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Tree Species Diversity in Urban Areas of Ijesa Region of Osun State, Nigeria

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Abstract

Tree species diversity in the urban areas of Ijesa region of Osun State, Nigeria, was determined through the use of field visits and semi-structured interviews of residents in six urban communities that were selected from six Ijesa Local Government Areas of the state. In each community, three routes were selected from the centre of the community and used for the study. In each route, a 500m distance was measured out and at every 50m distance; an inventory of trees and houses situated within 10m radius of the centre of the road was carried out. Also in each route, 10 residents along the route were interviewed. Similarities in the occurrence of tree species were determined among the selected communities. Also, the indices of diversity were calculated on the identified tree species in each community. Results obtained revealed a density of 2,156 tree species, belonging to 34 species and 23 families. 64 % of the trees were preserved from wildlings. The trees were valued for the fresh air and shade they provided and their ethnomedicine importance. Over-exploitation, browsing by animals, insects infestation, harbouring of reptiles and birds and unplanned land use were identified as disincentives to planting trees in urban areas of the region. High similarity but low diversity values were obtained on the occurrence and diversity of the identified trees in most of the communities used in this study. Strategies that would improve urban forestry in the region were prescribed.

INTRODUCTION

In 2008, an 'Ijesa Ethnobotany Project' was launched in the Department of Plant Science and Biotechnology, Ekiti State University, Ado-Ekiti, Nigeria. The project was aimed at the study of the relationships between plants and the Ijasa indigenes who are a unique ethnic Yoruba tribe in south western Nigeria (Kayode *et al.*, 2016). Ijesa are mostly farmers who occupied six local government areas of Osun State, Nigeria (Oni and Kayode 2018), situated in the rain forest region of the country. This vegetation that is rich in flora species is presently being annihilated by series of anthropogenic factors. These have impacted negatively on tree diversity, abundance, species composition, indigenous knowledge of tree flora and conservation in the region.

The potentials of urban forestry at ameliorating the harsh effects of deforestation cannot be over-emphasised. Urban forestry could be described as a modern and sustainable means of increasing tree diversity and density of an area. A number of studies, such as Yanga *et al.*, 2005; Nowak *et al.*, 2006;

Escobedoa and Nowak, 2009; Escobedo *et al*, 2011 have established that trees are crucial to maintaining environmental quality. They affect local and regional air quality by removing atmospheric pollutants and chemicals from the vegetation (Babalola and Raji, 2016), lower air temperatures, change wind patterns, reduce energy used (Beckett *et al*., 2000; Singh, 2002), remove greenhouse gases from the atmosphere (McPherson *et al*., 1999). Trees provide many ecosystem services such as species conservation, prevention of soil erosion, and preservation of habitat for plants and animals (Armenteras *et al*., 2009). Indeed, Carol *et. al*. (2005) asserted that the early humans depended on trees for foods such as fruits and nuts. The trees create a serene environment that helps relax the minds of dwellers in the urban environment (Ulrich, 1990).

Study by Kayode (2004) revealed that a gross apathy is being demonstrated on tree cultivation in the south western area of Nigeria but recent initiatives revealed that trees are now being deliberately cultivated for landscaping, fruits and nuts in the urban areas of the study area. Ogwu, *et. al.* (2016) opined that the knowledge of the tree flora of a community will enable inhabitants to positively relate with the trees as well as promote the diversity and sustainable management of the trees. Consequent on this, the study being reported was conducted to determine the tree species diversity in urban areas of Ijesa Region of Osun State, Nigeria.

MATERIALS AND METHODS

The study was conducted in the six urban communities selected from the six Local Government Areas (LGA) of Ijesa region (Figs. 1 and 2). The communities selected were: Ibokun in Obokun Local Government Area (LGA) ($7^0 47^1$N $4^0$46E), Ereja in Ilesa West LGA ($7^0 39^1$ N $4^0 43^1$E), Iyemogun in Ilesa East LGA (7^0 37^1 N 4^0 46^1 E), Ijebu Ijesa in Oriade LGA (7^0 35^1 N 4^0 52^1 E), Osu in Atakunmosa West LGA ($7^0 33^1$ N $4^0 40^1$E) and Iperindo in Atakunmosa East LGA (7^0 29^1 N $4^0 47^1$E).

