

**CHECKLIST OF TREE SPECIES OF HUMID FOREST RESEARCH STATION,
FORESTRY RESEARCH INSTITUTE OF NIGERIA (FRIN), UMUAHIA, ABIA STATE,
NIGERIA**

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Abstract

The study provided an updated checklist of tree species found within Forestry Research Institute of Nigeria, Umuahia premises. A total of 103 taxa belonging to 89 genera and 32 families were identified and documented. The family Fabaceae is the most diverse with 17 species. It was closely followed by the families: Sterculiaceae (8), Meliaceae (7), Moraceae (7), Euphorbiaceae (6) and Annonaceae (5). These six (6) families contributed about 48.5% of the tree flora diversity or 40.8% of the genera. About 34% of the encountered tree species are non-native and are naturalized to the region. Economic fruit trees registered were 34 taxa or 33.0% of the total tree list. Conservation status of each taxon determined using the IUCN Redlist V. 2014-2 classification showed that 3 endangered and 9 vulnerable tree species were recorded from the study area. Efforts should be intensified toward conservation of this important 'Green Area' in view of the challenging impact of global climatic change effect.

Key Words: *Checklist, Non-native taxa, Naturalized, Conservation, Endangered species*

Introduction

Inventory taxonomy (description and mapping of the world biota) is considered by conservation biologist as one of the most important task facing modern systematics (OPS, 2011). Evidently, the ongoing effects of global climatic change further accentuate the need for biodiversity analysis and conservation measures particularly in species rich Tropical Africa, where there exist a gap in knowledge about plant diversity and its distribution.

Recent studies (Silk *et al.*, 2015 and Sosef *et al.*, 2017) underlined the need for

more botanical inventories in Tropical Africa, in view of uncertainty regarding the actual number of tropical tree species. Their various findings however, provided a baseline data. Silk *et al.* (2015) estimated a minimum number of 4,626-5,984 tree species for Africa (including Madagascar) while, studies by Sosef *et al.* (2017) documented 3,013 tree species for Tropical Africa, representing 5-7% of the estimated world's tropical tree flora. In the West African region, its rain forest rank among the 34 most important biodiversity hotspots in the world (Mittermeier *et al.*, 2004; Soladoye *et al.*, 2015). Keay *et al.*

(1989) documented a total of 935 tree species belonging to 417 genera and 86 families (both native and non-native/naturalized taxa) for Nigeria.

Trees are important component of both urban and rural forest ecosystems and directly impact on human habitation. Trees play key role as a structural component of forest ecosystems, providing timber and non-timber products including ecosystem services with direct impact on ameliorating climate change effect (a major Carbon 'Sink') cannot be over-emphasized. However, the increasing problem of forest deforestation caused by massive/uncontrolled timber exploitation, agriculture and urbanization in Nigeria, with less than 10% of the natural vegetation under forest cover calls for concern (Pelemo *et al.*, 2011; Ariwaodo *et al.*, 2008). Ola-Adams (1981) had earlier highlighted the longevity of forest tree species to be of great advantage to their genetic conservation if offered protection, as the same population can be retained for a very long time unaltered. This may prove useful for purposes of molecular genetic studies and other related scientific work to improve their growth performance and utilization potentials.

Generally, native tree species in Nigeria have been reported (Osemeobo, 1993; Borokini, 2014) to possess a long gestation period, slow growth rates of between 1.5 m³/ha/year to 2.5 m³/ha/year at juvenile stages, irregular fruiting within species of different types, low viability rates of seeds, low seed production among majority of trees, few species population in a unit area of land, low success rate of regeneration and low coppicing abilities.

Based on the highlighted drawbacks, several authors (Oguntala *et al.*, 1996; Soladoye *et al.*, 2005, 2015; Ariwaodo *et al.*, 2012; Nodza *et al.*, 2014; Olowokudejo and Oyebanji, 2016) have now shifted attention to the documentation of the nation's rich flora diversity from various location with the aim of helping to build a floristic data bank for the country and to guide future conservation effort. It is against this background that this study was embarked upon to provide an updated checklist of the tree flora assemblage within the study area.

