Available online: www.notulaebiologicae.ro
Print ISSN 2067-3205; Electronic 2067-3264
Not Sci Biol, 2015, 7(1):45-51. DOI: 10.15835/nsb.7.1.9420

Biodiversity Status of the Immediate Vicinity of an Iron and Steel Recycling Factory in Ile-Ife, South-Western Nigeria

Oludare Oladipo AGBOOLA[1]*, Olalekan Oluwatoyosi SALAMI[2], Stephen OYEDEJI[3]

[1]*Department of Botany, University of Lagos, Akoka, Yabaas, Nigeria; dipod2001@yahoo.com (*corresponding author)*
[2]*Institute of Ecology and Environmental Studies, Obafemi Awolowo University, Ile-Ife, Nigeria; lekansalamio@gmail.com*
[3]*Department of Plant Biology, University of Ilorin, Ilorin, Nigeria; princeseyed1st@yahoo.com*

Abstract

Floristic composition of vegetation communities of 27 plots established along a line transect in the four major directions was investigated in the vicinity of an Iron and Steel factory in Ile-Ife, Nigeria. The aim of the study was to document the plant species composition (biodiversity) of the plant communities found within the 350 m perimeter of the facility in the study area, which will serve as a reference data, as there was no reported study for the area prior to the establishment of the factory. Plant species were identified to species level in a 10 x 10 m plot and the occurrence of each species was described in semi-quantitative terms. The vegetation is heterogeneous in nature having 31 species of tree saplings and climbers, 26 of shrubs, 15 of herbaceous plants and 4 of grasses. These 107 plant species belong to forty six (46) plant families. The dominant families included Apocynaceae and Papilionaceae (9 species), Sapindaceae (8 species), Euphorbiaceae (6 species), Asteraceae, Cucurbitaceae, Malvaceae, Poaceae, Sterculiaceae and Verbenaceae (4 species). Among the diverse species recorded, *Chromolaena odorata* formed a ticket in almost all the plots. Other common species included *Albizia zygia*, *Alchornea laxiflora*, *Aspilia africana*, *Cnestis ferruginea*, *Combretum* sp., *Icacina tricantha*, *Ipomoea involucrata*, *Momordica foetida*, *Panicum maximum*, *Paullinia pinnata*, *Smicrata welwitschii* and *Vigna gracilis*. The index of similarity of the plots ranged from 6.1 to 71.8%. The potential and vulnerability of the species were highlighted. Adherence to and enforcement of environmental regulations was recommended for preservation of the native species.

Keywords: environment, plant species, steel factory, vegetation studies

Introduction

The floristic resource of any country plays a vital role in human development and survival. All living organisms depends on vegetation resources either directly or indirectly as they supply food, timber, fuel, shade, shelter, organic manure and conserve soil fertility (Tukur *et al*., 2013). The Nigerian floral resource and biodiversity has been under threat from unsustainable agricultural land use, urbanization, industrialization and from other anthropogenic factors (Obute and Osuji, 2002). This has formed the inclusion of vegetation studies in the Environmental Impact Assessment report for the establishment of major industries. This is done with a view to protect, manage and restore genetic resources for sustainable development despite the need for human development. Such studies does not only document occurrence of such species, but also usually provide measures of preservation of native species especially if rare. Vegetation studies are undertaken all over the world to document the notable floral diversity of the different localities.

Some researchers had carried out a lot of work to determine and document properties and uses of various indigenous plants in Nigeria. Bhat *et al*. (1990) documented the ethnobotanical survey of different plant resource in Kwara State of Nigeria. Nwosu (2002) also studied southern Nigeria pteridophytes, while Ibe and Nwufo (2005) reported the medicinal plants of the South-eastern Nigeria; Ubom (2010) gave the ethnobotanical biodiversity inventory of the plant resources in the Niger Delta area of Nigeria. Other studies of places that are potentially rich in plant species, but under threat due to urban development, are being studied. Soladoye *et al*. (2005) made an extensive study of the angiosperm community of the permanent site of Olabisi Onabanjo University with the aim of conserving them for posterity. Also, Durugbo *et al*. (2012) made a comprehensive vegetation inventory of the Redemption Camp (the headquarters of the Redeemed Christian Church of God) where the temporary site of its university is located, and emphasized some strategies for conservation.