In each of the selected community, three routes were selected from the centre of the community and labelled as follow:

Ibokun (A)
Route A_1 - Oba's palace Junction - Ilesa road
Route A_2 - Oba's palace Junction- Esa Oke road
Route A_3 - Oba's palace Junction – Ikirun road
Ereja (B)
Route B_1- Oba's palace Junction – Irojo road
Route B_2 - Oba's palace Junction – Okesa road
Route B_3 - Oba's palace Junction - Adeti/ Ita Akogun road
Iyemogun (C)
Route C_1 - Local government junction – local government road
Route C_2 - Local government junction – INEC road
Route C_3 - Local government junction – Wesley Road
Ijebu- Jesa (D)
Route D_1 - Oba's palace Junction – Ilesa road
Route D_2 - Oba's palace Junction – Palace road
Route D_3 - Oba's palace Junction – Ado road
Osu (E)
Route E1- Oba's palace junction- Agunja street
Route E2- Oba's palace junction- Oke-Agbeye street
Route E3- Oba's palace junction- Palace road
Iperindo (F)
Route F_1 - Oba's palace Junction – Ago- Oyo road
Route F_2 - Oba's palace Junction – Oke- Odo Street
Route F_3 - Oba's palace Junction – Oke- Ayo Street

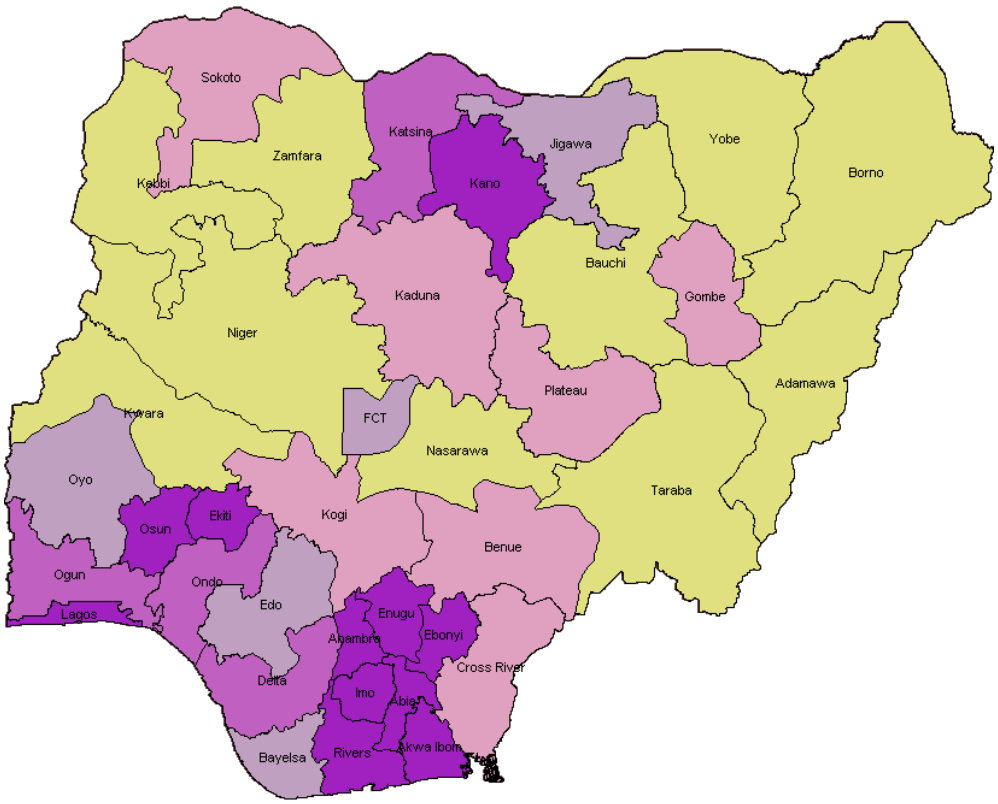

Figure 1: Map of Nigeria showing Osun State

Figure 2: Map of Osun State, Nigeria showing the Local Government Areas

In each of these routes, a 500m distance was measured out, inventories of trees and houses situated within 10m radius of the centre of the road, were carried out at every 50m distance. Also in each routes, 10 respondents, who were residents along the routes were interviewed individually. The interviews were conducted with a fairly open frame work that allowed for focused, conversational and two-way communication (Molnar *et al*., 1989).

