PUBLIC AWARENESS ON THE IMPORTANCE OF URBAN FOREST PARKS IN KOTA KINABALU CITY, SABAH

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ABSTRACT *Kota Kinabalu City has several urban parks, which has become the centre of urban green space. However the function of the urban park is still not fully recognized. In addition, the enlightenment concept of urban forestry is still unclear in view of the public. This study aims to provide an assessment of the functions of each park in the city of Kota Kinabalu via public perception. Furthermore, it also aims to identify on public awareness about urban forestry concept. There are eight parks that were selected as the location of the study. The Parks comprise of public and pocket parks that are maintained solely by the Kota Kinabalu City Hall. The sampling method used in this study is convenience sampling with questionnaires involving 160 respondents, of whom the target group are the park visitors. The results of the study show a total of 153 (95.6%) respondents agreed that each park has distinct and separated functions. It also shows that urban parks such as Prince Philip Public Park, Teluk Likas Park, Tun Fuad Stephen Public Park, and Ujana Rimba Public Park have recreation as the main function, meanwhile Tugu Petagas Public Park, Kampung Air Pocket Park, and Lintasan Deasoka Pocket Park have aesthetic as the main function, whilst the Signal Hill Park is found to serve as soil erosion control. In addition, a total of 123 (76.9%) of respondents understood the concept of urban forestry as planning and management of trees in urban area. As a conclusion, recreation and aesthetic are the main functions for all of the selected urban parks in the city of Kota Kinabalu city. Besides that, it is found that most of the public are aware of the existence of urban forest concept in the city of Kota Kinabalu.*

KEYWORDS. Public awareness, urban forest park, urban forest, and Kota Kinabalu, Sabah

INTRODUCTION

Urban forestry is a management practice in contributing physiology, sociology, and economics to the public. It is associated with an area that is covered with timber, a group of timber or an individual timber in which people live (Mojiol and Maznah, 2000). Urban Forestry covers tree management and a group of trees. Urban forester sees this concept as arboriculture. It is the growth and treatment process of either individual, small orlarge groups that are intended for decorative purposes without seeing the benefits (Miller, 2007).

The concept of urban forestry has long existed and being grown rapidly in developing countries. It is proven by the establishment of the Institute for Environmental

Studies, which was established by the U.S. Forest Service in 1970. The institution has become a center to train researchers in conducting research on urban forestry (Carter, 1993).

Urban green space (UGS) is defined as all publicly owned and publicly accessible open space with a high degree of cover by vegetation, e.g. parks, woodlands, nature areas and other green space. It can have a designed or cultural character as well as a more natural character. Only areas that can be entered by users are included (Schipperijn, 2010). Elements that create green lungs refer to the form of physical landscape that has coverage area, which includes vegetations or water element (JPBD, 1995).

METHODOLOGY

This study was conducted at urban parks in the city of Kota Kinabalu. There are eight (8) parks selected, and each park is being maintained solely by Kota Kinabalu City Hall. The parks are namely Prince Philip Public Park, Teluk Likas Public Park, Tugu Petagas Public Park, Tun Fuad Stephen Park, Ujana Rimba Public Park, Kampung Air Pocket Park, Lintasan Deasoka Pocket Park and Signal Hill Park.The sampling method that was used in this study is convenience sampling with semi-structured questionnaire. The questionnaires are distributed randomly to 160 respondents, of whom 20 respondents are targeted for each public park. The target group for this study is park visitors. The questionnaires are also distributed equally for both sexes. The questionnaire is divided into 3 sections; demographic information, perception on the importance of urban forestry, and assessment of function of urban forest park. The questionnaire are multiple-choice questions involving likert scale types. There is also an open-ended question asking about the respondent's opinion on urban forestry. For the assessment of urban forest parks functions, it was conducted by matrix score rating based on public perception which are identified namely as very agree, agreeable, fair, disagree and very disagree. There are seven (7) functions listed in the rating, which are recreation, aesthetic value, education, pollution reduction, wildlife habitat, wind barrier, and soil erosion control.