The objective of this research was to document the floral component of the vicinity of the factory with a view to determining its floristic composition and similarity and to determine the state biodiversity erosion due to anthropogenic disturbances.

Materials and methods

The study area

The study was conducted in Ile-Ife, Southwest Nigeria on latitude 7°29″ N and longitude 4°28″ E. It is located along Ife-Ibadan expressway about 4 km from Ife Central Local

Received: 07.09.2014. Accepted: 05.11.2014.

Government Secretariat and about 5 km from the Obafemi Awolowo University (OAU) main campus. Ile-Ife is situated within the rainforest zone and the climate is identified to be humid tropical climate characterized by two prominent seasons: the rainy and the dry season (Olajuyigbe *et al*., 2012). The dry season is short, usually lasting from November to March, and the longer rainy season prevails during the remaining months usually with two peaks, one in July and the other in September. The weather report from the meteorological stations located within OAU Teaching and Research farm showed the annual rainfall at Ile-Ife averaged 1400 mm yr^{-1} in a 5-year survey (Oke and Isichei, 1997) and mean annual temperature ranges from 28 to 34 °C (Olajuyigbe *et al*., 2012).

Sampling procedure

Data were collected from 27 sample plots of 10 x 10 m, laid along a line transect of 50 m distance from the fence of the steel recycling factory in order to capture, as close as possible, the native species of the factory location prior to establishment. The transects were laid along the four cardinal directions of North, East, South and West of the factory up to three hundred and fifty meters in each of the four directions. The total enumeration was done for two weeks between late January and early February (dry season). Within each sampling plot, the plants were identified to species level and the occurrences of the each species were recorded in each plot. Those that cannot be identified at the field were taken to IFE Herbarium for proper identification. Specimens of the plants species were collected from the study site and pressed. Identification, authentication and classification of the plant species into families was carried out in the Department of Botany Herbarium (IFE), Obafemi Awolowo University, Ile-Ife.

The occurrence of each species was described in semi-quantitative terms in accordance with the method used by Edwin-Wosu and Edu (2013). Species with a wide frequency of distribution with many stands within a plot and across majority of plots are described as *very abundant* (++++). Some species with similarly wide frequency of distribution, but with few stands are said to be *less frequent or abundant* (+++), while species of limited geographical distribution and with a few stands are termed *scarce* (++) and *very scarce* (+) species.

The index of similarity (I. S.) of the 27 plots studied was calculated using the coefficient of similarity by Sorenson (1948):

$$\text{I. S.} = \frac{2C}{A+B} x100$$

where C = the number of species common to the two plots compared;

A = number of species in plot A;

B = number of species in plot B.

Results and discussions

A total of 107 plant species belonging to 46 plant families were recorded in the floristic survey of the study area (Table 1) in which twenty one families were prevalently dominant, with two or more species. Among the dominant families, Apocynaceae and Papilionaceae had the highest species diversity in terms of richness with nine species. Other families recorded include Sapindaceae (8 species), Euphorbiaceae (6 species), Asteraceae, Cucurbitaceae, Malvaceae, Poaceae, Sterculiaceae, Verbenaceae (4 species), Combretaceae, Mimosaceae, Moraceae, Rubiaceae (3 species), Bignomiaceae, Caesalpiniaceae, Connaraceae, Convolvulaceae, Musaceae, Smilacaceae and Tiliaceae (2 species) respectively. The Nigeria rainforest belt is dominated by members of the families represented in the study area which agrees with the findings of Isichei (1995), Soladoye *et al*. (2005), Durugbo *et al*. (2012). In terms of species diversity, the study area recorded some variations in richness and evenness although *Chromolaena odorata* formed a ticket in almost all the plots. Other common species included *Albizia zygia*, *Alchornea laxiflora*, *Aspilia africana*, *Cnestis ferruginea*, *Combretum* sp., *Icacina tricantha*, *Ipomoea involucrata*, *Momordica foetida, Panicum maximum, Paullinia pinnata, Simicrata welwitschii*, *Vigna gracilis* and some cultivated *Manihot esculenta* (Table 2). The presence and dominance of *Chromolaena odorata* (an early colonizer of waste land), other early succession species and tree samplings indicate previous general disturbances (Hall and Okali, 1979).