Materials and Methods

Study Area

The Humid Forest Research Station (FRIN), Umuahia, occupies a 33 hectares piece of land in Umuahia North Local Government Area of Abia State. About a distance of 4 kilometers to the capital City Centre. It is a major 'Green Area' and predates the creation of the state. The location lies on latitudes 5°30'48" N to 5°31'15" N and longitude 7°31'32" E to 7°31'03" E of the Greenwich Meridian, at altitude area of up to 122 m above sea level (Fig. 1). The vegetation is typical of the lowland rainforest of southeast Nigeria. The rainfall pattern is bimodal with peaks around June to July and September to October. Annual rainfall is 2238 mm. Minimum and maximum temperature are 23°C and 30°C respectively. Relative humidity is 86.4% (Ariwaodo and Harry-Asobara, 2015). The soil of the area is derived from the Precambrian basement complex and the soil type is sandy loam.

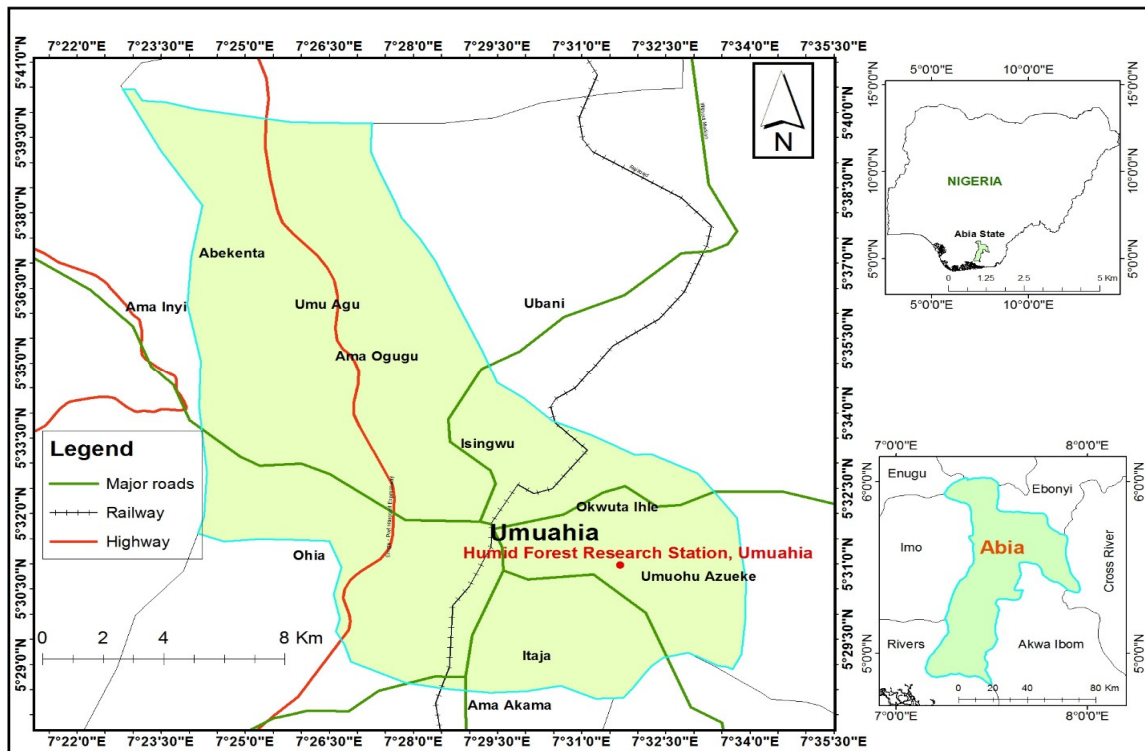


Fig. 1: Map Showing the Study Area

Data Collection

The study involved intensive taxonomic field collection, identification and registration of both native and non-native/naturalized tree species (either planted or naturally regenerated) found within the Humid Forest Research Station (FRIN) Premises, Umuahia. The taxonomic keys provided in the flora of West Tropical Africa (Hutchinson and Dalziel, 1972) and Trees of Nigeria (Keay, 1989) were used in the identification of the taxa. Furthermore, the plant specimens collections were compared and authenticated with Registered Voucher Specimens deposited at the Forest Herbarium Ibadan (FHI), listed in Holmgreen (1990) in accordance with conventional taxonomic practice. The concept of families follows Hutchinson and Dalziel (1972). Families are arranged

in alphabetical order under each category. The conservation status of each taxon were determined following the IUCN Redlist V. 2014-2. Binomial nomenclature of registered taxa follows International Plant Names Index (IPNI).

