



RESIDENT STAFF' S AWARENESS AND PERCEPTION OF SERVICES AND DISSERVICES OF TREES IN UNIVERSITY OF IBADAN, NIGERIA

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ABSTRACT

This study assessed the resident staff's perception and awareness of tree services and disservices at the University of Ibadan in order to aid all relevant stakeholders in designing management policies and decisions for the optimal and continuous benefit of trees. A stratified random sampling technique was used. Seventy-five (75) senior staff and fifty (50) junior staff respondents were randomly selected. Tree services as well as perceptions of tree management strategies were analysed using descriptive statistics and Chi-square (χ^2) at $p=0.05$. Both senior staff (100%) and junior staff (98%) were aware of the presence of trees on campus, however, staff category is not dependent on awareness of presence of trees. Majority of the respondents (70%) selected more than one tree service. Among the identified services, resident senior staff ranked cooling of the environment (14.64%) as the most important, while resident junior staff ranked trees beautifying the environment (8.84%) as the most important. As a personal benefit derived from trees, cooling the environment was ranked highest (16.88 and 10.51%) by both senior and junior staff. The most common environmental disservice reported by respondents (23.59 and 24.82%, respectively) was littered fruits and leaves and trees falling on roads, causing nuisance and endangering pedestrians and motorists. The trees, according to the respondents (57.59%), are old and poorly maintained by the Campus Tree Management committee (32.28%). Furthermore, 93.70% of respondents agreed that trees are necessary on the University of Ibadan campus. The Campus Tree Management Committee should create an action plan that focuses on tree hazards mitigation and the promotion of sustainable greenery for the University environment.

Keywords: Tree services; disservices; resident staff; university environment

INTRODUCTION

Concerns about global warming, urban heat, and air pollution from industries, vehicles, and other sources have prompted a lot of attention to be paid to tree planting in urban areas in order to improve the climate and conserve energy. According to McPherson *et al.* (2005), urban trees improve global climate by removing greenhouse gases from the atmosphere directly, as well as reducing emissions from energy production, controlling rainfall runoff and flooding (reduction and stabilization of erosion), reducing urban noise

levels, reducing negative psychosocial issues, increasing property value, reducing human stress levels, and providing shade. Thus, planting a diverse range of tree species in urban and peri-urban environments improves structural and functional diversity on city streets while also increasing pest and disease resistance.

Greening in residential areas, according to Olivero-Lora *et al.* (2019), is an important component of healthy living because it has the potential to provide multiple ecosystem services and benefits. Aylor (1972), Reethof and McDaniel (1978), Dombrow (2000), Gutscher and Bauer (2011) and Olivero-Lora *et al.* (2019) divided the benefits of trees into four categories: environmental, economic, social, and health-related benefits. Some of these benefits include, the ability of leaves and stems to scatter sound, absorb and provide shelter from noise in the bustling city, thus, trees planted at strategic points within cities can abate major noises; trees add aesthetic value to a neighbourhood, thus they are a major factor in the choice of residence; the presence of trees could be attributable to a 2% increase in home value presence of trees increased property value; trees control rainfall runoff and flooding thus protecting properties and lives. Furthermore, trees as landmarks can give an area a new identity and foster civic pride, as well as provide a beautiful canopy that increases property value in a neighbourhood.

Therefore, trees on university campuses play a huge role in making the environment conducive to teaching and learning, improving human health and well-being by providing physical and psychological benefits, facilitating connections with others and with nature, and providing services that go beyond their functional value (e.g., emotional, physiological, spiritual). Akabari *et al.* (2001) affirmed that trees reduce city temperatures by 5°C and participate in transpiration cooling, which reduces solar heating of dark surfaces. The forms, textures, colours, fragrances, and movement of trees in the breeze affect serenity and beauty while also enlivening the University environment. The Arbor Day Foundation (2010) also reported that visual exposure to tree-filled environments resulted in significant stress recovery within five minutes, as evidenced by changes in blood pressure and muscle tension. As a result, the benefits of trees are a necessary and advantageous condition for reading, concentration, and assimilation.

Unfortunately, society tends to take trees and the benefits they provide for granted and losing something is often the only way for people to realize how valuable that amenity was to them. Putting the extinction of trees in urban areas to the test, on the other hand, will result in a global disaster. Thus, there is a need to assess how the public values trees. The Public's perception and knowledge of trees is an important factor to consider in any tree planting and conservation campaign because it influences their attitude toward tree conservation and management. Understanding people's perceptions of tree services and benefits are necessary before designing management policies and decisions that include all relevant stakeholders in the management strategy. Based on the foregoing, this study was conducted to assess residents' level of information about tree services as well as their perceptions of tree management strategies.