In terms of habit and life form, there was a domination of trees and climbers with a representative total of 31 species each; twenty-six (26) were recorded as shrubs, fifteen (15) as herbs and four (4) of the grass family. The frequency and percentage of the life forms encountered in this study is presented in Table 3. The domination of trees (which were all saplings) and climbers, both representing 58% within the study area, is an indication of a regeneration process of secondary vegetation structure.

Hence, results showed that the vegetation in the area is more of a rich, diverse and heterogeneous nature with a mixture of various life forms involving trees, shrubs, herbs and climbers, characterized by both natural and anthropogenic influences. This is attributed to processes such as the influence of human activities (farming and constructions, soil removal), regeneration, as well as seasonal variation influenced by local environmental conditions (Edwin-Wosu and Edu, 2013). These had affected the vegetation structure in terms of species abundance and diversity.

This corroborates the affirmation of Offiong *et al*. (2012) that human activity is an important agent influencing plant species biodiversity.

The level of similarity was generally lower than 50% as observed in the standing vegetation of the plots using the similarity analysis. This is a reflection of the difference in species composition of the plots. Indices of similarity of each pair of plots are shown in Table 4. The highest variation (93.9) was observed between plot south 350 m and plot west 350 m, while the level of variation of 28.2 was the lowest, between south 100 m and south 200 m plots, possibly because of closeness of the two areas.

Out of the 46 families encountered in this study, 32 representing 70% had one or two species representation due to several anthropogenic activities. These activities portends grave danger to plant species losses occurring as a result of direct human activities (such as farming and soil collection for construction purposes) and fragmentation of the ecosystem from continued land development. This is because some of the plants species encountered in this study have been documented to have medicinal properties in the studies of Chima *et al*. (2013), Oni (2010). Some of these plants especially *Panicum maximum, Sida acuta, Chromolaena odorata, Aspilia Africana, Andropogon gayanus* have also been reported to be tolerant to metal pollution around metal based

Table 1. Species distribution according to families

S/No	Families	No. of Species
1	Acanthaceae	1
2	Amaranthaceae	1
3	Anacardiaceae	1
4	Apocynaceae	9
5	Araceae	1
6	Asteraceae	4
7	Bignomiaceae	2
8	Caesalpiniaceae	2
9	Cannaceae	1
10	Capparidaceae	1
11	Caricaceae	1
12	Celastraceae	1
13	Combretaceae	3
14	Commelinaceae	1
15	Connaraceae	2
16	Convolvulaceae	2
17	Cucurbitaceae	4
18	Dioscoreaceae	1
19	Ebenaceae	1
20	Euphorbiaceae	6
21	Icacinaceae	1
22	Lauraceae	1
23	Lecythidaceae	1
24	Loganiaceae	1
25	Malvaceae	4
26	Melastomataceae	1
27	Meliaceae	1
28	Mimosaceae	3
29	Menispermaceae	1
30	Moraceae	3
31	Musaceae	2
32	Myrtaceae	1
33	Palmae (Arecaceae)	1
34	Papilionaceae	9
35	Periplocaceae	1
36	Passifloraceae	1
37	Poaceae(Gramineae)	4
38	Rubiaceae	3
39	Sapindaceae	8
40	Smilacaceae	2
41	Solanaceae	1
42	Sterculiaceae	4
43	Tiliaceae	2
44	Ulmaceae	1
45	Verbenaceae	4
46	Vitaceae	1
	Total	107