A total of 30 respondents were interviewed in each community. Three group interviews were conducted in each community to determine group consensus on the subject matter. Similarly, 10 key informants were identified in the study area and interviewed. These included officials of the forestry division, local government and teachers.

The data obtained were subjected to descriptive statistics, mainly percentages, frequencies and inferential statistics, mostly chi-square which was used to determine whether trees occurrence differ among the communities.

Similarity measures on the tree occurrences in the roadsides of the six urban communities were determined as follows:

(1) Index of similarity (I_S), after Kayode (1999) as:
$I_S =$ 2C X100 / (A+B)
(2) Jaccard Index (Sj) after Gurevitch *et al.* (2002) as:
Sj = C / (A+B+C)
(3) Sorensen Dice Index (Ss_D) after Gurevitch *et al.* (2002) as:
$S_{SD} =$ 2C / (A+B+C)
(4) Ochioi Index (So) after Gurevitch *et al.* (2002) as:
$S_o =$ C / (A+C) + (B+C)
(5) Asymmmetrical Similarity (S_{AS}) after Gurevitch *et al*. (2002) as:
$S_{AS} =$ B / (B+2C)

Where A is the number of species in first community only
B is the number of species in second community only
C is the number of species common to both communities

Also, the indices of diversity were calculated on the identified tree species in each community, using Bongers *et al*. (1998) as:

i. Shannon – Wieners Index (H) as:

$H' = -\sum Pi \ln pi$
Where $P_i = n_i/N$
n_i = Number of individual of species I and.
N = total number of individuals.

ii. Simpson Index (C)
$C = \sum Pi^2$

iii. Equitability Index (E)

E= H' / Hm

Where Hm = LOGS
S= number of species
H'= Shannon-Wiener index

RESULTS AND DISCUSSION

Table 1 shows the demography of trees and households enumerated in the study area. A total density of 2156 tree individuals, belonging to 34 tree species was enumerated. 36% of these trees were planted by the respondents while 64% were preserved wildlings. Thus the proportion of trees planted was lower than those preserved as wildlings. A total number of 539 houses were enumerated. Thus the ratio of the trees to the houses was 4 to 1. This observation tends to suggest that sufficient number of trees were found in the study area.

The trees enumerated belonged to 23 families (Table 2). The families Anacardiaceae and Rutaceae have 3 species each, families Areaceae, Caesalpiniaceae, Conbretaceae, Malvaaceae, Moraceae, Musaceae and Verbenaceae have 2 species each while each of the other families has 1 species each. Anacardiaceae is a widely distributed family of trees and shrub (Anon. 2020a) that are cultivated throughout the world for their edible fruits and seeds, medicinal compounds, valuable timber, and landscape appeal (Pell 2009). Members sampled in this study were *Anacardium occidentalis, Mangefera indica* and *Spondia mombin* (Table 2). Rutaceae are generally shrubs and trees with strong fragrance (Yashasvi 2020). Members sampled in this study area were *Citrus aurantifolia, Citrus reticulata* and *Citrus sinensis*. Members of the families Anacardiaceae and Rutaceae were also found to dominate the tree species sampled in an urban forestry study in Port Harcourt, Nigeria by Eludoyin *et. al.* (2015).

Field observation revealed that respondents regarded *Musa parasidiaca* and *Musa sapentum* as trees. Scientifically, the fact that they lacked woody stem might rubbed them of this classification (McLaughlin 2018, Anon. 2020b). The results obtained revealed that *Musa parasidiaca* has the highest number of individuals (672) (Table 3), followed by *Bambusa vulgaris* (253)*, G. sepium* (243). *M. sapentum* (155) and *D. canadense* (137). *A. digitata. P. avium* and *T. superba,* each has 2 individuals while *C. cujete* and *M. exelsa,* each has one individual. Field observation revealed that the dominance of *Musa parasidiaca* could be attributed to its fruits that constituted an important food in the study area and its ability to produce several suckers as its means of propagation. Eludoyin (2015) also opined that the ethnobotanical values, especially the medicinal value, of a species might be responsible for the number of such species in urban forestry. Similarly, *Bambusa vulgaris* population could be attributed to its vegetative propagation, even as wildlings, in the study area. The population of *G. sepium* was relatively high in this study. The species grow seamlessly in the study area where it is found to have multipurpose values, especially for fencing, yam staking and fodder. *M. sapentum* possessed similar attributes as that of *M. parasidiaca.*

