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URBAN RESIDENTS' ATTITUDES TOWARD WILDLIFE IN THEIR NEIGHBOURHOODS: THE CASE STUDY OF KLANG VALLEY, MALAYSIA

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Abstract
Rapid urbanisation in Malaysia has resulted in the loss and fragmentation of lowland tropical forests. Due to the modification of habitat needs provided by these natural green, the diversity and population of urban wildlife have been significantly reduced. Urban parks provided are recognized as an effective urban conservation strategy to mitigate the effects of urbanisation by conserving, enhancing and creating new habitats for urban wildlife. Potential of neighbourhood green spaces to function as urban wildlife habitats has not been optimized. This research investigates urban residents' responses to different dimension of attitudes toward common wildlife; and their needs for wildlife in the contact of sustainable living in the Klang Valley. The research, has sought to investigate through a combination of surveys and observations on residents' attitudes toward urban wildlife. The findings demonstrated selective preferences towards urban wildlife while residents displayed strong preferences toward naturalistic landscape elements compared to man-made landscape elements.

Keywords: Sustainable urban residential, residents' attitudes, urban wildlife.

INTRODUCTION

The rapid urban growth had created enormous and unprecedented pressure on land resources that resulted in a significant reduction and fragmentation of forested areas. Much has been done to ensure the awareness on importance of urban wildlife. The purpose of this paper is to investigate the residents' knowledge on the importance of wildlife, their interest and experience with common urban wildlife in the vicinity of their neighbourhoods. This paper had also sought to uncover relevant aspects of neighbourhoods that influence the residents' preference for staying in the neighbourhoods. The attitudes of residents are evaluated and used to inform subsequent efforts toward ensuring the conservation of urban wildlife. The research also investigates residents' attitudes influenced by their socio cultural and demographic diversity. The major issues and problems encountered, and solutions arrived are also discussed.

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SUSTAINABLE URBAN RESIDENTIAL COMMUNITY

Sustainable housing development has become a growing concern among policy makers and practitioners of built environment (Liu, 2001; Jia, 2001). This is because human settlement is the main component in the sustainable development of society and a residential community is a place that people live in for an extensive time. Thus, long term health and prosperity ultimately rely on the ambience of the built and the natural environment surrounding the residents.

In recent years, researches have focused on outlining principles for planning and designing sustainable residential communities. Notwithstanding the different strategies adopted, there is a consensus that sustainable residential communities can be created by promoting ecological integrity and by providing for economic viability and social equity (Grant, 1996). The particular form that an urban housing exhibits is the product of the reciprocal relationship between humans and the ecological systems in the area that bind together to create an urban landscape that changes through the course of time.

Research on urban wildlife management in developed countries has identified the importance of providing wildlife habitat in neighbourhood as a strategy for sustainable community (Nilon and Pais, 1997). Harrison et al. (1987) specified the importance of providing local sites for the residents to view wildlife within one kilometer of their homes.

In the United States of America, Ahwahnee Principles were established to form the basis for sustainable communities. They identified areas including community design that are addressed by specific strategies including ample supply of green open spaces, continuous system of greenbelts as wildlife corridors, preservation of natural terrains and vegetation, and minimising of waste (Grant, 1996). The Town and Country Planning Association of the United Kigdom (2004) observed that supporting a richness of biodiversity is one way towards building more sustainable neigbourhoods. Live case studies illustrated that efforts to design green spaces in residential development for wildlife diversity should begin at the earliest stage of master planning.

In the Malaysian context, the government has formulated several national policies and guidelines for sustainable planning including Agenda 21 and Local Agenda 21. The emphasis of trends in settlement planning has shifted from that of conventional design to one that is contemporary, incorporating concerns for sustainability (Halimaton, 2007). This includes exploiting innovative designs (preservation of natural topography, sustainable open space network and optimum layout) and changing lifestyle choices (open space network, neighbourhood living and cul-de-sac vs. grid-iron-road pattern). The Department of Environment has introduced the Bandar Lestari Environment Award

to accord recognition to sustainable cities that integrate environment in their planning and design (Noor Baizzura, 2005).