RESULTS AND DISCUSSIONS

Demographic information

This study involves respondents of varying age groups. People who most frequently visited the parks are in age groups which ranges between of 18 to 29 years old (63.1%), followed by 30 to 49 years old (25%), age 50 to 65 years old (8.1%), less than 17 years old (3.1%), and lastly fewer by people in age group of above 65 years old (0.6%) as shown in Figure 1. Besides, most of the people that are visiting the parks have good education level of undergraduate degree (47.5%), diploma (21.25%), and high school (18.13%) as in Figure 2.

For park visitor status, it appears that most the respondents are the urban citizen who live near to Kota Kinabalu city, which is 49.38%. The park visitors who live outside from the urban center are 43.13%, while international tourists from other countries are 7.5%, as

shown in Figure 3. For ethnicity status, the local ethnic, non-local ethnic, and foreign nations have significant differences in percentages, which are 80%, 11.25%, and 8.75% respectively, as in Figure 4. The reason why this class of age group visited frequently to the park is because of the greater amount of energy they have to do recreational activities. Besides that, they may have other different motivation to visit the park such as for social interaction.

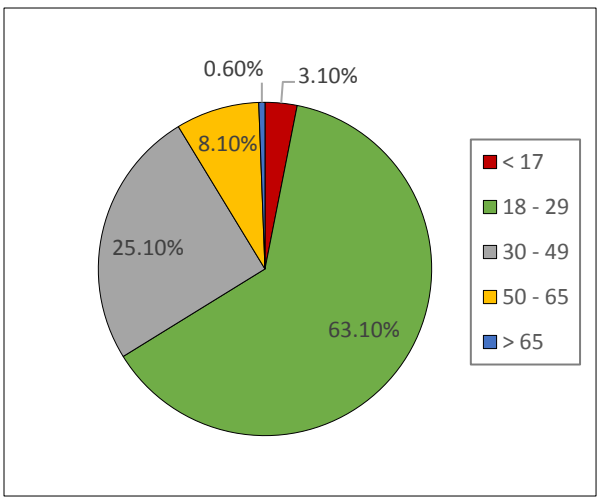

Figure 1: Percentage Age of respondents

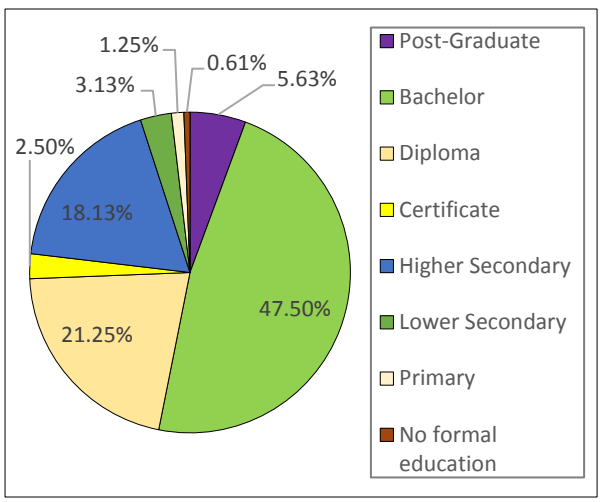

Figure 2: Education level of respondent

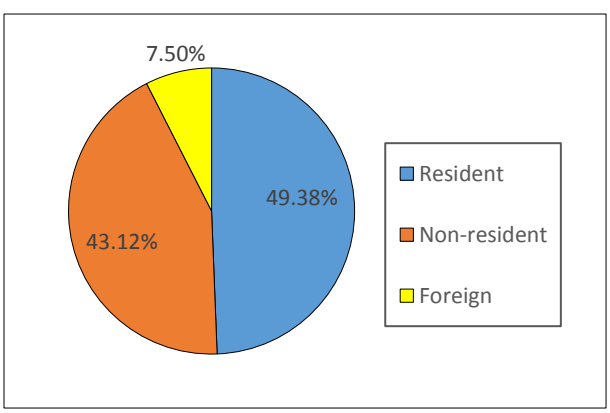

Figure 3: Park visitor status

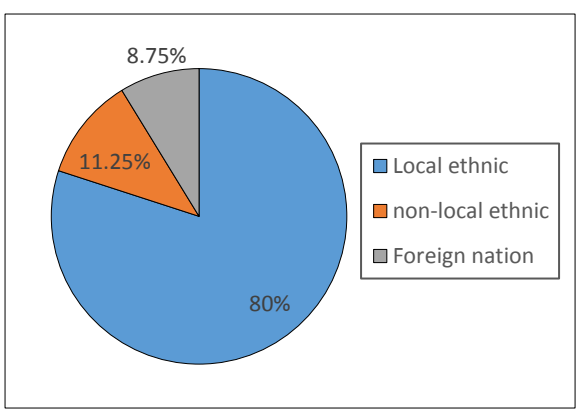

Figure 4: Ethnicity percentage of respondents

Perception of Urban Forestry

About 76.9% of the respondents understood the concept of urban forestry, as shown in Figure 5. For the importance of establishing park in urban areas, 56.9% of them agreed that it is a "very important" matter, followed by 40% who agreed that it is just "important" as shown in Figure 7. While 96 of the respondents have stated their reasons, which include

16.7% of urban park are for aesthetic value, 15.6% for relaxation and serenity, and 13.5% for natural and ecosystem balance. Majority of the respondents (91.9%), have agreed that the city of Kota Kinabalu has the potential to be developed as an environmental-friendly urban town in the future, as shown in Figure 6.

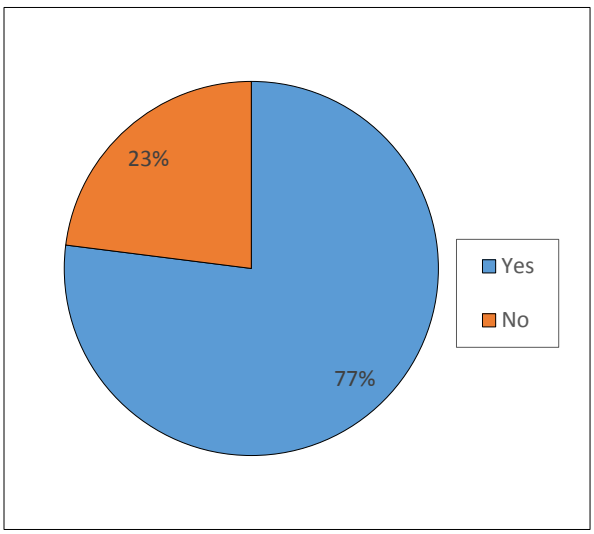

Figure 5: Percentage of respondents understand the concept of urban forestry

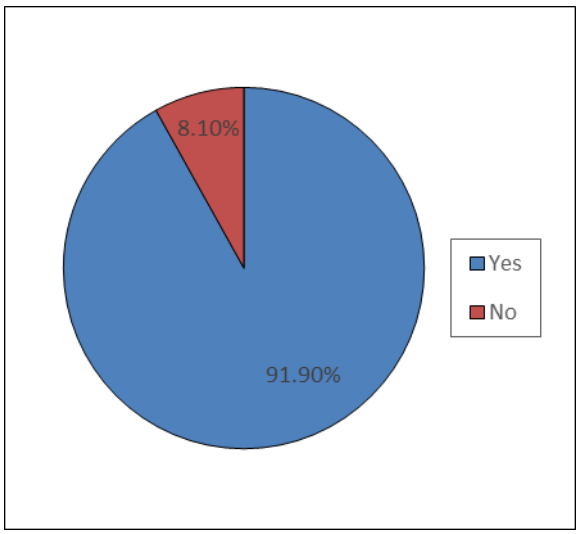

Figure 6: Potentials of city of Kota Kinabalu becoming environmental friendly town