All the respondents were quite familiar with the values of the identified trees species (Table 4) thus suggesting that the socio-economic classification of the respondents were not regarded as pre-requisites to the consciousness of respondents on the values of tree species. This observation tends to support the previous assertions of Kayode (2005), Kayode *et. al.* (2017) and Ayeni and Kayode (2018). Respondents identified diverse values for the identified species which was ranked and ranged from their values as shade providers, providers of fresh air (oxygen), sources of some important products such as fruits and herbs used for medicine (Table 4, 100% each), sources of fuel wood (70%), control of erosion (66%), provision of work places for artisans and retailers (62%), relaxation joints (60%) and source of fodders (52%). Field observation revealed that some artisans, such as Vulcanizers, Mechanics, Penal Beaters, Cobblers, Tailors, Upholstery makers and Provision sellers operating under the canopies of some of the trees in the study area.

The multi-purpose values observed in this study conformed to that of Van and Cochard (2017). Table 5 revealed that each of the identified species has multiple values which ranged from timber, fruits, traditional rights, boundary demarcation to construction. The recognition of these urban trees for the provision of fresh oxygen agreed with the previous observation of Cummins and Jackson (2001) that urban forests moderate air temperature, and also that of Nowak *et al.* (2006) that they mitigate ambient air pollution. All these produce human health benefits (Handy *et al.* 2002, Hansmann *et al.* 2007, Hartig *et al.* 2003, Pretty *et al* 2005 and Takano *et. al.* 2002), and thus lower human mortality rates (Villeneuve *et al.* 2012), and generally improve the quality of life of urban inhabitants (Maas *et. al.* 2008, Mitchell and Popham 2008).

Similarly, the recognition of the trees to provide shade and aesthetic values concurred with the earlier assertions of Pretty *et al* (2005), Takano *et al.* (2002) and Villeneuve *et al.* (2012) that these trees impart on the health of the residents by reducing diastolic blood pressure and heart rate. Taylor *et al.* (2001) also opined that human exposure to green space has been found to result in positive feelings, relaxation, stress relief, and restoration of attention-demanding cognitive performance.

However, the ethnobotanical values (Table 5) of the identified tree species skewed towards the fruits obtained from the tree species identified in this study. Edible fruits from trees in home gardens play important role in the family diet and food security in Nigeria (Larinde and Oladele 2014). Fruits provide important nutrients, vitamins and part of family income (Adeboye and Adedayo, 2008).

Table 1: Demography of trees and houses enumerated in urban areas of Ijesa region of Osun State, Nigeria

Description	**Communities**						
	A	B	C	D	E	F	Total
Density of Tree Species	421	77	566	334	319	439	2,156
% of Tree Species planted	33%	25%	37%	35%	41%	42%	Average =36%
% of Tree Species Preserved from wildlings	67%	75%	63%	63%	58%	58%	Average = 64%
No of Species	21	12	27	17	27	19	
Total Number of Species in A, B, C, D, E, F							34
Most Occurring among the identified species in the study area	*Musa parasidiaca*						577
Most Occurring Species / Community*	M.p	M.p	M.p	B.v	M.p	M.p	
No. of nost occurring species in the community	143	40	115	100	98	181	
No of Houses	254	24	68	59	58	76	539
Trees; Houses Ratio	2:1	3:1	8:1	6:1	6:1	6:1	Average = 4:1

- M.p: *Musa parasidiaca* B.v: *Bambusa vulgaris*

Table 2: Checklist of tree species sampled in urban areas of Ijesa region of Osun State, Nigeria