METHODOLOGY

The Study Area

University of Ibadan founded in 1948 is located in Ibadan, Nigeria. It is about 6 km to the North of the city of Ibadan metropolis at longitude 3° 54' E and Latitude 7° 26' N and

a mean altitude of 227 m above sea level. According to Alarape *et al.* (2015), the study area has an annual rainfall of about 1220 mm, which has its peak in June and August that lasts for about 8 months (April to October). The dry season occurs between November and March. The land area of the University of Ibadan is over 1032 hectares and trees of different species are lining the major road networks of the University. The population of the University of Ibadan community is over 25,000. There are about sixty-three roads in the University of Ibadan where thirty-six roads have senior staff quarters located with six hundred and ten houses and eight roads have junior staff quarters located with four hundred and five houses Agbeja and Adesoye (2003).

Jimoh (2012) reported that the treescape of the University of Ibadan campus is made up of about 88 species in 29 families. Some of the species include: *Adansonia digitata*, *Azizelia bella*, *Albizia ferruginea*, *Albizia lebbbeck*, *Alstonia boonei*, *Anacardium occidentale*, *Anogeissus leiocarpus*, *Antiaris Africana*, *Azadiractha indica*, *Blighia sapida*, *Bombax costatum*, *Borassus aethiopum*, *Bosqueia angolensis*, *Bridelia micrantha*, *Cassia senegalensis*, *Ceiba pentandra*, *Citrus senensis*, *Cocos nucifera*, *Cola nitida*, *Dacryodes edulis*, *Daniellia ogea*, *Eucalyptus camadulensis*, *Ficus capensis*, *Ficus exasperate*, *Ficus mucoso*, *Gliricidia sepium*, *Gmelina arborea*, *Hildegardia barteri*, *Khaya senegalensis*, *Leucaena leucocephala*, *Magnifera indica*, *Melicia excelsa*, *Morinda lucida*, *Nesogordonia papaverifera*, *Peltophorum pterocarpum*, *Phyllanthus discoideus*, *Phyllanthus micrantha*, *Pinus carribea*, *Pitanga cherry*, *Psidium guajava*, *Tectona grandis* *Terminalia catappa*, *Terminalia ivorensis*, *Terminalia mentalis*, *Terminalia superba*, *Treculia Africana*, *Triplochiton scleroxylon*, *Xanto zyllunsp* etc.

Sampling Procedure

To collect data for this study, a stratified random sampling technique was used. The senior and junior staff quarters are located on the campus of the University of Ibadan. The senior staff occupied 610 houses, while the junior staff occupied 405 houses. Senior staff quarters were divided into 15 roads, and 5 houses were chosen from each road. A staff from each of the houses was then chosen, for a total of 75 senior staff respondents. Furthermore, junior staff quarters were stratified into five roads, with ten houses chosen from each road and a staff chosen from each house, for a total of 50 junior staff.

Data Collection and Analysis

A total of 125 copies of structured questionnaire were administered to the respondents, however, 110 were retrieved. Data were analysed using descriptive statistics (frequency tables and charts) and chi-square test of association.

RESULTS AND DISCUSSION

Awareness of Presence of Trees around Staff Quarters

Table 1 shows that all resident senior staff in the university (100%) were aware of the presence of trees in their quarters, while 98% of resident junior staff are aware of the presence of trees in their quarters. This showed that trees are an important component of urban social-ecological systems as most of University of Ibadan resident staff are aware of the presence

of trees on campus. Information about tree awareness is very important because this aids in conceptualizing the relationships between humans and the environment, as well as how these relationships may shape human actions. Thus, the justification for asking the respondents if they are aware of the presence of trees in their surroundings.

Chi square (χ^2) value of 1.215 at p-value 0.270 implies that there is no significant association between university resident staff and awareness of the presence of trees. This shows that staff category is not dependent on awareness of the presence of trees around their quarters.

Table 1: Distribution of resident staff^a awareness of the presence of trees

			Awareness of presence of trees		
			Yes	No	Total
staff category	Senior	Frequency	60	0	60
		%	100	0.0	100
	Junior	Frequency	49	1	50
		%	98	2.0	100
Total		Frequency	109	1	110
		%	99.1	0.9	100

Awareness of Services of Trees in the University Environment

Figure 1 shows that 18.78% of senior staff in the university indicated that the primary function of trees in the environment is to serve as shade for different purposes, followed by trees improving the microclimate (14.64%), while the junior staff of the university ranked trees serving as shade to residents and pedestrians (9.94%) as highest, followed by trees beautifying the environment (8.84%). There is a slight difference in senior and junior staff observations of specific services provided by trees in the environment, as most senior and junior staff indicated that trees provide shade to many in the environment, but senior staff claimed the next highest service provided by trees is the improvement of the microclimate, while junior staff claimed the next highest service provided by trees is beautification of the environment (aesthetic). Furthermore, both senior and junior staff in the Institution ranked trees reducing air pollution as the lowest.