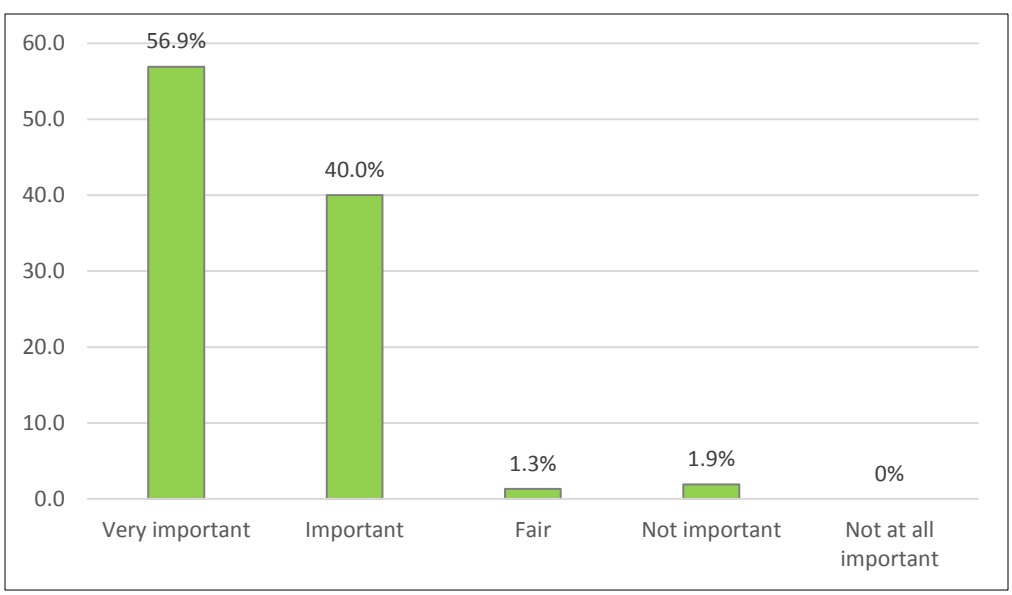

Figure 7: Percentage level of importance of urban forest park establishment in urban areas

The results show that most of the respondents have acknowledged the existence of the urban forestry concept. Awareness of this concept, in fact, has caught their attention since a long time ago, especially when the Kota Kinabalu city hall initiated an urban landscape theme for Kota Kinabalu city as a "Tropical City Park" in the year of 2000. Most of them are aware of its existence, but they are less concerned on the effort of ensuing the concept (Adi Rahimi, 2002).

Assessment of Park Functions

In examining the opinion of the public visitors about the existence of distinctive function of the parks, most of the respondentswhich is 95.63%, have agreed that every urban park has its own distinct function. Table 1 shows that the mean score for the assessment of urban forest functions between eight public parks as listed. From the findings, the recreation and aesthetic function are found to have the highest mean score for most of the parks. Recreational function has the highest mean score for Prince Philip, Teluk Likas, Tun Fuad Stephen, and Ujana Rimba Public Park respectively. While, aesthetic function was found to be the highest mean score for Tugu Petagas, Kampung Air and Lintasan Deasoka pocket park. The only park that has the highest score of mean function other than recreation and aesthetic value function is Taman Signal Hill, which has highest score for soil erosion control.

Many of them believe that the existence of parks in urban areas is very important. They argue that the existence of park can provide aesthetic, natural and ecosystem balance to the city. Some of them stated that urban parks can provide a place to relax and serenity. This is one of the keys for park establishment because it is not only the place for relaxation, but by its natural surroundings. In addition according to Grahn dan Stigsdotter (2010) a combination of refuge, nature and rich in tree species, and a low or no presence of societal, could be interpreted as the most restorative environment for stressed individuals. Besides that, respondents also have high expectation on the potential of Kota Kinabalu city as an environmentally friendly town. All groups of people are in fact preferred to the development that included more to nature particularly with suitable trees species, less visually bulky, and less contrasted with the environment (Kearney *et al.*, 2008). From the results, every urban park has a distinct function. Most of the respondents agree to the statement. The actual function of park refers to the main function of the park has. It can be seen on the main objective of why the park is established. For example, a park that was established in a residential area has the main function of promoting recreation among the neighborhood. Other than that, a park that was established in the highland could prevent the incident of landslide.