Recent trends in residential development in the Klang Valley showed a paradigm shift in the perception and attitudes toward neighbourhood green spaces. Malaysian has shifted their views on landscape as living spaces that attribute to the quality of life (Kamariyah, 2003; Ismail, 2007). The emphasis is on detailed space planning where daily activities are carried out (Kamariyah, 2003). As public awareness and concern in environmental protection and stewardship escalated, more and more housing developers began looking into alternative approaches toward providing livable and sustainable residential communities.

Impacts of Residential Development on Urban Wildlife Habitats

Several studies have investigated the impacts of urban residential developments on wildlife habitats and movement (Henderson and O'Herrens, 1992; Miller and Hobbs, 2002; Soule, 1991). The findings indicated that new residential developments do adversely affect wildlife habitats by degrading the key requirements of wildlife survival, thus resulting in the loss of cover and native vegetation. Miller and Hobbs (2002) cited that the linear layout of residential schemes and physical barriers such as roads, buildings and fencing also contribute significantly to the loss of wildlife. The Selangor Department of Wildlife and National Parks in Malaysia, has identified the loss and degradation of suitable habitats. According to its officer:

> "Wild birds such as the Night Herons and Cattle egrets are like nomads now, migrating from one place to another for their roosting sites. The habitat for these wild birds was previously at Tasik Puteri in Rawang before disturbances in the area caused the flock migrate to its present location in Taman Garing, Rawang. Even the present site is suitable as there are frequent human disturbances...Permanent habitat is urgently needed as open spaces for protected species to breed are disappearing fast" (Abdul Jalal Kasim, Head of Investigation Unit, Department of Wildlife and Parks, 2009).

SIGNIFICANCE OF URBAN GREEN SPACE AS WILDLIFE HABITATS

Urbanisation in the Klang Valley has resulted in a significant loss of wildlife habitats due to the reduction and fragmentation of natural green areas. Consequently, this has severely disrupted important wildlife movements cross natural corridors (Willmer, 2000). This issue is further compounded by the re-arrangement of habitat resources (including food, water, shelter and nesting) previously provided by the dipterocarp

forest, which is now replaced by secondary forests and the introduction of new plant species (Gilbert, 1989; Adams, 1994; Hadidian, 1992).

Notwithstanding the severe loss, degradation and fragmentation of natural habitats, extensive studies on urban green spaces in Malaysia revealed that these spaces still support selective wildlife if their ecological features are retained. A bird inventory conducted in the Forest Research Institute of Malaysia (FRIM) in 2002 recorded a total of 181 bird species from 45 families, mostly comprising lowland species while 26 migratory species were found from September to April (Ong, 2003). Similarly, an inventory of urban birds conducted in Taman Tasik Perdana identified 24 species including 11 fruitivorous, 4 insectivorous and 3 omnivorous bird species (Sharifah Dora, 2007).

These studies indicate that despite a significant loss of dipterocarp forests, existing urban green spaces including fragmented urban forests, campuses and urban parks still support wildlife. However, previous studies conducted by Yap and Sodhi (2004), Rosli (2001) and Rosli (2004) highlighted the fact that majority of urban wildlife consist of generalist and invasive species with 72 bird species (10% of total Malaysian birds) comprised introduced and invasive species. These include House Crows (*Corvus splendens*), House Sparrows (*Passer montanus*) and Rock Pigeon (*Columba livia*). The high composition of these generalist bird species indicates a high level of habitat disturbances as only the invasive species, having a generalist feeding habits can survive in a disturbed urban environment.

Displaced birds which depend on specialised diets often fail to re-establish themselves in neighbouring forests due to the restructuring of vegetation from the dipterocarp forest to secondary forest and introduced vegetation, of which they have not adapted to in their feeding habits (Rosli, 2001). As specialist bird species including kingfishers, hornbills and flycatchers have their preferences of resources available only in a particular habitat, fragmented forests thus failed to function as urban habitats. The increase in animal species categorized as endangered, vulnerable or rare, from 21 species in 1986 to 85 species in 1996, indicates that species under threat of extinction are rising at an alarming rate (Yong, 1998).