Members of communities benefit directly and indirectly from ecosystem functions, as attested by respondents' awareness of tree services. According to Kais *et al.* (2021), trees in residential areas have varying levels of importance to individuals, and recognition of the existence of the services they provide influences society's attitude (either positive or negative) toward the resource. Thus, from the list of tree services in Figure 1, it was clear that certain services, such as shade and beautification of the environment, were acknowledged more by staff.

Resident staff's awareness and perception of services and disservices of trees



Figure 1: Percentage distribution tree services in the University of Ibadan premises

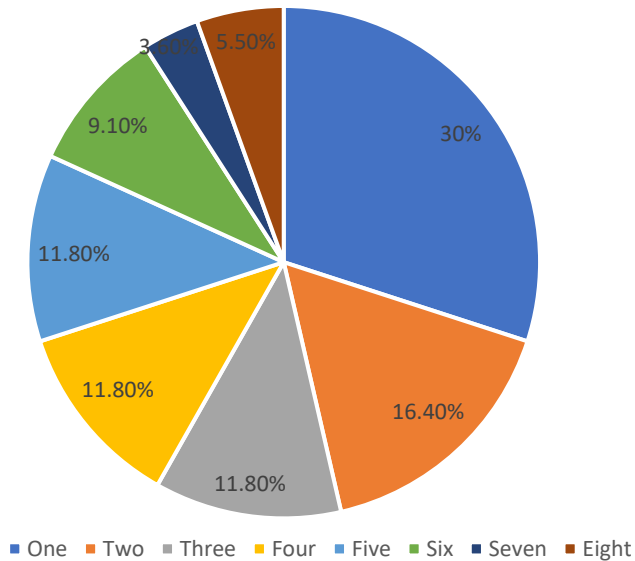


Figure 2: Frequency distribution of number of tree services options selected by respondents

Figure 2 shows that university resident staff are aware of numerous services of tree, which explains the multiple choice. The Figure depicts the number of services chosen by each respondent. Only 3.60% of the respondents chose one function, 5.50% chose two functions, a large percentage of the respondents (30%) chose three services, and majority (60.90%) chose more than three functions. This demonstrates that respondents are aware of

the effects of trees on residential areas. According to Ajewole and Owoeye (2012), the identification of several tree benefits in residential areas demonstrates that people are aware of the economic, health, social, and visual benefits of trees. Chi-square (χ^2) value of 18.264 at p-value 0.011 indicates that there is significant relationship between university resident staff and the number of tree functions selected, indicating that staff category is dependent on the number of tree functions selected. Plate 1 and 2 show trees adorning the houses surrounding the senior staff quarters on Phillipine Road and serving as shade for relaxation at junior staff quarters on Chapel Road at the University of Ibadan.



Plate 1: *Milicia excelsa* (Iroko) tree beautifying the Senior Staff Quarters (Phillipine Road)



Plate 2: *Ceasalpina pulcherima* tree serving as shade for relaxation at Junior Staff Quarters (Chapel Road)

Awareness of Tree Disservices in the University Environment

Table 2 shows that 60% of respondents were aware of the hazardous nature of trees to the university community, while 40% believed that trees do not pose a threat to the environment. Urban trees, in particular, provide a variety of ecosystem services to urban dwellers, but they can also be a source of harm and nuisance. Lyytimäki (2017) affirmed that urban trees may produce disservices depending on a variety of factors such as species composition, location of the tree in relation to other trees and built structures, growth patterns and life phase of the tree, stress caused by external conditions, and the intensity of maintenance activities. The study stated that it is critical to investigate the respondents' knowledge and experience with tree hazards as these influences how people value trees.