The results also show that the recreation and aesthetic function are the most preferred choice of urban forest park in parks of Kota Kinabalu city. Both functions can be seen clearly on each park. Indeed, there is no doubt that the urban forest has a good potential of providing residential area and natural recreation (Vince *et al.*, 2005). Moreover, the aesthetic value of the city is created through the combination of natural and concrete elements (Mojiol and Maznah, 2000). Other functions, which are education, pollution reduction, wildlife habitat,

wind barrier, and soil erosion control do exist in every park in the city of Kota Kinabalu, but they are considered to be less important compared to the recreation and aesthetic function

Table 1: Mean Scores for Urban forest functions between each Parks

Location	Function	N	Min	Max	Score Mean	Standard deviation
Prince Philip Public Park, Tanjung Aru	Recreation	20	1	5	4.35	0.587
	Wind barrier	20	1	5	3.8	1.196
	Aesthetic value	20	1	5	3.6	0.94
	Soil erosion control	20	1	5	3.5	1.235
	Pollution reduction	20	1	5	3.4	1.429
	Wildlife habitat	20	1	5	3.05	1.191
	Education	20	1	5	2.8	1.196
Teluk Likas Public Park	Recreation	20	1	5	4.15	0.933
	Aesthetic value	20	1	5	4.1	0.912
	Pollution reduction	20	1	5	4	0.973
	Education	20	1	5	3.65	1.137
	Wildlife habitat	20	1	5	3.65	1.268
	Soil erosion control	20	1	5	3.65	1.089
	Wind barrier	20	1	5	3.6	1.314
Tugu Petagas Public Park	Aesthetic value	20	1	5	4.15	0.489
	Recreation	20	1	5	3.8	1.24
	Education	20	1	5	3.75	1.07
	Pollution reduction	20	1	5	3.5	1
	Soil erosion control	20	1	5	3.35	1.04
	Wind barrier	20	1	4	3.2	0.951
	Wildlife habitat	20	1	5	3	1.026
Tun Fuad Stephen Park	Recreation	20	1	5	4.7	0.47
	Soil erosion control	20	1	5	4.2	0.696
	Pollution reduction	20	1	5	4.05	0.605
	Aesthetic value	20	1	5	4	0.649
	Wildlife habitat	20	1	5	3.9	1.071
	Wind barrier	20	1	5	3.9	0.788
	Education	20	1	5	3.5	0.688
Ujana Rimba Public Park	Recreation	20	1	5	4.6	0.598
	Aesthetic value	20	1	5	4.3	0.657
	Soil erosion control	20	1	5	4.25	0.716
	Education	20	1	5	3.9	0.912
	Pollution reduction	20	1	5	3.85	0.933
	Wind barrier	20	1	5	3.6	1.188
	Wildlife habitat	20	1	5	3	1.298
Kampung Air Pocket Park	Aesthetic value	20	1	5	3.45	0.999
	Recreation	20	1	5	3.4	1.501
	Pollution reduction	20	1	5	3.15	1.461
	Wildlife habitat	20	1	5	2.75	1.209
	Education	20	1	5	2.65	1.387
	Wind barrier	20	1	5	2.65	1.226
	Soil erosion control	20	1	5	3	1.338
Lintasan Deasoka Pocket Park	Aesthetic value	20	1	5	4.05	0.945
	Pollution reduction	20	1	5	3.75	0.851
	Recreation	20	1	5	3.5	1.277
	Wind barrier	20	1	5	3.35	1.309
	Soil erosion control	20	1	5	3.25	1.118
	Education	20	1	5	3.15	1.268
	Wildlife habitat	20	1	5	2.55	1.05
Signal Hill Urban Park	Soil erosion control	20	1	5	4.25	0.639
	Aesthetic value	20	1	5	4.05	0.51
	Pollution reduction	20	1	5	3.85	1.137
	Wildlife habitat	20	1	5	3.8	1.105
	Wind barrier	20	1	5	3.6	1.188
	Education	20	1	5	3.2	1.508
	Recreation	20	1	5	3	1.686
Total					3.610714	1.039232143

Note: 5 = Very agree, 4= Agree, 3 Fair, 2= Disagree and 1 = Very disagree

The Signal Hill park has a different situation compared to the other seven (7) parks. The results show that the park has a more important function on the soil erosion control compared to recreational function. This occurs due to its location on the hilly area. The potential for landslide to occur in this hilly area is higher. The establishment of this park could help in preventing the landslide to occur because it is surrounded by tree cover. Availability to prevent the occurrence of landslides is occurred by several factors, such as inhibition through binding of soil particles grounded by the roots, the physical constraints of ground motion by the principal, and reduced soil moisture due to sweating by the trees (Gilman, 1997). Furthermore, the lack of recreation facility in that area has made the park to be unavailable for other functions.