Table 2. Occurrence and status of the plant species in the of study area

S/N	Plant Species	Family	Habit	Number of plot(s) found	Remarks
1	*Abelmoschus esculentus*	Malvaceae	Herb	1	+
2	*Adenia lobata*	Passifloraceae	Climber	1	+
3	*Albizia adianthifolia*	Mimosaceae	Tree	2	+
4	*Albizia zygia*	Mimosaceae	Tree	17	++++
5	*Alchornea cordifolia*	Euphorbiaceae	Tree	3	++
6	*Alchornea laxiflora*	Euphorbiaceae	Shrub	14	++++
7	*Allophylus africanus*	Sapindaceae	Shrub	2	+
8	*Andropogon gayanus*	Poaceae	Grass	2	++
9	*Anthocleista nobilis*	Loganiaceae	Tree	1	+
10	*Antiaris africana*	Moraceae	Tree	7	+++
11	*Aspilia africana*	Asteraceae	Herb	13	++++
12	*Asystasia gangetica*	Acanthaceae	Herb	10	+++
13	*Baissea breviloba*	Apocynaceae	Climber	1	++
14	*Baphia nitida*	Papilionaceae	Shrub	3	+
15	*Blighia sapida*	Sapindaceae	Tree	3	+
16	*Blighia unijugata*	Sapindaceae	Tree	1	+
17	*Callichilia monopodialis*	Apocynaceae	Shrub	1	+
18	*Calopogonium mucunoides*	Papilionaceae	Climber	3	++
19	*Canna indica*	Cannaceae	Herb	2	++
20	*Cardiospermum grandiflorum*	Sapindaceae	Climber	1	+
21	*Cardiospermum halicacabum*	Sapindaceae	Climber	1	+
22	*Carica papaya*	Caricaceae	Tree	3	+
23	*Cassytha filiformis*	Lauraceae	Climber	1	+
24	*Castanola* sp.	Connaraceae	Shrub	2	+
25	*Chassalia kolly*	Rubiaceae	Shrub	3	++
26	*Chromolaena odorata*	Asteraceae	Shrub	26	++++
27	*Cissampelos owariensis*	Menispermaceae	Climber	2	+
28	*Cissus* sp.	Vitaceae	Climber	1	+
29	*Clerodendrum* sp.	Verbenaceae	Climber	6	+++
30	*Clerodendrum volubile*	Verbenaceae	Climber	4	++
31	*Cnestis ferruginea*	Connaraceae	Shrub	11	++++
32	*Cola nitida*	Sterculiaceae	Tree	1	+
33	*Combretum platypterum*	Combretaceae	Climber	6	++
34	*Combretum racemosum*	Combretaceae	Climber	4	++
35	*Combretum* sp.	Combretaceae	Climber	11	++++
36	*Commelina* sp.	Commelinaceae	Herb	1	+
37	*Cucurbita* sp.	Cucurbitaceae	Climber	1	+
38	*Cyathula* sp.	Amaranthaceae	Herb	1	+
39	*Dalbergia lacteal*	Papilionaceae	Shrub	1	+
40	*Deinbollia pinnata*	Sapindaceae	Shrub	1	+
41	*Desmodium ramosissimum*	Papilionaceae	Herb	1	+
42	*Dioscorea* sp.	Dioscoreaceae	Climber	1	+
43	*Diospyros monbuttensis*	Ebenaceae	Tree	1	+
44	*Elaeis guineensis*	Arecaceae	Tree	3	+
45	*Ficus exasperate*	Moraceae	Tree	3	+
46	*Ficus sur*	Moraceae	Tree	8	++
47	*Flueggea virosa*	Euphorbiaceae	Shrub	5	++
48	*Funtamia elastic*	Apocynaceae	Tree	1	+
49	*Gliricidia sepium*	Papilionaceae	Tree	1	+
50	*Glyphaea brevis*	Tiliaceae	Shrub	1	+
51	*Hedranthera barteri*	Apocynaceae	Shrub	3	+
52	*Holarrhena floribunda*	Apocynaceae	Tree	8	++
53	*Icacina tricantha*	Icacinaceae	Herb	12	++++
54	*Ipomoea involucrate*	Convolvulaceae	Climber	17	++++
55	*Lagenaria breviflora*	Cucurbitaceae	Climber	1	+
56	*Landolphia* sp.	Apocynaceae	Climber	1	+
57	*Lantana camara*	Verbenaceae	Shrub	1	+

