentale</i> Linnaeus <i>Xylopiiia aethiopica</i> (Dunal) A. Rich.	T	Leaves	Blood enrichment	Oral	2	Abundant
			T	Fruit	After birth pain	Oral	1	Endangered
				Root or Stem/bark	Urinary issues	Oral		
				Seed	Purgative	Oral		
				Seed	Abortion	Oral		
				Seed	Navel pain	Dermal		
		Seed	Fever	Oral				
		Root/Stem bark	Urinary issues	Oral				
		<i>Cleistopholis patens</i> (Benth.) Engl. & Diels	T	Stem/bark	Malaria	Oral	1	Vulnerable
				Stem/bark	Hernia	Oral		
				Root	Rheumatism	Oral		
4	Apiaceae	<i>Cleome asiatica</i> Linnaeus	H	Juice	Ear ache	Auricular	2	Abundant
				Juice	Eye worm	Auricular		
5	Apocynaceae	<i>Alstonia boonei</i> De Wild.		Stem/bark	Malaria	Oral	2	Endangered
				Root	Rheumatism	Dermal		
		<i>Funtumia elastica</i> (Benth.) Stapf	T	Leaves	Enhance Libido	Oral		
		<i>Landolphia owariensis</i> P.Beauv.	C	Leave	Enhance Libido	Oral		
		<i>Monodora myristica</i> (Gaertn.) Dunal	T	Seed	Typhoid	Oral	1	Endangered
		<i>Rauvolfia vomitoria</i> (L.) Benth. ex Kurz	T	Root	Sexual stamina	Oral	4	Endangered

S/No.	Family	Species	Habit	Part used	Medicinal use	Mode of admin	Use value	Perceived conservation status
6	Araceae	<i>Landolphia dulcis</i> (Sabine) Pichon <i>Colocasia bicolor</i> Long & Cao	C H	Root	To induce sleep	Oral	1	Abundant
				Leaves	STDs	Oral		
				Root	Mental disorder	Oral		
				Stem/bark	Enhance Libido	Oral		
				Tuber	Hernia	Dermal		
7	Arecaceae	<i>Aglaonema spp.</i> Schott <i>Cyrtosperma senegalense</i> <i>Culcasia scandens</i> P. Beauv. <i>Colocasia esculenta</i> (L.) Schott <i>Elaeis guineensis</i> Jacq	S H C S T	Tuber	Enhance fertility/pregnancy	Oral	2.7	Abundant
				Juice	Poison			
				Root	Cure miscarriage	Oral		
				Stem/bark	Throat boil	Oral		
				Tuber	Hernia	Dermal		
				Root	Weak erection	Oral		
				Fruit (Oil)	Anti-poison	Oral		
				Fruit (Oil)	Detoxification	Oral		
				Seed (Oil)	Convulsion	Dermal		
				Seed (Oil)	Measles	Dermal		
				Seed (Oil)	Fever	Dermal		
				Fruit (Oil)	Antifungal	Dermal		
				Fruit (Oil)	Aid child delivery	Oral		
				Seed (Oil)	Massage	Dermal		
				Seed (Oil)	Cure miscarriage	Oral		
8	Asclepiadaceae	<i>Oncocalamus mannii</i> H.Wendl. <i>Raffia hookeri</i> G.Mann&H.Wendl.	T T	Leaves	Purgative	Oral	1	Abundant
				Root	Enhance Libido	Oral		
				Juice	Breast milk induction	Oral		
9	Asparagaceae	<i>Dracaena arborea</i> (Willd.) Link	T	Juice	Malaria	Oral	1	Abundant
				Fruit	Body inflammation	Oral/Dermal		
10	Asteraceae	<i>Chromolaena odorata</i> (L.) R.M.King&H.Rob.	S	Leaves	Hypertension	Oral	1.3	Abundant
				Root	Rheumatism	Dermal		
				Juice	Fresh wound	Dermal	1.3	Abundant
				Leaves	Stop purging	Oral		
				Leaves or	Body pain	Oral		