Table 2: Analysis of Variance (Anova) of the differences of importance level of functions between parks

		Sum of Squares	df	Mean Square	F	Sig.
Recreation	Between Groups	52.275	7	7.468	5.940	.000
	Within Groups	191.100	152	1.257		
	Total	243.375	159			
Aesthetic value	Between Groups	11.575	7	1.654	2.668	.012
	Within Groups	94.200	152	.620		
	Total	105.775	159			
Education	Between Groups	28.500	7	4.071	2.967	.006
	Within Groups	208.600	152	1.372		
	Total	237.100	159			
Pollution reduction	Between Groups	13.844	7	1.978	1.687	.116
	Within Groups	178.150	152	1.172		
	Total	191.994	159			
Wildlife habitat	Between Groups	35.575	7	5.082	3.802	.001
	Within Groups	203.200	152	1.337		
	Total	238.775	159			
Wind barrier	Between Groups	22.075	7	3.154	2.353	.026
	Within Groups	203.700	152	1.340		
	Total	225.775	159			
Soil erosion control	Between Groups	34.194	7	4.885	4.743	.000
	Within Groups	156.550	152	1.030		
	Total	190.744	159			

Note: significant level at $P < 0.05$

The results of analysis of variance (Anova) show that the there are significant differences between the level importance of urban forest function and parks in Kota Kinabalu ($p < 0.05$), especially for recreation function, aesthetic, education, wildlife habitat, wind barrier, and soil erosion control. However, the p-value is not significant in the pollution reduction function as the value of p is higher than the alpha value, which is 0.05.

CONCLUSION

Based on the assessment of urban park function via public perception, the study has found that the recreation and aesthetic value are the important functions for most of the urban parks in the Kota Kinabalu city. The analysis of variance has revealed that there is no significant difference on the mean score of importance level function among the parks.The study also found that most of the public are aware and understand the concept of urban forestry. They do feel that the concept is relevant to the Kota Kinabalu city as one of the important elements known as 'Tropical City Park'.

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REFERENCES

Adi Rahman (2002). *Kesedaran Penduduk Kota Kinabalu Terhadap Konsep Bandaraya Taman Tropika*. Tidak diterbitkan. Universiti Malaysia Sabah.

Carter, E. J. (1993). The potential of urban forestry in developing countries: a concept paper. FAO

Gilman, E.F. (1997). *Trees for Urban and Suburban Landscapes*. Delmer Publisher, United State of America.

Grahn, P., & Stigsdotter, U.K. (2010). The Relation between Perceived Sensory Dimensions of Urban Green Space and Stress Restoration. *Landscape and UrbanPlanning* **94**, pp. 57-64.

JPBD. (1995). Garis Panduan Landskap Negara. Jabatan Perancangan Bandar dan Desa Semananjung Malaysia, Kementerian Perumahan dan Kerajaan Tempatan. Malaysia

Kearney, A.R., Bradley, G.A., Petrich, C.H., Kaplan, R., Kaplan, S., & Simpson-Colebank,D. (2008). Public Perception as Support for Scenic Quality Regulation in a Nationaly Treasured Landscape. *Landscape and Urban Planning* **87**, pp. 117-128.

Miller R. W. (2007). Urban Forestry: Planning and Managing Urban Greenspaces 2nd Edition. Prentice Hall, Upper Saddle River, New Jersey USA.

Mojiol, A.R., & Maznah Mahali.(2000). *Penyelenggaraan Pokok-pokok Bandar*. Universiti Malaysia Sabah, Kota Kinabalu.

Schipperijn, J.J. (2010). Use of Urban Green Space. Forest & Landscape Research. Skov & Landskab, Københavns Universitet.

Vince, S.W., Duryea, M.L., Macie,E.A., & Hermansen,L.A. (2005). *Forest at The Wildland-Urban Interface: Conservation and Management*. CRC Press LLC, United State of America.