Results and Discussion

A total of 103 tree species belonging to 89 genera and 32 families were identified and documented (Table 1 and 2). The family Fabaceae was the most diverse with 17 species (Ceasalpinaideae-5; Mimosoideae-8; Papilonoideae-4). It was closely followed by the families- Sterculiaceae (8), Meliaceae (7), Moraceae (7), Euphorbiaceae (6) and Annonaceae (5). These 6 families contributed about 48.5% of the tree flora diversity or 40.8% of the genera. The dominance of the legume family

(Fabaceae) as shown in Figure 2, may be attributed to its reproductive biology especially the dispersal mechanisms which allow widespread distribution across most of the diverse habitat condition found in Nigeria (Soladoye *et al.*, 2011).

The genera *Terminalia* L and *Cola* Schott and Endl have the most diverse number of species with a total of four (4) species recorded. Eleven (11) families or 33.4% of the total family list are represented by a single tree species and this has a strong implication for the conservation of the studied area. The taxonomic structure of the tree flora diversity showed that the genus-to-species (G/S) ratio was 1:1.16 and family-to-genera (F/G) ratio was 1:2.78. The ratios obtained were similar to other regions in the world (Chawla *et al.*, 2012). Generally, the taxonomic structure of biotas which is a tool in biodiversity assessment as reported by (Krug *et al.*, 2007 and Jarvienen, 1982, cited by Chawla *et al.*, 2012) can be measured as the ratio of family-to-genera, genera-to-species and family-to-species, does not vary randomly on regional or global scales. The species-genus (S/G) ratio are

sensitive to diversity and increase with the number of species in the sample.

Furthermore, 35 tree species or 34% of the registered taxa (Fig. 3) are non-native and are naturalized plant species, having been introduced in the distant past into the West African region and Nigeria. Table 3 and Fig 4 shows representative economic fruit tree species documented from the study. Thirty-four (34) or (33.0%) of the total number of tree species encountered are readily recognisable fruit trees, consumed as fruit, soup condiments and masticatories with a high economic return in the south-eastern part of Nigeria. Meregini (2005) observed that most of the registered native fruit tree species are endangered locally and need to be offered priority in any conservation programme. Following the IUCN Redlist V. 2014-2 classification, 3 endangered and 9 vulnerable tree species were encountered in this study. *Cedrala odorata* L. (Meliaceae) and *Shorea roxburghii* G. Don (Dipterocarpaceae) documented in this study are both exotic trees, classified as vulnerable and endangered in their native ranges though introduced into Nigeria (Borokini, 2014).

Table 1: Comprehensive List of Tree Specie Enumerated

S/n	Plant groups	Habit	Conservation status
Gymnosperms			
Cupressaceae			
1	* <i>Callistris intratropica</i> R. T. Baker & H. G. Smith	Tree upto 20m in height	NA
Pinaceae			
2	* <i>Pinus caribaeae</i> Morelet-Var hondurensis Barrett & Galfari	Tree upto 45m in height	NA
3	* <i>Pinus oocarpa</i> Schiede	Tree upto 50m in height	NA
Angiosperms			
Dicotyledons			
Anacardiaceae			
4	* <i>Anacardium occidentale</i> Linn	A stragglng tree upto 10m in height	LC
5	* <i>Mangifera indica</i> Linn	Tree with dense crown, upto 20mm in height	LC