S/No.	Family	Species	Habit	Part used	Medicinal use	Mode of admin	Use value	Perceived conservation status
				Root				
				Root	Tuberculosis	Oral		
				Leaves	Fresh wound	Dermal		
				Leaves	Malaria	Oral		
				Leaves	Diabetes	Oral		
		<i>Emilia sonchifolia</i> Linnaeus	H	Whole plant	Ulcer	Oral	1.6	Abundant
				Whole plant	Clear vision	Optical		
				Whole plant	Cough	Oral		
		<i>Vernonia amygdalina</i> Delile	S	Leaves	Diabetes	Oral	1.5	Abundant
				Leaves	Constant urination	Oral		
				Leaves	Stop bleeding	Oral		
				Leaves	Stomach upset	Oral		
		<i>Eclipta prostrata</i> (L.) Linnaeus	H	Leaves	Liver problem	Oral	1	Abundant
11	Avicenniaceae	<i>Avicennia germinans</i> (L.) Linnaeus	T	Leaves	Body rashes	Dermal	1	Abundant
				Leaves	Anti-poison	Dermal		
12	Bignoniaceae	<i>Newbouldia laevis</i> (P.Beauv.) Seem	T	Root or Leaves	Aid child delivery	Oral	1	Endangered
				Leaves	Drive evil spirit	Cultivation		
13	Burseraceae	<i>Dacryodesedulis</i> (G.Don) H.J.Lam.	T	Seed	Kidney treatment	Oral	1	Endangered
14	Caesalpinaceae (Leguminosae)	<i>Lonchocarpus cyanescens</i> (Schum. &Thonn.) Benth.	S	Root	Hernia	Dermal	1	Abundant
				Leaves	Breast cancer	Dermal		
				Leaves	Fish poison	Dermal		
		<i>Pentaclethra macrophylla</i> Benth	T	Fruit	Epilepsy	Dermal	3	Endangered
				Fruit	Convulsion	Dermal		
				Fruit	Against evil spirit	Exploding pud		
		<i>Baphia nitida</i> Lodd	T	Stem/bark	Blood enrichment	Oral	2	Endangered
				Leaves	Pile	Dermal		

S/No.	Family	Species	Habit	Part used	Medicinal use	Mode of admin	Use value	Perceived conservation status		
15	Chenopodiaceae	<i>Cassia spp.</i>	H	Leaves	Snake bite	Dermal	1	Abundant		
		<i>Crotalaria retusa</i> Linnaeus	H	Juice	Eye problem	Optical	1	Scarce		
		<i>Chenopodium ambrossidium</i> Linnaeus	H	Leaves	Hypertension	Oral	1	Abundant		
	Combretaceae	<i>Erythrophleum ivorense</i> A. Chev.	T	Leaves	Insecticide	Spraying	1	Scarce		
16	Commelinaceae	<i>Palisota hirsuta</i> (Thunb.) K.Schum.	S	Stem/bark	Anti-inflammation	Dermal	2	Abundant		
				Stem/bark	Recuperation	Oral				
				Stem/bark	Abortion	Nasal				
				Leaves	Hunch back	Dermal				
17	Costaceae	<i>Commelina difussa</i> Burm.f.	H	Leaves	Rheumatism	Dermal	2	Abundant		
		<i>Costus afer</i> Ker Gawl.	S	Leaves	Infertility	Oral			1.3	Abundant
18	Cucurbitaceae	<i>Momordica foetida</i> Linnaeus	H	Stem	Measles	Oral,	1	Abundant		
				Stem	Cough	Dermal				
				Stem	Chest pain	Oral				
				Stem	Stomach pain	Oral				
				Leaves	Diabetes	Oral				
				Leaves	Hair treatment	Dermal				
19	Dilleniaceae	<i>Tetracea alnifolia</i> Willd.	C	Leaves	Hair treatment (relaxing and darkening)	Dermal	1	Abundant		
				Juice	Malaria	Oral				
20	Euphorbiaceae	<i>Alchornea cordifolia</i> Schumach. & Thonn	S	Leaves	Eye cleansing	Optical	1.5	Endangered		
				Leaves	Drunkness curing/neutralize alcohol	Oral				
				Stem	Cough	Oral				
				Leaves	Typhoid	Oral				
				Stem/bark or leaves	Stop bleeding during delivery	Oral				
				Leaves	Stomach ache	Oral				
				Leaves	Eye problem	Optical				
Leaves	Ulcer	Oral								