S.N.	Family	Species	English Name	Local Name
1	Amaranthaceae	*Dysphania ambrosioides*	Wormseed	Asin
2	Anacardiaceae	*Anacardium occidentalis* *Mangefera indica* *Spondia mombin*	Cashew Mango Hog plum	Kasu Mangoro Iyeye
3	Annonaceae	*Polyalthia longifolia*	False ashoka	Igi Igunu
4	Apocynaceae	*Holarrhena floribunda*	False rubber tree	Irena
5	Arecaceae	*Elaeis guineense* *Cocos nucifera*	Oil Palm Coconut	Ope Agbon
6	Bignoniaceae	*Crescentia cujete*	Calabash tree	Igba
7	Bombacaceae	*Adansonia digitata*	Baobab	Ose
8	Caesalpiniaceae	*Caesalpinia pulcherrima* *Senna siamea*	Pride of Barbados Cassia	Eko Omode Kassia
9	Caricaceae	*Carica papaya*	Pawpaw	Ibepe
10	Combretaceae	*Terminalia ivorensis* *Terminalia superba*	Ivory Coast almond African limba wood	Afara Frutu
11	Dracaenaceae	*Dracaena fragrans*	Corn plant	Peregun
12	Malvaceae	*Cola acuminata* *Theobroma cacao*	Colanut Cocoa	Obi Koko
13	Meliaceae	*Azadiractha indica*	Neem	Dongoyaro
14	Moraceae	*Ficus thonningii* *Melicia excels*	Wild fig African Teak, Iroko	Odan Iroko
15	Moringaceae	*Moringa oleifera*	Moringa	Igbale
16	Musaceae	*Musa parasidiaca* *Musa sapentum*	Plantain Banana	Ogede agbagba Ogede wewe
17	Myrtaceae	*Psidium guajava*	Guava	Gurova
18	Papilionaceae	*Gliricidia sepium*	Nicaraguan cocoa shade, Quick-stick	Agunmaniye
19	Poaceae	*Bambusa vulgaris*	Bamboo	Oparun
20	Rosaceae	*Pirus communis*	Pear	Pia
21	Rutaceae	*Citrus aurantifolia* *Citrus reticulata* *Citrus sinensis*	Lime Tangerine Orange	Osanwewe Tangarini Osan mimu
22	Sapotaceae	*Chrysophyllum albidum*	African Star Apple	Agbalumo
23	Verbenaceae	*Gmelina arborca* *Tectonia grandis*	Melina/Parrot's Beak Teak	Igi melina Igi oba

Table 3: Demography of the identified species in urban areas of Ijesa region of Osun State, Nigeria

S.N.	Tree Species	Density
1	*Musa parasidiaca*	672
2	*Bambusa vulgaris*	253
3	*Gliricidia sepium*	243
4	*Musa sapentum*	155
5	*Desmodium canadense*	137
6	*Elaeis guineense*	118
7	*Carica papaya*	64
8	*Cocos nucifera*	60
9	*Citrus sinensis*	49
10	*Anacardium occidentalis*	41
11	*Senna siannea*	41
12	*Gmelina arborea*	39
13	*Theobroma cacao*	35
14	*Ficus thionningii*	33
15	*Spondia mombin*	32
16	*Uvaria longifolia*	27
17	*Dracaena fragrans*	23
18	*Citrus aurantifolia*	22
19	*Mangefera indica*	22
20	*Terminalia ivonrensis*	21
21	*Caesalpinia banduc*	12
22	*Holarrhena floribunda*	12
23	*Cola acuminata*	7
24	*Psidum guajava*	7
25	*Azadiractha indica*	6
26	*Chenopodium ambrosioides*	5
27	*Moringa oleifera*	5
28	*Citrus reticulate*	4
29	*Pirus communis*	3
30	*Adansonia digitata*	2
31	*Prunus avium*	2
32	*Terminalia superba*	2
33	*Crescentia cujete*	1
34	*Melicia exelsa*	1

Table 4: Respondents' perception of the role of tress in urban areas of Ijesa region of Osun State, Nigeria

Rank	Roles	% of the Respondents
1	Provide Shade	100
	Provide fresh air	100
	Sources of some important products; Fruit, Herbs/Medicine,etc.	100
4	Sources of Fuel wood	70
5	Control of Erosion	66
6	Provision of workplace (workshop) for Artisans and retailers	62
7	Relaxation Joints	60
8	Sources of fodders	52

Table 5: Cultivation status and ethnobotanical values of the identified tree species in urban areas of Ijesa region of Osun State, Nigeria