6	<i>Spondias mombin</i> Linn	A medium sized deciduous tree, upto 18m in height	LC
Annonaceae			
7	<i>Cleistopholis patens</i> (Benth) Engl. & Diels	Medium-sized tree grows upto 27m in height	LC
8	<i>Dennettia tripetala</i> Bark f.	Small tree upto 8m in height	LC
9	<i>Monodora myristica</i> (Gaertn) Dunal	Tree grows upto 25m in height	LC
10	<i>Monodora tenuifolia</i> Benth	Tree grows upto 15m in height	LC
11	<i>Xylopia aethiopica</i> (Dunal) A. Rich	Tree upto 20m in height	LC
Apocynaceae			
12	<i>Alstonia boonei</i> De Wild	A large tree with fluted bole, upto 30m in height	LC
13	<i>Funtumia elastic</i> (Preuss) Stapf.	Tree grows upto 20m in height	LC
14	<i>Rauvolfia vomitoria</i> Afzel	A small tree with whorled branches upto 9m in height	LC
15	<i>Tabernaemontana pachysiphon</i> Stapf	Understorey forest tree upto 15m in height	NA
Bignoniaceae			
16	* <i>Crescentia cujete</i> L.	Tree sometimes upto 10m in height with a short bole	LC
17	<i>Newbouldia laevis</i> P. (Beauv) Seeman ex Bureau	Tree grows upto 18m in height	LC
18	* <i>Tabebuia rosea</i> (Bertol) D. C.	Tree upto 10m in height	LC
Bombacaceae			
19	<i>Ceiba pentandra</i> (Linn) Gaertn	Often a secondary forest tree species with a height upto 60m and 8m in girth	LC
Boraginaceae			
20	* <i>Cordia alliodora</i> Cham	Tree upto 20m in height	NA
Buseraceae			
21	<i>Canarium schweinfurthii</i> Engl	Tree attains a height of upto 50m in height	LC
22	<i>Dacryodes edulis</i> (G. Don) H. J. Lam	Tree grows upto 20m in height with a grey-brown flaking bark	LC
Caricaceae			
23	* <i>Carica papaya</i> Linn	Softwooded stem sometimes grows upto 10m in height	LC
Clusiaceae			
24	<i>Allanblackia floribunda</i> Oliv	Tree grows upto 30m in height	LC
25	<i>Garcinia kola</i> Heckel	Medium-sized tree grows upto 27m in height	VU
26	<i>Harungana madagascarensis</i> Lam ex Poir	A small tree upto 8m in height	NA
27	<i>Pentadesma butyracea</i> Sabine	Tree grows upto 25m in height	LC
Combretaceae			
28	* <i>Terminalia catapa</i> L.	Tree upto 20m in height	LC
29	<i>Terminalia ivorensis</i> A. Chev.	Tree upto 50m or more in height and 5m in girth	VU
30	* <i>Terminalia mentaly</i> H. Perrier	Tree upto 25m in height	NA
31	<i>Terminalia superba</i> Engl Diels	Tree upto 50m in height and 5m in girth	LC
Dipterocarpaceae			
32	* <i>Shorea roxburghii</i> G. Don	Tree upto 30m in height	NA
Ebenaceae			
33	<i>Diospyros crassiflora</i> Hiern	Tree attains a height of upto 18m	EN