S/No.	Family	Species	Habit	Part used	Medicinal use	Mode of admin	Use value	Perceived conservation status
21	Gentianaceae	<i>Macaranga barterii</i> (Rchb.f. & Zoll.) Müll.Arg.	T	Stem/bark	Rheumatism and waist and body pain	Oral	1.0	Abundant
				Root	Gonorrhoea	Oral		
				Leaves	Antioxidant	Oral		
				Root or Stem/bark	Rheumatism	Oral		
				Tuber	Ear puss	Auricular		
22	Humiriaceae	<i>Sacoglottis gabonensis</i> Baill	T	Latex	Purgative	Oral	1.6	Abundant
				Stem/bark	Stomach hotness	Oral		
				Root	Malaria	Oral		
				Root	Gonorrhoea	Oral		
23	Hypericaceae	<i>Harungana madagascariensis</i> Lam. ex Poiret	T	Root	Enhance Libido	Oral	2.5	Abundant
				Leaves	Chicken pox	Oral, Dermal		
				Stem/bark	Severe waist pain	Oral		
				Leaves	Gonorrhoea	Oral		
				Stem/bark	Poison	Oral		
24	Icacinaceae	<i>Lasienthera africana</i> Beauv	T	Leaves	Menstrual pain	Oral	1	Endangered
				Leaves and Stem/bark	Asthma	Oral		
				Stem/bark and Root	Tuberculosis	Oral		
				Stem/bark and Root	Children sickness	Oral, Dermal		
				Leaves	Stomach upset	Oral		
25	Lamiaceae	<i>Ocimum gratissimum</i> Linnaeus	S	Leaves	Internal heat	Oral	1.7	Abundant
				Juice	Stop bleeding	Dermal		
				Leaves	Stomach upset	Oral		
		<i>Catnip vulgaris</i> Linnaeus	T	Leaves	Headache	Dermal	1	Abundant

S/No.	Family	Species	Habit	Part used	Medicinal use	Mode of admin	Use value	Perceived conservation status
		<i>Solenostemon monostachyus</i> Schumach. &Thonn.	H	Whole plant	Anti-inflammation	Dermal	1	Abundant
26	Loranthaceae	<i>Tapinanthus spp.</i>	S	Leaves Flower	Hypertension Hypertension	Oral Oral	1	Abundant
27	Lycopodiaceae	<i>Lycopodium spp.</i> Linnaeus	H	Whole plant	Body weakness	Oral	1.7	Abundant
28	Malvaceae	<i>Cola pachycarpa</i> Schumann	T	Leaves	High blood pressure Malaria	Oral Oral	1	Scarce
		<i>Urena lobata</i> Linnaeus	S	Stem/bark	Rheumatism	Dermal	1	Scarce
29	Maranthaceae	<i>Marantochlea purpurea</i> (Ridl.) Milne-Redh.	H	Leaves	Infertility	Oral	1	Abundant
30	Melastomataceae	<i>Dissotis rotundifolia</i> Thonn.	H	Leaves Leaves Leaves and Stem/bark	Pile Bone and muscle Boil in throat	Dermal Dermal Oral	2.2	Scarce
				Leaves	Anti-inflammation	Dermal		
31	Nephthytideae	<i>Anchomanious difformis</i> (Blume) Engl.	S	Leaves Whole plant	Eye worm Purgative	Starring Oral	1	Abundant
				Whole plant	Rheumatism	Oral		
32	Ochnaceae	<i>Lophira alata</i> Banks ex Gaertn	T	Root Stem/bark Stem/bark	Rheumatism Against evil spirit Chicken pox	Oral Dermal Oral, Dermal	2.5	Endangered
				Stem/bark	Small pox	Oral		
33	Pandanaceae	<i>Pandanus candelabrum</i> Beauv	T	Root	Rheumatism	Dermal	2	Abundant
				Leaves	Malaria	Oral		
34	Papilionaceae	<i>Stylosanthes spp.</i> Sw.	H	Root	Enhance infant	Oral	1	Abundant