Rosli (2001) investigated the effects of forest disturbances on birds inhabiting three fragmented urban forest islands in the Klang Valley, namely the Bukit Gasing Forest Reserve, the Bukit Seputih Forest Reserve and in a patch of green area located in University of Malaya campus. The findings indicated that both migrant and large resident birds such as the Crested Serpent Eagle and the Red Jungle Fowl, are less tolerant to habitat modifications and disturbances as they require large foraging areas. Specialist birds including the White-throated Kingfishers (*Halcyon smyrnensis*) and

the Olive-backed Sunbirds (*Nectarinia jugularis*), with specific habitat requirements, have disappeared from their main ecosystem.

Based on the above findings, the research identified a gap in the pattern and distribution of green spaces that led to an investigation on the design approaches to be adopted in green space designs towards attracting a diversity of wildlife, including specialist species to return to a sustainable urban ecosystem.

RESIDENTS' ATTITUDES ON URBAN WILDLIFE

Attitudes toward wildlife has changed from a dominating and utilitarian one to a more humanistic one defined by a strong interest and affection for individual animal (Shaw, 1985). In a survey of residents of Kansas City, 93% of the respondents described the wildlife around their homes as "enjoyable" rather than pests, and only 13% reported that they had wildlife-related problems.

Studies on attitudes recognize that basic components that make up the community's attitudes are cognitive (knowledge and value component), affective (feelings component) and behavioural in nature (the action tendency that results or experience) (Thomas and DeGraaf, 1973; Woolcott et al., 2002). In this light, the attitudes of residents can be measured using several variables comprising personal interests/ desirability for each species, the social and environmental benefits brought on by wildlife and the experiences encountered by residents with wildlife.

The personal interests (feelings) of residents toward urban wildlife are influenced by demographic variables including types of dwelling, location, gender and age group (Woolcott et al., 2002; Hadidian et al., 1992). Those living in residences with ample green space such as bungalows are more likely to show interest in adopting positive behaviors, compared to those residing in apartments/townhouses. Age factor also significantly influences the typology of wildlife favoured. Children favour touching crawling smaller animals such as worms and beetles compared to older residents who favour listening to sounds made by birds and watching their movements.

The New South Wales National Parks and Wildlife Service investigated the attitudes, needs and practices of residential community on wildlife. The findings indicate that dwelling types and location have significant influence on the residents' attitudes toward urban wildlife (Woolcott et al., 2002). Those living in landed properties adopted highly positive behaviours toward wildlife.

Meanwhile, in a benchmark study on residents in Illinois, Mankin et al. (1999) observed three related factors comprising of place of residence, gender and age group

that influenced the different attitudes of residents toward wildlife. According to Butler et al., (2001), the social value of wildlife can be measured by four compromising the presence of wildlife as an indicator of an environmental quality, the ecological role by wildlife, the understanding wildlife behaviours and the existence of wildlife in a natural environment.

While the positive attitudes of urban residents are indicated by the interest and value of social benefits brought on by wildlife, the residents' tolerance are determined by the experiences encountered with wildlife (Dagg, 1970). Six categories of wildlife-related problems were identified including damage done to landscape, structures and vegetable gardens and the pollution generated by noise and foul odor (O'Donnell and Vandruff, 1983). In Malaysia, complaints were reported on the problems caused by monkeys and crows (Department of Wildlife and National Parks, 1992).

There is no consensus on the criteria that can be used to classify urban wildlife as it is ultimately the personal interest of an individual that will determine if an animal species is preferred or not (Thomas and DeGraaf, 1973). However, this research concur the view of Flint (1985) and Butler et al. (2001) to classify urban wildlife as being either favourable, a nuisance or a danger to residents. This has provided some insight into what aspects render a species acceptable in green spaces.

a. Favourable wildlife are animals which considered friendly, attractive and desirable. This group of animals includes resident and migratory birds such as songbirds, purple herons and egrets, tortoises, beetles, butterflies, dragonflies and squirrels.
b. Nuisance Wildlife are annoying animals with desirable attributes. They are noisy, smelly, potentially dangerous to humans pets and homes, and are dirty or unhealthy. This group of animals includes monkeys, spiders, bats, civets, crows, frogs and toads.
c. Dangerous wildlife are undesirable animals considered destructive, treating and potentially harmful to humans, pets and homes. This group includes snakes, bees, wasps and wild boars.