Euphorbiaceae			
34	<i>Bridelia micrantha</i> (Hochest) Baill	Medium size tree grows upto 18m in height	LC
35	* <i>Hevea brasiliensis</i> (A. Juss) Muell. Arg.	Tree upto 15m in height	LC
36	* <i>Hura crepitans</i> Linn	Tree upto 16m in height	LC
37	<i>Macaranga barteri</i> Muell Arg	Tree upto 20m in height	NA
38	<i>Margaritaria discoidea</i> (Baill) Webster	Tree sometimes upto 30m in height	NA
39	<i>Ricinodendron heudelotii</i> (Baill) Heckel subsp africanum (Muell. Arg) J. Leonard	Tree grows upto 25m in height	LC
Fabaceae			
40	* <i>Acacia holosericea</i> A.Cunn ex G. Don	Tree grows upto 12m in height	NA
41	* <i>Adenantha pavonina</i> Linn	Tree upto 12m in height	NA
42	<i>Azalia africana</i> SM	Tree upto 30m in height in the forest region	VU
43	* <i>Albizia lebeck</i> (Linn) Benth	Tree grows upto 15m in height	NA
44	<i>Albizia zygia</i> (DC) J. F. Machr	Tree upto 24m in height	LC
45	<i>Datarium microcarpum</i> Guill & Perr	Tree grows upto 9m in height, with tunstel bole and wide spread branches	LC
46	* <i>Delonix regia</i> (Hook) Raf.	Ornamental tree upto 10m in height	NA
47	<i>Dialium guineense</i> Willd	Tree grows upto 20m in height	LC
48	* <i>Leucaena leucocephala</i> (Lam) De Wit	Tree upto 18m in height	NA
49	<i>Millettia aboensis</i> (Hook f) Bark	Small tree upto 8m in height	LC
50	<i>Parkia biglobosa</i> (Jacq) R. Br. Ex. G. Don	Medium-sized tree, upto 21m in height	LC
51	<i>Pentaclethra macrophylla</i> Benth	Tree upto 23m in height	LC
52	<i>Pericopsis elata</i> (Harms) Van Meeuwen	Tree upto 36m in height	EN
53	<i>Pterocarpus osun</i> Craib	Tree grows upto 30m in height	LC
54	<i>Pterocarpus santalinoides</i> L' Herit ex DC	Tree upto 12m in height	LC
55	* <i>Senna siamea</i> (Lam) Irwin & Barneby	Tree grows upto 20m in height	LC
56	<i>Tetrapleura tetraptera</i> (Schum and Thonn) Taub	Tree upto 24m in height	LC
Irvingiaceae			
57	<i>Irvingia gabonensis</i> (O' Ronce Baill)	Tree attains a height of upto 25m and 2m in grith	LC
58	<i>Irvingia wombulu</i> Vermoesen	Tree grows upto 30m in height	LC
Lauraceae			
59	* <i>Cinnamomum zeylanicum</i> Garc ex Blume	Tree grows upto 10m in height	NA
60	* <i>Persea americana</i> Mill	Tree upto 20m in height	NA
Longaniaceae			
61	<i>Anthocleista djalonesis</i> (A. Chev.)	Tree upto 15m in height	LC
Meliaceae			
62	* <i>Azadirachta indica</i> A. Juss	Medium-sized tree, upto 24m in height	LC
63	* <i>Cedrela odorata</i> Linn	Tree attains a height upto 20m	NA
64	<i>Entandrophragma angolense</i> (Welw) C. D.C.	A large forest tree upto 48m in height with straight bole	VU
65	<i>Khaya grandifoliola</i> C.D.C	Tree grows upto 40M in height and 5m in girth	VU
66	<i>Khaya senegalensis</i> (Desr) A. Juss	Tree grows upto 30m in height	VU
67	<i>Lovoa trichilioides</i> Harms	Tree attains a height of upto 45m in height	VU