S/N	Tree Species	Cultivation Status	Ethno botanical Values
1	*Adansonia digitata*	PW	M,F,TR,T
2	*Anacardium occidentalis*	PW	M,F,FR
3	*Azadiractha indica*	PW	M,F
4	*Bambusa vulgaris*	PW	F, C
5	*Caesalpinia banduc*	PW	FR,M
6	*Carica papaya*	P	FR,M,F
7	*Citrus aurantifolia*	P	FR,M,F
8	*Citrus reticulate*	P	FR,M,F
9	*Citrus sinensis*	P	FR,M,F
10	*Cocos nucifera*	P	FR,F,M
11	*Cola acuminata*	P	FR,F,T,M
12	*Chenopodium ambrosioides*	PW	T,F
13	*Crescentia cujete*	PW	F,FR,TR
14	*Desmodium canadense*	PW	F,T,M
15	*Dracaena fragrans*	PW	TR, BD
16	*Elaeis guineense*	PW	FR,T,F,TR
17	*Ficus thionningii*	PW	T,F,TR
18	*Gliricidia sepium*	PW	T,F,M
19	*Gmelina arborea*	PW	T,F, C
20	*Holarrhena floribunda*	PW	T,F, C
21	*Mangefera indica*	P	T,F,FR,M
22	*Melicia exelsa*	PW	T,F,TR, C
23	*Moringa oleifera*	P	M,T,F,FR
24	*Musa parasidiaca*	PW	M,FR,TR
25	*Musa sapentum*	PW	M,FR,TR
26	*Pirus communis*	P	T,FR,F,M
27	*Psidum guajava*	PW	M,FR,T,F
28	*Prunus avium*	PW	FR,T,F
29	*Senna siannea*	PW	M,T,F, C
30	*Spondia mombin*	PW	M,T,F,TR,FR BD,
31	*Terminalia ivonrensis*	PW	T,F, C
32	*Terminalia superb*	PW	T,F,M,FR, C
33	*Theobroma cacao*	P	F,M,FR
34	*Uvaria longifolia*	P	T,F

*R: T; Timber, F: Fuel wood, Fr: Fruit, TR: Traditional rights, BD: Boundary demarcation, C: Construction, P: Planted, PW: Planted from the wild

The examination of the primary method of cultivating the identified tree species in the urban communities of the study area (Table 5) revealed that 23 of the tree species (i.e. 68%) were primarily preserved from wildlings while the remaining 11 (32%) were primarily planted in the study area. The values obtained from the various similarity indices revealed that similar tree species were identified

in the various communities sampled. Communities with the most similar tree occurrences were Communities A and C (Ibokun and Iyemogun), and A and D ((Ibokun and Ijebu-Jesa) while communities with the least similarity were B and E (Ereja and Osu). Similarly the various tree diversity indices revealed the presence of an array of trees in the communities sampled in this study. The study was conducted in different communities of Ijesa region, where the respondents were of the same culture and tribe hence there was the expectation that all the tree species sampled will be found in all communities used in this study. Statistical analysis (χ^2 at 0.05 levels) revealed that the occurrence of the identified tree species differed among the communities. This tends to suggest that investment in urban trees is an individual issue. Also no compulsion abounds in the study area on investment on urban trees.

Table 7 shows the disincentives hindering urban tree cultivation and preservation as perceived by respondents in the study area. The ranking of these disincentives revealed that they ranged from over exploitation, harvesting of the leaves, barks, log and roots (85%), browsing by animals at early stage (80%), insects infestation (70%), harbouring of reptiles (64%) and birds (60%) by the trees and unplanned land use as planting of tress in building neighbourhood were not incorporated in building plans (56%). The dangers inherent in the over exploitation of Nigeria' tree products has been stressed by Aruofor (2001) especially in a country that lacked accurate data. The browsing of tree seedlings by animals, especially at the sapling stage, is a serious disincentive to tree cultivation. Residents of the study area still practised the free range system of animal husbandry. Elsewhere in Ethiopia, Eshete *et. al.* (2009) identified grazing as a major problem in tree cultivation hence recommended livestock exclusion in such project. Also, Barad *et. al.* (2008) enumerated the damages caused to trees by insects which ranged from killing the entire tree, to reducing its growth, grade of its products, seed production and stem deformities. The ability of trees to provide habitat to snakes hinders interest in tree cultivation. Previous observation by Neilly (2017) revealed that this often extend beyond just the tree-dwelling reptiles, as the tree cover improves the prospects for ground-dwelling reptiles too. These reptiles often like woody debris, leaf litter and fallen logs, similarly, the birds often seek habitats in the trees and this has constituted nuisance pest due to potential transmission of illness, the corrosive damage from their droppings, and issues related to the location of their nests (Anon. 2020c).