58	*Lecaniodiscus cupanioides*	Sapindaceae	Tree	6	++
59	*Leptoderis micrantha*	Papilionaceae	Climber	3	++
60	*Leucaena leucocephala*	Mimosaceae	Shrub	4	++
61	*Lonchocarpus cyanescens*	Papilionaceae	Shrub	2	+
62	*Mallotus oppositifolius*	Euphorbiaceae	Shrub	1	+
63	*Mangifera indica*	Anacardiaceae	Tree	1	+
64	*Manihot esculenta*	Euphorbiaceae	Shrub	11	++++
65	*Margaritaria discoidea*	Euphorbiaceae	Tree	1	+
66	*Markhamia tomentosa*	Bignomiaceae	Tree	3	+
67	*Melanthera scandens*	Asteraceae	Herb	2	+
68	*Memecylon* Linn.	Melastomataceae	Shrub	1	+
69	*Merremia* sp.	Convolvulaceae	Climber	1	+
70	*Mezoneuron benthamianum*	Caesalpiniaceae	Climber	6	++
71	*Momordica charantia*	Cucurbitaceae	Climber	4	++
72	*Momordica foetida*	Cucurbitaceae	Climber	9	++++
73	*Morinda lucida*	Rubiaceae	Tree	1	+
74	*Mucuna pruriens*	Papilionaceae	Herb	1	+
75	*Musa paradisiacal*	Musaceae	Tree	1	+
76	*Musa sapientum*	Musaceae	Tree	1	+
77	*Napoleona imperialis*	Lecythidaceae	Shrub	2	+
78	*Newbouldia laevis*	Bignomiaceae	Tree	7	++
79	*Panicum maximum*	Poaceae	Grass	8	++++
80	*Parquetina nigrescens*	Periplocaceae	Climber	1	+
81	*Paullinia pinnata*	Sapindaceae	Climber	9	++++
82	*Pleioceras barteri*	Apocynaceae	Shrub	1	+
83	*Psidium guajava*	Myrtaceae	Shrub	1	+
84	*Rauvolfia vomitoria*	Apocynaceae	Tree	2	+
85	*Ritchiea longipedicellata*	Capparidaceae	Climber	2	+
86	*Sarcocephalus latifolius*	Rubiaceae	Climber	1	+
87	*Senna siamea*	Caesalpiniaceae	Tree	3	+
88	*Setaria barbata*	Poaceae	Grass	1	+
89	*Sida acuta*	Malvaceae	Herb	8	+++
90	*Sida spinosa*	Malvaceae	Herb	1	+
91	*Simicrata welwitschii*	Celastraceae	Climber	13	++++
92	*Smilax kraussiana*	Smilacaceae	Climber	3	+
93	*Solanum torvum*	Solanaceae	Shrub	5	++
94	*Stachytarpheta cayennensis*	Verbenaceae	Herb	1	+
95	*Sterculia tragacantha*	Sterculiaceae	Tree	1	+
96	*Theobroma cacao*	Sterculiaceae	Tree	2	+
97	*Tithonia diversifolia*	Asteraceae	Shrub	8	+++
98	*Trema orientalis*	Ulmaceae	Tree	3	+
99	*Trichilia prieureana*	Meliaceae	Tree	2	+
100	*Triclisia subcordata*	Smilacaceae	Climber	4	++
101	*Triumfetta cordifolia*	Tiliaceae	Shrub	1	+
102	*Urena lobata*	Malvaceae	Herb	1	+
103	*Vigna gracilis*	Papilionaceae	Climber	13	++++
104	*Voacanga africana*	Apocynaceae	Tree	1	+
105	*Waltheria indica*	Sterculiaceae	Shrub	1	+
106	*Xanthosoma mafaffa*	Araceae	Herb	2	+
107	*Zea mays*	Poaceae	Grass	3	++

Note: + = Very scarce; ++ = Scarce; +++ = Abundant; ++++ = Very abundant

industries in the works of Anoliefo *et al*. (2008) and have been listed as candidates for potential phyto-remediation of heavy metal contaminated soils subject to further studies.

In view of the potential of the species identified in the study area and the fact that majority (70%) are vulnerable for elimination because of their limited number in representation and occurrence (having ≤ 2 species or occurring in ≤ 2 plots), government should enforce that the provisions of

Table 3. The frequency and percentage of the plant life form of the study

Plant Forms	Frequency	Percentage
Trees	31	29
Shrubs	26	24
Herbs	15	14
Grass	4	4
Climber	31	29