68	<i>Trichilia monadelpha</i> (Thonn) J. J. De Wilde	Understorey tree, upto 12m in height	NA
Moraceae			
69	<i>Antiaris toxicaria</i> Lesch var africana	Tree grows upto 40m in height	LC

70	* <i>Artocarpus altilis</i> (Parkinson) Forberg Syn. A. cummunis Forst	Tree upto 18m high	LC
71	* <i>Artocarpus heterophyllus</i> Lam	Tree grows upto 15m in height	LC
72	<i>Ficus exasperata</i> Vahl	Tree upto 21m in height	LC
73	<i>Ficus vogeliana</i> (Miq) Miq	Small forest tree upto 8m in height	NA
74	<i>Milicia excelsa</i> (Welw) C. C. Berg	A deciduous tree with straight bole, attains a height of upto 50m and 10m in girth	NT
75	<i>Treulia africana</i> Decne	Tree with fluted bole attains a height of upto 24m	LC
	Myristaceae		
76	<i>Pycnanthus angolensis</i> (Welw) Warb	Tree grows upto 30m in height	LC
	Myrtaceae		
77	* <i>Eucalyptus camadulensis</i> Dehn Blakely	Tree upto 30m in height	NA
78	* <i>Eucalyptus torelliana</i> F. muell-Blakely	Tree upto 35m in height	NA
79	* <i>Psidium guajava</i> Linn	A small tree grows upto 6m in height	LC
	Passifloraceae		
80	<i>Barteria fistulosa</i> Mast	Small tree, attains upto 15m	NA
	Rubiaceae		
81	<i>Nauclea diderrichii</i> (De Wild and Th. Dur) Merrill	Tree grows upto 40m in height	VU
82	<i>Psydrax subcordata</i> (DC) Bridson	Tree upto 24m in height	NA
83	<i>Rothmannia hispida</i> (K. Schum) Fagerlid	Tree upto 11m in height	NA
	Rutaceae		
84	* <i>Citrus sinensis</i> (L) Osbeck	Tree grows upto 10m in height	LC
	Sapindaceae		
85	<i>Allophylus africanus</i> P. Beauv	Understorey forest tree sometimes reaching 8m in height	LC
86	<i>Blighia sapida</i> Konig	Medium-sized tree, grows upto 25m in height	LC
87	<i>Lecaniodiscus cupanioides</i> Planch ex Benth	Tree upto 8-12m in height	LC
	Sapotaceae		
88	<i>Baillonella toxiperima</i> Pierre syn Mimosop djava Engl	Tree upto 48m in height with an umbrella shaped crown	VU
89	<i>Chrysophyllum albidum</i> G. Don	Tree upto 30m in height	LC
	Sterculiaceae		
90	<i>Cola lepidota</i> K. Schum	Small forest tree upto 10m in height	NA
91	<i>Cola millenii</i> K. Schum	Small tree upto 7m in height	NA
92	* <i>Cola nitida</i> (Vent) Schott & Endl	Tree upto 8-12m in height	LC
93	<i>Cola pachycarpa</i> K. Schum	Small forest tree upto 10m in height	LC
94	<i>Hildegardia barteri</i> (Mast) Kosterm	Tree upto 32m smooth, greenish-grey bark	LC
95	<i>Mansonia altissima</i> (A. chev) A. Chev	Tree upto 30m high and 2.5m in girth	EN
96	<i>Sterculia tradacantha</i> Lindl	Tree upto 26m in height	EN
97	<i>Triplochiton scleroxylon</i> K. Schum	Tree grows upto 65m and 7m girth with pronounced buttresses	LC
	Ulmaceae		NA
98	<i>Trema orientalis</i> (Linn) Blume	A small tree grows upto 12m in height	LC
	Verbenaceae		
99	* <i>Gmelina arborea</i> Roxb	Tree upto 21m in height	LC
100	* <i>Tectona grandis</i> Linnif	Tree upto 30m in height	LC