The lack of proper planning in land use also inhibits investment in urban tree planting. Building plans are drawn without making provision for trees in the neighbourhood of the proposed house. Wu (2020) described land–use change as the most pervasive socioeconomic force driving changes and degradation of ecosystems. This has brought about the conversion of farmland and forests to urban development thus reduced the amount of lands available for food and timber production. Soil erosion and other soil degradations associated the change eliminate the services provided by the removed vegetation (Lubowski *et al.* 2006).

Table 6: Similarity indices in the occurrence of trees species in urban areas of Ijesa region of Osun State, Nigeria

Location	Index of Similarities				
	Is	**S_J**	**S_{SD}**	**So**	**S_{AS}**
A-B	61	0.23	0.47	0.97	0.38
A-C	79	0.28	0.57	1.45	0.42
A-D	79	0.28	0.57	1.29	0.64
A-E	67	0.25	0.50	1.27	0.46
A-F	75	0.27	0.55	1.27	0.39
B-C	51	0.20	0.41	0.93	0.57
B-D	55	0.22	0.43	0.84	0.52
B-E	41	0.17	0.34	0.77	0.63
B-F	52	0.21	0.41	0.83	0.54
C-D	77	0.28	0.56	1.36	0.33

C-E	78	0.28	0.56	1.52	0.39
C-F	70	0.26	0.52	1.28	0.37
D-E	73	0.27	0.53	1.30	0.46
D-F	72	0.33	0.67	1.17	0.42
E-F	74	0.27	0.54	1.35	0.36

Table 7: Diversity indices in tree species sampled in urban areas of Ijesa region of Osun State, Nigeria

Community	Indices		
	H^1	C	E
A	2.25	0.17	0.37
B	1.65	0.09	0.33
C	2.62	0.09	0.40
D	2.11	0.19	0.37
E	3.32	0.09	0.50
F	1.86	0.28	0.32

Table 8: Disincentives to planting trees in urban areas of Ijesa Region of Osun State, Nigeria

Rank	Disincentives	% of Respondents
1	Over exploitation; Harvesting the leaves, barks, log and roots	85
2	Browsing by animals at early stage	80
3	Insects infestation	70
4	Harbouring of reptiles	64
5	Harbouring of birds	60
6	Unplanned land use ; by not incorporating trees in building plans	56

In conclusion, urban forestry still maintains its potentials to alleviate the current global warming. Fuwape and Onyekwelu (2011) earlier opined that urban forests have played important roles in social, cultural, economic and environmental development of urban centers in West Africa as the rapid urbanization and growing world population occasioned by the demographic switch from rural to urban have led to the destruction and disappearance of the natural forest ecosystem (Hussain1989, Konijnendik 2003, UN 2007). The urban biodiversity also enables urban inhabitants to interact with nature, thereby enhancing appreciation and understanding of the importance of ecological, social and psychological functions that the green areas perform (Ekwebelam and Onewota, 1989 Aimufia, 2002; Donovan and Butry, 2009). While the ratio of 4 trees: 1 house obtained in this study might be considered as fair, the diversity of the trees was poor. There is the need to incorporate more arrays of species into the urban trees, especially more of the indigenous species that are increasingly endangered in the study area. This study revealed that the inhabitants of the study area still valued the trees for their ethnobotanical utilities, thus more studies should be carried out to document the ethnobotanical values of the trees. Also, sustainable methods of controlling reptiles and birds associated with some trees must be fashioned out. Government must encourage urban trees by legislating 'one house-one tree policy' through which each landlord will be compelled to plant at least one tree in his household area, as well as abolishing the free range system of animal husbandry in the study area.

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