Table 4. Index of similarity of plots at distance from the factory site

	N1	N2	N3	N4	N5	N6	N7	S1	S2	S3	S4	S5	S6	S7	E1	E2	E3	E4	E5	E6	E7	W1	W2	W3	W4	W5	W6	W7
N1																												
N2	–																											
N3	–	47.6																										
N4	–	45.2	34.1																									
N5	–	38.9	15.0	13.8																								
N6	–	48.9	27.0	30.8	19.4																							
N7	–	47.4	49.2	38.7	27.8	30.3																						
S1	–	27.6	12.1	9.0	50.0	33.3	20.7																					
S2	–	43.2	29.3	20.0	45.7	25.0	37.8	42.9																				
S3	–	30.3	27.0	15.4	25.8	35.7	24.2	33.3	37.5																			
S4	–	45.0	31.8	18.1	21.1	28.6	25.0	38.7	71.8	34.3																		
S5	–	27.6	15.0	9.0	29.6	33.3	20.6	40.0	28.6	41.7	25.8																	
S6	–	40.0	27.3	42.4	21.1	34.3	45.0	25.8	35.9	34.3	48.5	19.4																
S7	–	11.4	15.4	7.1	24.2	26.7	11.4	30.8	29.4	33.3	32.4	38.5	37.8															
E1	–	8.3	7.10	11.8	9.1	10.5	16.7	26.7	34.8	21.1	30.8	13.3	15.4	28.6														
E2	–	27.6	12.1	18.1	44.4	16.7	27.6	50.0	35.7	25.0	38.7	30.0	25.8	30.8	13.3													
E3	–	27.6	24.2	18.1	29.6	16.7	20.7	40.0	35.7	33.3	32.3	20.0	19.4	23.1	26.7	40.0												
E4	–	27.6	29.4	26.1	14.3	16.0	33.3	19.1	20.7	32.0	18.8	19.1	18.8	7.4	12.5	19.1	28.6											
E5	–	45.7	30.8	21.4	30.3	26.7	34.3	30.7	35.3	33.3	43.2	38.5	43.2	37.5	9.5	38.5	30.8	29.6										
E6	–	27.7	20.0	13.8	35.3	32.3	27.8	37.0	40.0	38.7	36.8	37.0	36.8	30.3	27.3	29.6	44.4	21.4	42.4									
E7	–	29.3	26.7	23.5	35.9	27.8	34.2	31.3	40.0	38.9	41.9	25.0	60.5	42.1	22.2	37.5	43.8	24.2	52.6	46.2								
W1	–	26.7	17.7	17.4	35.7	24.0	26.7	47.6	41.4	40.0	37.5	19.1	31.3	29.6	37.5	38.1	57.1	18.2	29.6	35.7	48.5							
W2	–	14.8	12.9	10.0	24.0	27.3	22.2	44.4	38.5	27.3	27.6	44.4	13.8	33.3	30.8	33.3	33.3	10.5	25.0	32.0	20.0	31.6						
W3	–	37.8	29.3	20.0	28.6	18.8	37.8	28.6	44.4	31.3	41.0	28.6	35.9	35.3	17.4	35.7	28.6	20.7	47.1	28.6	40.0	34.5	15.4					
W4	–	42.4	27.0	15.4	38.7	28.6	30.3	41.7	43.8	28.6	51.4	25.0	22.9	13.3	21.1	50.0	33.3	24.0	33.3	32.3	38.9	40.0	18.2	37.5				
W5	–	32.5	34.0	22.2	24.4	26.3	51.2	23.5	23.8	31.6	40.0	17.6	44.4	30.0	13.8	29.4	17.6	22.9	35.0	19.5	47.8	34.3	12.5	33.3	21.1			
W6	–	17.1	15.4	14.3	24.2	20.0	17.1	23.1	11.8	13.3	16.2	7.7	16.2	12.5	19.1	23.1	30.8	22.2	25.0	18.2	31.2	22.2	8.3	11.8	46.7	25.0		
W7	–	38.8	35.0	20.7	41.2	25.8	33.3	29.6	34.3	25.8	31.6	14.8	26.3	6.1	18.2	29.6	37.0	21.4	30.3	35.3	41.0	35.7	8.0	34.3	58.1	34.2	60.6	
	N1	N2	N3	N4	N5	N6	N7	S1	S2	S3	S4	S5	S6	S7	E1	E2	E3	E4	E5	E6	E7	W1	W2	W3	W4	W5	W6	W7

Values (%) are similarity indices of all species. N = North, S = South, E = East, W = West, 1 =50 m, 2 = 100 m, 3 = 150 m, 4 = 200 m, 5 = 250 m, 6 = 300 m, 7 = 350 m

Environmental Impact Assessment reports is strictly adhered to. These include among other things, compensatory planting and restocking of indigenous species, provision of new appropriate habitat and careful timing of major disturbances.