Monocotyledons

Areaceae

101	* <i>Cocos nucifera</i> Linn	Tree upto 10m height	LC
102	<i>Elaeis guineensis</i> Jacq	Tree upto 12m in height	LC
103	* <i>Roystonea regia</i> (Kunth) O. F. Cook	Tree upto 12m in height	LC

Keys: EN – Endangered, VU – Vulnerable, LC – Least Concerned, NA – Not Assessed, NT – Near Threatened * - Non-native taxa

Table 2: Statistical Summary of Tree Species enumerated indicating genus-to-species and family-to-genera ratio

Gymnosperms		Angiosperms		
		Dicotyledons	Monocotyledons	Total
Families	2	29	1	32
Genera	2	84	3	89
Species	3	97	3	103
Native	-	67	1	68
Non-native	3	30	2	35
Genera-to-Species	-	-	-	1:1.16
Family-To-Genera	-	-	-	1:2.78

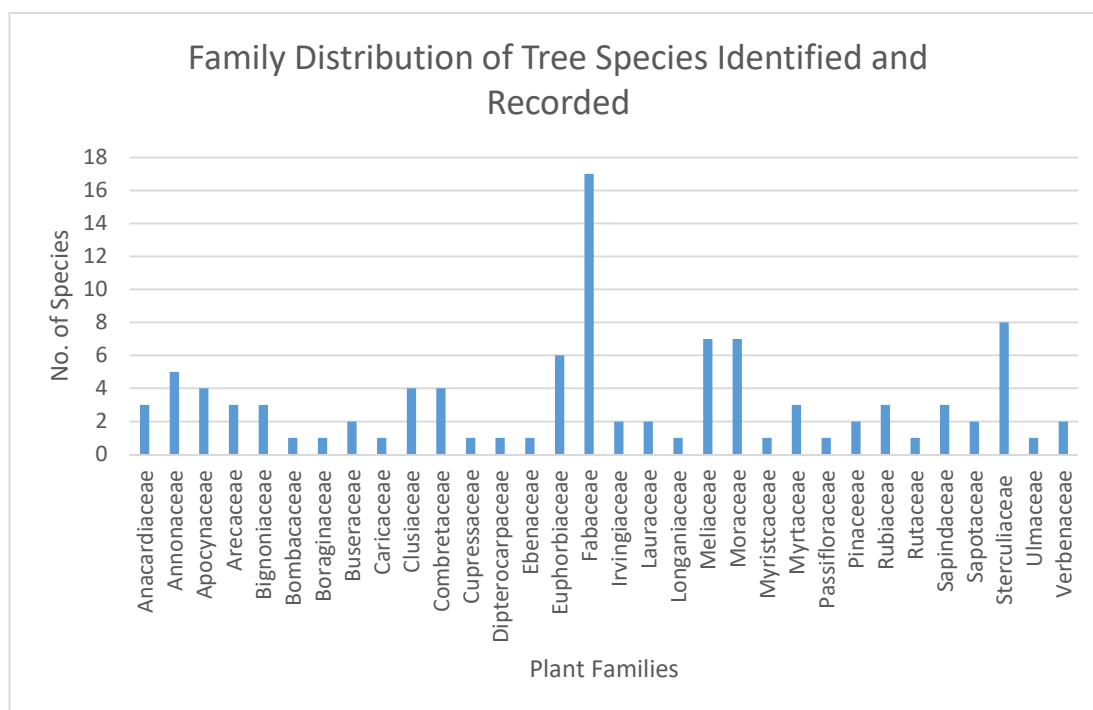


Fig. 2: Family distribution of tree species identified and recorded

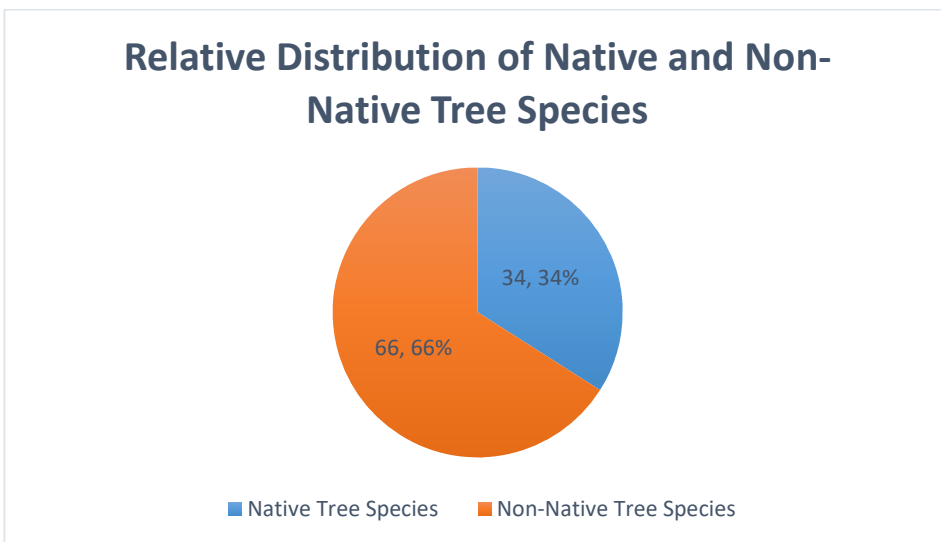


Fig. 3: Relative Distribution of Native and Non-Native Tree Species

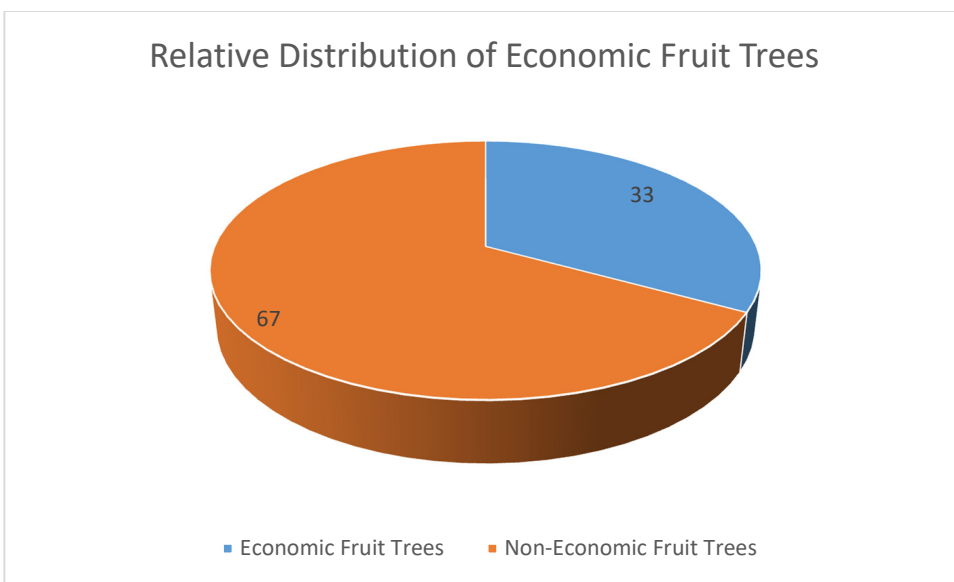


Fig. 4: Relative Distribution of Economic Fruit Trees

Table 3: Checklist of enumerated economic fruit trees

S/N	Botanical Name	Family	Conservation Name	Part Used
1	<i>Mangifera indica</i> L	Anacardiaceae	Mango	Fruit (Pulp)
2	<i>Cocos nucifera</i> L	Arecaceae	Coconut	Fruit (Kernel)
3	<i>Carica papaya</i> L	Caricaceae	Paw-Paw	Fruit
4	<i>Elaeis guineensis</i> Jacq	Arecaceae	Oil palm tree	Fruit seed
5	<i>Terminalia catapa</i> L	Combretaceae	Indian Almond	Fruit seed
6	<i>Tetrapleura tetraptera</i> (Schum & Thorn)	Fabaceae	Aridan plant	Fruit
7	<i>Pentaclethra macrophylla</i> Benth	Fabaceae	Oil bean	Seed
8	<i>Xylopia aethiopica</i> (Dunal) A. Rich	Annonaceae	Guinea pepper	Fruit/Seed
9	<i>Persea americana</i> Mill	Lauraceae	Avocado pea	Fruit (Pulp)
10	<i>Psidium quajava</i> L.	Myrtaceae	Guava	Fruit
11	<i>Garcinia kola</i> Heckel	Clusiaceae	Bitter kola	Seed
12	<i>Cola nitida</i> (Vent) Schott & Endl	Sterculiaceae	Kola nut	Seed
13	<i>Dialum guineense</i> Willd	Fabaceae	Velvet	Fruit (Pulp)