Table 2: Respondents' view of tree disservices to the community

	Frequency	Percentage
Yes	66	60
No	44	40
Total	110	100

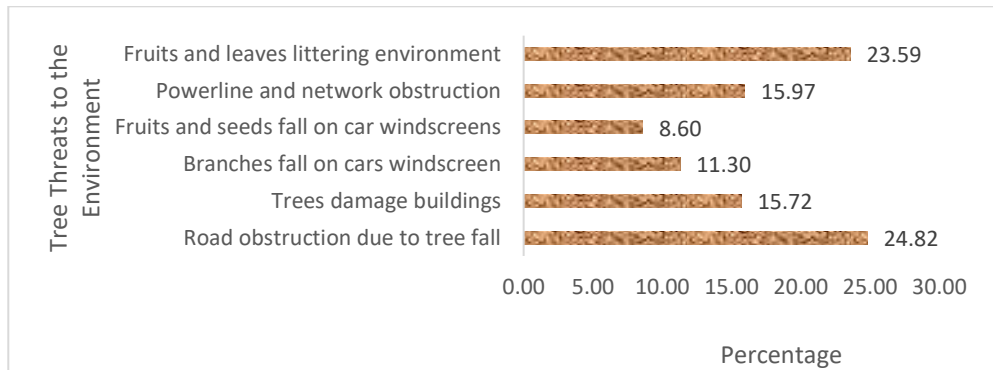


Figure 5: Frequency distribution (%) of identified tree threats

Figure 5 reveals that 24.82% of respondents reported that trees falling on roads were the most common hazard they encountered: 23.59% stated that littered fruits and leaves are a nuisance and endanger pedestrians and drivers, powerline and network obstruction (15.97%), tree branches and roots damaging buildings (15.72%) and fruits, seeds and branches falling on car windscreens (19.90%). The respondents claimed fruits and leaves that litter the environment can make pedestrian and driver paths slippery, resulting in accidents. Also, they stated that some trees are vulnerable to wind throw, thus, weak branches and trees may fall on powerline thereby causing power outage and accidents in the environment. Evidently from the results, trees can cause harm thereby influencing how people value trees in their environment.



Figure 6: Frequency Distribution (%) of reasons trees on campus have become hazardous

Furthermore, Figure 6 shows that 57.59% believe the trees on campus are old, 32.28% believe the trees are not well maintained, and 10.13% believe the trees are not healthy. This is consistent with the findings of Ajewole and Owoeye (2012), who discovered that 56.7% and 27.3% of students at the University of Ibadan, respectively, thought the challenges posed by trees on campus were due to the trees being old and poorly maintained.

Perception of the Benefits of Trees on the Campus of University of Ibadan

People's perceptions play a significant role in management decisions and long-term sustainability. Understanding resident staff perceptions and dispositions toward campus trees will allow campus tree managers to learn about the needs and expectations of staff from the trees, as well as from the managers of the trees, to ensure sustainable tree management. As a result, this section presents respondents' agreement or disagreement with some statements about campus trees.

Results in Table 3 reveal that 38.20% and 55.50% of the respondents agreed and strongly agreed respectively that trees are necessary within the premises of University of Ibadan because they are beneficial to man and the environment; 30.00% and 24.50% agreed and strongly agreed respectively that trees should still be planted in the University because the benefits appear to outweigh the associated risks; 43.60% and 48.20% agreed and strongly agreed respectively that presence of trees make university beautiful and appealing; 38.20% and 51.80% agreed and strongly agreed respectively that trees purify the air we breathe and thus promote healthy living; 46.40% and 43.60% agreed and strongly agreed respectively that trees on the university premises create a serene environment, which is essential for learning and productivity; and 42.70% and 26.40% respectively agreed and strongly agreed that presence of trees makes the University premises out from the surrounding environment.

Most of the respondents (93.70%) believed that trees are necessary on the University of Ibadan campus because of the benefits they provide. The respondents (54.50%) agreed

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that more trees should be planted in the university because the benefits outweighed the risks; 91.80% noted that trees beautify and make the environment more appealing; 90.00% indicated that trees purify the air we breathe and thus promote healthy living. Ninety percent (90.00%) agreed that trees in the University premises create a tranquil environment that is necessary for learning and productivity. According to 69.10% of respondents, the presence of trees distinguishes the university premises from the surrounding environment and a large proportion of university resident staff believed in trees' productive and protective roles.

Perception on Management of Trees on University of Ibadan Premises

Table 4 shows that 30.90% and 18.20% of the respondents agreed and strongly agreed that there are too many trees on the University campus and that they should be reduced, 26.40% and 13.60% disagreed and strongly disagreed, respectively, and 10.90% was undecided. This means that 49.10% of respondents think there are too many trees and that they should be cut down to prevent accidents, while 40.00% disagree. The results show that 35.50% and 50.90% agreed and strongly agreed, respectively, that old trees within the premises should be replaced by newly planted ones, while 30.00% and 24.50% agreed and strongly agreed, respectively, that more trees should be planted on the University campus in addition to replacing old ones.