Conclusions

The findings of the present study provides a complete view of the floristic composition of the study area, which is rich in regenerating species that could result in the establishment of a diverse natural forest if protected to conserve the saplings of the regenerating species. However, since this previously forested area seems to have been opened up for development (potentially into industrial and residential estates), the importance of preserving the threatened diversity and available plant forms in the area cannot be overemphasized. Government, industries and individuals must abide by the provisions of the EIA act in further development of the vicinity.

Acknowledgments

We appreciate Mr. G. Ibanesebhor and B. Omomoh of Ife Herbarium in the technical assistance in the identification, collection and pressing of the plant species and specimens. We are also thankful to B. Jimba, A. Adetokun and A. Adeniyi for their dedicated field support.

References

Anoliefo GO, Ikhajiagbe B, Okonokhua BO, Edegbai BO, Obasuyi DC (2008). Metal tolerant species distribution and richness in and around the metal based industries: Possible candidates for phytoremediation. African J Environm Sci Technol 2(11):360-370.

Bhat RB, Etejere EO, Oladipo VT (1990). Ethnobotanical studies from Central Nigeria. Economic Botany, 44:382-390.

Chima UD, Ofodile EAU, Okorie MCF (2013). A survey of plants used in the treatment of ante-natal and post-natal disorders in Nneochi Local Government area of Abia State, Nigeria. Greener J Bio Sci 3(6):229-237.

Durugbo EU, Oyetoran BO, Oyejide NE (2012). Vegetation inventory of the Redemption Camp, Ogun State, Nigeria; Evaluation of medicinal plant resources and strategies for Conservation. J Biol Sci 12(1):34-42.

Edwin-Wosu NL, Edu EAB (2013). Eco-taxonomic assessment of plant species regeneration status in a postremediated crude oil impacted site in parts of Ibibio-I-Oil field in Ikot-Ada Udo, Ikot-Abasi local government area of Akwa Ibom State, Nigeria. Asian J Plant Sci Res 3(3):14-23.

Hall JB, Okali DUU (1979). A structural and floristic analysis of woody fallow vegetation near Ibadan, Nigeria. Nigerian J Ecol 67:321-346.

Ibe AE, Nwufo MI (2005). Identification, collection and domestication of medicinal plants in Southeastern Nigeria. Africa Development 30(3):66-77.

Isichei AO (1995). Omo biosphere reserve, current status, utilisation of biological resources and sustainable management. UNESCO South-South cooperation programme, 11-48 p.

Nwosu MO (2002). Ethnobotanical studies on some pteridophytes of Southern Nigeria. Econom Bot, 56(3):255-259.

Obute GC, Osuji LC (2002). Environmental awareness and dividends: A scientific discourse. Afr J Interdisciplin Stud 3:90-94.

Olajuyigbe AE, Alinaitwe P, Adegboyega SA, Salubi E (2012) Spatial analysis of factors responsible for incidence of water borne diseases in Ile-Ife, Nigeria. Journal of Sustainable Society 1(4):96-113.

Offiong RA, Iwara AI, Njar GN, Atu JE (2012). Effects of industrial activities on the structure and floristic pattern of vegetation within the calabar port authority, South-Southern Nigeria. J Geog Geol 4(1):203-211.

Oke SO, Isichei AO (1997). Floristic composition and structure of the fallow vegetation in Ile- Ife Area of South Western Nigeria. Nigerian J Bot 10:37-50.

Oni PI (2010). Ethnobotanical survey of a fallow plot for medicinal plants diversity in Idena village Ijebu-Ode, South-western Nigeria. J Med Plants Res 4(7):509-516.

Sorenson T (1948). A method of establishing groups of equal amplitude in a Plant society based on similarity of species content. K. Danske Vidensk Selsk 5:1-34.

Soladoye MO, Sonibare MA, Nadi AO, Alabi DA (2005). Indigenous Angiosperm biodiversity of Olabisi Onabanjo University permanent site. African J Biotechnol 4 (5):554-562.

Tukur R, Adamu GK, Abdulrashid I, Rabi'u M (2013). Indigenous Trees Inventory And Their Multipurpose Uses In Dutsin-Ma Area Katsina State. European Sci J 9(11):288-300.

Ubom RM (2010). Ethnobotany and biodiversity conservation in the Niger Delta, Nigeria. Intern J Bot 6:310-322.