The risks and losses incurred by urban residents have changed their perception toward selected wildlife as being pests and nuisance. In Malaysia, the major complaints on wildlife species are against the Long-tailed Macaque (923), civets (33), python (16), monitor lizard (2), and birds (7) (Department of Wildlife and National Parks, 1992). They have caused severe damages to plantations and buildings and they thrive on almost all food types thus rendering them a nuisance to domestic households (Siti Hawa, 2007). Although monkeys are protected under the Wildlife Protection Act, 1972 (Act 76), they are considered a bane as they are opportunistic animals that easily reproduce.

RESEARCH METHODS

A comparative research strategy is used for this research where other factors, except residents' attitudes toward urban wildlife, in their neighbourhood, were eliminated. This required the development of a survey method, sample and site selection strategy as explained in the following sections.

Study Area

The residential schemes are selected based on (a) visual evidence of urban wildlife in these residential schemes; (b) mixed residential schemes (bungalows, semi-detached and terrace houses); (c) the phases of residential units completed at least five years earlier; and (d) presence of water bodies or forests contiguous to the developments.

The survey is confined to six neighbourhood schemes in the Klang Valley. This is due to the more significant impact of urbanisation experienced in Klang Valley as compared to other urban areas in the country. The study areas selected are Bukit Jelutong, Shah Alam (2205 acres, 1997), Kota Kemuning, Shah Alam (1820 acres, 1995), Kota Damansara, Damansara (3925 acres, 1989), Bandar Tun Hussein Onn, Cheras (752 acres, 1990), Taman Tun Dr Ismail, Damansara (286 acres, 1974) and Taman Tun Abdul Razak, Ampang (200 hectares, 1980).

Sampling Method and Size

A quota sampling method was conducted for the purpose of this study. Quota sampling is a form of non-probability sampling in which sub-samples are selected from a clearly defined group (Baker, 1999). This type of sampling is very useful where the participation of the minority group is critical. In the context of this research, the defined group was the house types that comprises of bungalows, semi-detached and terraces.

The survey involved a total of 2,857 residents comprising 600 residents (Bukit Jelutong), 546 residents (Kota Kemuning), 518 residents (Kota Damansara), 350 residents (Bandar Tun Hussein Onn), 400 residents (Taman Tun Dr Ismail) and 443 residents (Taman Tun Abdul Razak). The residents were selected based on the composition of terrace, semi-detached and bungalows types of housing.

Although Rasimah (2006) observed that a 95% level of confidence is appropriate, it is also observed that a larger sample would provide more accurate results. As it is expected that non-response will occur, this study had made allowance for the non-response by increasing the sample size.

The Survey

Analysis focuses on the main aspects of a) the background of each residential scheme which discusses factors relating to location, type and size of housing development and the original site and environmental conditions, b) the master planning (if any) and designing of green space and waterways, and the types of habitats and common wildlife observed on sites, c) linkages within and outside of residential schemes, d) linkages to the local neighbourhoods (only for Putrajaya and Shah Alam townships.)

RESULTS AND FINDINGS

Out of a total of 2,857 survey questionnaires distributed to the homes of the residents, 559 respondents (19.6%) responded by post. The largest group of respondents was from Taman Tun Dr Ismail (19.5%), followed closely by Kota Kemuning (18.6%), Taman Tun Abdul Razak (18.1%), Bandar Tun Hussein Onn (17.5%), Bukit Jelutong (14.5%) and Kota Damansara (11.8%).

Likeability Toward Neighbourhood

A majority of the residents (96.8%) enjoy staying in their neighbourhoods. There are many physical, social and cultural factors that contribute towards the residents' positive feelings toward their neighbourhoods. The respondents were given five options to choose from on aspects of neighbourhoods most preferred by them. The results were anaylsed based on the mean score of each aspect and tabulated in Table 1.