14	<i>Cola lepidota</i> K. Schum	Sterculiaceae	-	Fruit (Pulp)
15	<i>Cola pachycarpa</i> K. Schum	Sterculiaceae	-	Fruit (Pulp)
16	<i>Cola myllenii</i> K. Schum	Sterculiaceae	-	Fruit (Pulp)
17	<i>Artocarpus altilis</i> (Parkinson) Forberg	Moraceae	Breadfruit	Fruit
18	<i>Artocarpus heterophyllus</i> Lam	Moraceae	Jackfruit	Fruit
19	<i>Monodora myristica</i> (Gaertn) Dunal	Annonaceae	African nutmeg	Seed
20	<i>Monodora tennifolia</i> Benth	Annonacea		Seed
21	<i>Dennettia tripetala</i> Barkf.	Annonaceae	Pepper fruit	Fruit
22	<i>Afzelia africana</i> SM	Fabaceae	Apa	Seed
23	<i>Treculia africana</i> Decne	Moraceae	African breadfruit	Seed
24	<i>Irvingia wombulu</i> Vermoesen	Irvingiaceae	Wild mango	Seed/Fruit
25	<i>Irvingia gabonensis</i> (O'Rorke) Baill	Irvingiaceae	Dikanut (Ogbono)	Seed/Fruit
26	<i>Canarium schwenfuuthii</i> Engl	Burseraceae		Fruit
27	<i>Dacryodes edulis</i> (G. Don)	Burseraceae	Local pear	Fruit (Pulp)
28	<i>Citrus sinensis</i> (L) Osbeck	Rutaceae	Sweet Orange	Fruit
29	<i>Anacardium occidenatle</i> Linn	Anacardiaceae	Cashew	Fruit/seed
30	<i>Spondias mombin</i> Linn	Anacardiaceae	Local plum	Fruit/Pulp
31	<i>Chrysophyllum albidum</i> (G.Don)	Sapotaceae	Star apple	Fruit
32	<i>Allanblackia floribunda</i> Oliv	Clusiaceae	-	Oil Seed
33	<i>Datarium microcarpum</i> Guill & Perr	Fabaceae	Ofo	Seed
34	<i>Parkia biglogosa</i> (Jacq) R. Br ex G. Don	Fabaceae	Locust bean	Seed

Conclusion and Recommendations

The research work has revealed the rich diversity of tree species found within the study area. Efforts geared toward conservation should be intensified and given adequate priority in future. Presently, the country lacks a harmonized and comprehensive compilation of National Redlist of threatened species to guide management and conservation of her rich native flora diversity. Attempts in this direction is urgently needed and cannot be over-emphasized.

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