The number of respondents who indicated that old trees should be replaced with new trees and that more trees should be planted demonstrates that trees are an important part of the environment, and their benefits should not be underestimated. Campus tree managers must therefore increase their efforts to ensure the long-term viability of these vital resources, as management is critical to keeping trees in good and healthy condition while also preventing them from posing a threat to people and property.

A sizable proportion of respondents (33.60% and 60.00%) agreed and strongly agreed respectively that proper management of trees in the University can reduce hazards associated with the trees, particularly when they grow old. However, 30.00% and 20.00% of the respondents disagreed and strongly disagreed with the statement that trees on the campus of University of Ibadan are currently well managed, respectively; 21.80% and 13.60% agreed and strongly agreed that the trees were well managed, respectively, and 14.50% were undecided. This means that 35.40% of the respondents thought the trees were well managed, 50.00% had a contrary opinion, and 14.60% were undecided. From these results, most of the respondents believe effective management of trees is lacking in the university premises.

Fortunately, a high percentage (42.70% and 34.50%) agreed and strongly agreed that forestry education should not be limited to the Department of Forest Resources Management. Furthermore, 34.50% disagreed and 30.00% strongly disagreed that an awareness campaign about planting trees on the campus is unnecessary.

The study thus revealed that the majority of respondents (93.60%) believed that proper management of trees in the University can reduce hazards associated with the trees, 49.10% believe that trees are too numerous and should be reduced, 86.40% agreed that old trees within the premises should be replaced by newly planted ones, and 54.50% agreed that, in addition to replacing old ones, more trees should be planted. Furthermore, 77.20% believed that forestry education should not be limited to the Department of Forest Resources Management, and 64.5% saw the need for a campus-wide awareness campaign for tree planting.

Table 3: Frequency distribution (%) of perception on benefits of trees on the campus of University of Ibadan

Statement	SA	A	U	SD	D	Total (%)
Trees are necessary within the premises of University of Ibadan because they are beneficial to man and the environment.	55.50	38.20	0.90	2.70	2.70	100
Although there are risks associated with presence of trees within the university premises, the benefits of trees in the university seem to surpass the risk therefore, trees should still be planted in the university	24.50	30.00	19.10	10.00	16.40	100
Presence of trees makes University of Ibadan to be beautiful and Attractive	48.20	43.60	1.80	2.70	3.60	100
Trees purify the air we breathe and therefore enhances healthy living	51.80	38.20	2.70	1.80	5.50	100
Trees in the University premises makes the environment to be serene, which is essential for learning and productivity	43.60	46.40	6.40	1.80	1.80	100
Presence of trees marks the university premises out from the surrounding environment	26.40	42.70	16.40	6.40	8.20	100

SA = Strongly agree, A = Agree, U = I don't know, SD = Strongly disagree, D = Disagree

Table 4: Frequency distribution of perception on the management of the trees on the campus

Statements	SA	A	U	SD	D	Total (%)
Trees in University of Ibadan premises are too many and I therefore suggest that they should be reduced	18.20	30.90	10.90	13.60	26.40	100
Old trees within the premises of University of Ibadan should be replaced by newly planted ones in order to enjoy the benefits.	50.90	35.50	6.40	2.7	4.50	100
More trees should be planted within the premises of University of Ibadan	24.50	30.00	19.10	10.0	16.40	100
Proper management of trees in the University can reduce hazards associated with the trees particularly when growing old	60.00	33.60	3.60	2.7	0	100
In my opinion, trees in the University are presently well managed	13.60	21.80	14.50	20.0	30.00	100
Forestry education should not be limited to the department of forest resources management	34.50	42.70	10.90	5.5	6.40	100
Awareness campaigns on planting more trees for environmental sustainability is not necessary in the University of Ibadan	10.00	19.10	6.40	30.0	34.50	100

SA = Strongly agree, A = Agree, U = I don't know, SD = Strongly disagree, D = Disagree

CONCLUSION

The findings revealed that the University of Ibadan staff have benefited from the trees' services and functions. Despite the fact that a large percentage of respondents identified more than three environmental services provided by trees, many respondents underestimated some functions of trees and are unaware of the numerous personal benefits derived from trees. Furthermore, one possibility is that the interplay between perceived services and disservices of trees on university premises could affect human beings by causing structural damage to private or public infrastructure, as well as influencing management decisions. Some staff members believed trees posed a threat to the university community due to a variety of factors including: many trees on campus are too old, trees are unhealthy, and trees are poorly maintained. The Campus Tree Management Committee should therefore create an action plan that focuses on tree hazards mitigation and the promotion of sustainable greenery for the University environment.

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