Table 1: Aspects of Neighbourhoods Most Liked (by Residential Schemes)

Residential Schemes	Location to office		Landscape		School, shops, banks		Presence of wildlife	
	Mean	St. Deviation	Mean	St. Deviation	Mean	St. Deviation	Mean	St.
Kota Kemuning	2.79	1.348	1.68	0.958	3.12	1.022	2.69	1.024
Bukit Jelutong	2.69	1.558	1.70	0.947	3.06	1.202	2.56	1.123
Kota Damansara	1.77	0.825	2.86	1.122	1.89	0.994	3.33	1.086
Bandar Tun Hussein Onn	2.08	1.351	3.17	1.053	2.20	0.909	3.77	1.227
Taman Tun Abdul Rzak	2.59	1.498	1.81	0.924	2.75	1.048	2.63	1.129
Taman Tun Dr. Ismail	2.23	1.489	2.10	0.981	2.56	1.105	2.92	1.095
Total	**2.39**	**1.423**	**2.19**	**1.143**	**2.63**	**1.124**	**2.97**	**1.192**

The respondents chose landscape as the neighbourhood aspect they liked most (mean score: 2.19). This was followed by location to office (mean score: 2.39), schools, shops and banks (mean score: 2.63), presence of wildlife (mean score: 2.97) and others (mean score: 4.04). The results highlighted the significant role of green space in positively contributing towards good environment for the residential community.

Urban Wildlife Mostly Favoured

The residents' preferences toward wildlife species are crucial in this research. Wildlife comprises numerous types of animals including those that are favourable and those considered as nuisance or dangerous species. It is pertinent to investigate the wildlife species perceived by residents to be favourable and to segregate them from the list of dangerous or nuisance wildlife. This will facilitate the research into looking at the focal species and establishing only their habitats.

Table 2: Common Families of Urban Wildlife Most Favoured

Statements	N	Mean	Std. Deviation
Small birds	555	6.24	0.982
Butterflies	557	6.18	1.046
Squirrels	558	4.82	1.644
Tortoise	555	3.51	1.965
Frogs	554	2.60	1.698
Monkeys	556	2.35	1.507
Crows	556	1.51	1.039
Snakes	556	1.21	0.678

Since there is no database provided by the Department of Wildlife listing the typology of urban wildlife, the researcher limits the wildlife typology of wildlife species commonly found in urban residential schemes in tropical countries only (Siti Hawa, 2007). This research assumed that the residential schemes of the Klang Valley are typified by the common wildlife. The respondents were given a list of eight wildlife species typically found in urban areas of tropical countries. These comprised birds, invertebrates including butterflies and dragonflies, amphibians and mammals. The respondents were asked to rate each species using semanthic scale from '7' which indicates 'most liked' to '1' which indicates 'do not like at all'. Table 2 illustrates the preference of residents on wildlife families where small birds are the species most preferred (mean score: 6.24), followed by butterflies (mean score: 2.6), monkeys (mean score: 2.35) and lastly, snakes (mean score: 1.21).

Factor analysis was further conducted to summarise the groupings of wildlife families into smaller categories. The results were tabulated in Table 3.

Table 3: Factor Analysis on Groupings of Families of Urban Wildlife

Rotated Component Matrix	Component		
	Favored animals	Nuisance animals	Dangerous
a. Animal: Small Birds	.841	.050	.054
b. Animal: Crows	-.023	.559	.546
c. Animal: Monkeys	.166	-.038	.878
d. Animal: Squirrels	.633	.179	.272
e. Animal: Frogs	.332	.778	-.070
f. Animal: Tortoise	.417	.700	-.149
g. Animal: Butterflies	.809	.136	-.051
h. Animal: Snakes	-.122	.706	.380

Note: Extraction Method: Principal Component Analysis, Rotation Method: Varimax with Kaiser Analysis, b. Rotation converged in 5 iterations.

Literatures on wildlife have categorized wildlife families into three broad groups of a) favourable animals, b) nuisance animals and c) dangerous animals (Butler et al., 2001; Woolcott etal., 2002; o'Donnel and VanDruff, 1983).