S/No.	Family	Species	Habit	Part used	Medicinal use	Mode of admin	Use value	Perceived conservation status
35	Passifloraceae	<i>Barteria nigritiana</i> Hook		Root	movement Rheumatism	Dermal	1	Abundant
36	Phyllanthaceae	<i>Phyllanthus amarus</i> Schum. &Thonn	H	Leaves	Pile	Dermal	1.1	Abundant
				Leaves	Diabetes	Oral		
				Leaves	High blood pressure	Oral		
		<i>Phyllanthus niruri</i> Linnaeus	H	Leaves	Female stomach upset	Oral	2	Abundant
				Leaves	Enhance libido	Oral		
		<i>Spondianthus preussii</i> Engl. (Gandajika)	T	Stem/bark	Muscle pull	Dermal	1	Abundant
37	Phytolaccaceae	<i>Petiveria alliaceae</i> Linnaeus	H	Stem/bark	Cough	Oral	1	Abundant
38	Primulaceae	<i>Ardisia spp.</i> Stapf		Root	Waste pain	Oral		
39	Rubiaceae	<i>Mitragyna ciliate</i> Aubrév. &Pellegr.	T	Stem/bark	Malaria	Oral	1	Abundant
		<i>Nauclea diderrichii</i> (De Wild. &T.Durand)	T	Stem/bark	Malaria	Oral	1.2	Scarce
				Stem/bark	Hernia	Oral		
		<i>Pauridiantha floribunda</i> (Hiern) Bremek.	T	Stem/bark	Gum ache	Oral	1	Abundant
		<i>Massularia acuminata</i> (G.Don) Bullock ex Hoyle	S	Juice	Child delivery	Oral	1	Endangered
				Whole plant	Against evil spirit	Cultivation		
				Stem/bark	Tooth cleaning	Oral		
		<i>Mitragyna inermis</i> (Willd.) Kuntze	T	Leaves	Malaria	Oral	1	Scarce
		<i>Borreria verticillata</i> (L.) G.Mey.	H	Leaves	Local bullet proof	Oral	1	Abundant
		<i>Diodia scandens</i> Swart	H	Leaves	Eczema	Dermal	1	Abundant
40	Selaginellaceae	<i>Selaginella spp.</i> P. Beauv.	H	Leaves	Headache	Dermal	2	Abundant
				Whole plant	Measles	Dermal		
41	Simaroubaceae	<i>Pierreodendron africanum</i> (Hook.f.) Little	T	Leaves	Diarrhea	Oral	1	Endangered
42	Smilacaceae	<i>Smilax kraussiana</i> Linnaeus Willd,	C	Stem Leaves	Diarrhea Injury inflammation	Dermal	1	Abundant

S/No.	Family	Species	Habit	Part used	Medicinal use	Mode of admin	Use value	Perceived conservation status
		1877						
43	Thelypteridaceae	<i>Cyclosorus afer</i> Ching	F	Leaves	Malaria	Oral		
44	Urticaceae	<i>Musanga cecropioides</i> R.Br. & Tedlie	T	Leaves Stem/bark	Yellow fever Fibroid	Oral Oral	1 1	Abundant Endangered
45	Zingiberaceae	<i>Aframomum spp.</i>	S	Root Seed	Asthma Enhance Libido	Oral Oral	1	Abundant

Note: T-Tree, S-Shrub, C-Climber, F-Fern

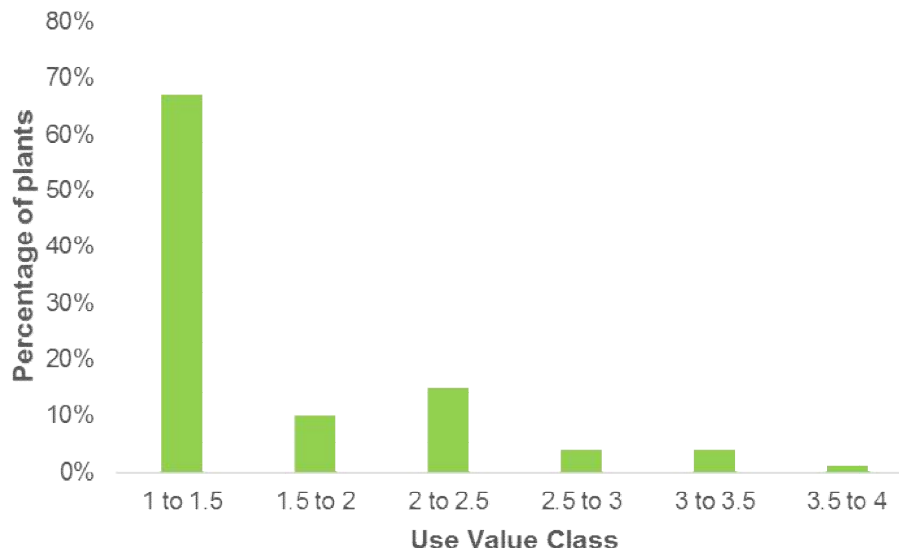


Fig. 5. Use value of each plant species in the study area

#### 4. CONCLUSION

The study has shown that Finima Nature Park (FNP) located in the Niger Delta Region of Niigeria is rich in medicinal plants of different varieties with the potentials to cure wide range of ailments if utilized correctly. Knowledge of the inhabitants surrounding FNP on the utilization of the plants for medicine has been brought to bear through this study. Many of the medicinal plants are perceived to be scarce or endangered. However, some of the medicinal plants that only the leaves are utilized as medicine may be harvested sustainably while species where roots and stem barks are used require more protection efforts to prevent extinction. *R. vomitoria* is a pristine medicinal plant of FNP that require concerted conservation intervention due to the use value and application in the treatment of array of disease conditions.

#### CONSENT

As per international standard or university standard, a verbal consent was obtained from settlement heads after a brief introduction of the aim of the study and preserved by the author(s).

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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