Table 3 deducted that small birds, squirrels and butterflies are categorized as favourable animals while crows, frogs, tortoise and snakes are grouped as nuisance. The third category categories as dangerous animals comprised monkeys. Although snakes are widely perceived as dangerous, it was placed in the same category as other nuisance animals like crows, frogs and tortoise.

Attitudes of Residents toward Wildlife

Three variables were used to measure the attitudes of the residents. There are awareness and feelings about wildlife; and experience (normally referring to bad experiences/ problems encountered) with wildlife.

a) Awareness

Table 4: Awareness on Importance of Urban Wildlife

Statements	N	Mean	Std. Deviation
Animals are a part of nature	558	4.37	0.697
I appreciate the role of animals	557	4.25	0.812
I like to see the animals' natural behaviors	554	4.12	0.934
Good neighbourhoods have birds and other animals	556	4.05	0.928

The survey posted four statements pertaining to awareness of residents on the importance of wildlife and they were questioned on their agreement on each statement. They were provided with a likert scale where '5' indicates to 'strongly agree' to '1' indicates to 'strongly disagree'.

Table 4 tabulates the mean score for the responses and they are in the range of four which means that the residents agree on all the four aspects. The residents' high degree of awareness of the importance of wildlife may be attributed to high levels of educational levels. The research did not seek to look further into the trends between residential schemes since all the residents have unanimously agreed on all the four statements.

b) Feelings

The respondents were asked on their feelings on wildlife commonly found in their neighbourhoods. Similar to awareness, the respondents were provided four statements to express their feelings about wildlife. However, they were asked to select only one statement that encapsulates their feelings about common wildlife.

Table 5 reveals that a majority of residents (95.3%) enjoy viewing wildlife within their neighbourhoods. Nevertheless, 48.6% of the population was concerned with the problems caused by wildlife. Only a minority (4.7%) did not like having wildlife in their neighbourhoods. It may assume that these respondents may consist of residents who have experienced problems with this wildlife. The concerns are mostly unfounded because the animals they perceived as problematic are actually domesticated animals including stray cats and dogs that do not constitute wildlife.

Table 5: Feelings of Residents on Urban Wildlife

Statements	Percentage
I enjoy seeing the birds and other animals near my house	46.7
I enjoy seeing a few animals but concerned about the problems they caused	48.6
I generally regards all animals as nuisance/dangerous	2
I do not like having animals in my neighbourhood	2.7

Table 6: Feelings of Residents on Urban Wildlife Population

Statements	Percentage
Increase	59
Reduced	33
Remain the same	8

Table 7: The Correlation of Feelings on Urban Wildlife with the Perceptions of the Residents

Correlations			b6. Feel about the animals	Perception
Spearman's rho	b6. Feel about the animals	Correlation Coefficient Sig. (2-tailed) N	1.000 553	-.411** .000 553
	Perception	Correlation Coefficient Sig. (2-tailed) N	-.411** .000 553	1.000 558

*Note: **. Correlation is significant at the .01 level (2-tailed)*

The respondents' feelings toward the population of common wildlife in their neighbourhoods were further explored. A majority of respondents (59%) would like to see an increase in the population of wildlife (Table 6). This reflects the increasing awareness on the psychological and social benefits brought on by the common wildlife to the residents and the local environment. Another 33.0% of the respondent would like the present population maintained whilst a minority of 8.0% respondents prefers the population to be reduced. This may be attributed to specific wildlife problems experienced by the residents.

c) Experience

Previous studies have indicated that the experiences of the residents, normally associated with problems, significantly influenced their attitudes toward wildlife. Table 8 reveals that a majority of the respondents (60.3%) have not encountered any bad experience with wildlife in their neighbourhoods. Residents who constitute 37.9% of the respondents admit experiencing wildlife problems; however this included problems with domesticated animals including stray cats and dogs which have been wrongly perceived as wildlife by the residents. This means the actual number of residents having had any experience with wildlife is actually lower than 37.9%.

Table 8: Experience of Residents on Common Urban Wildlife

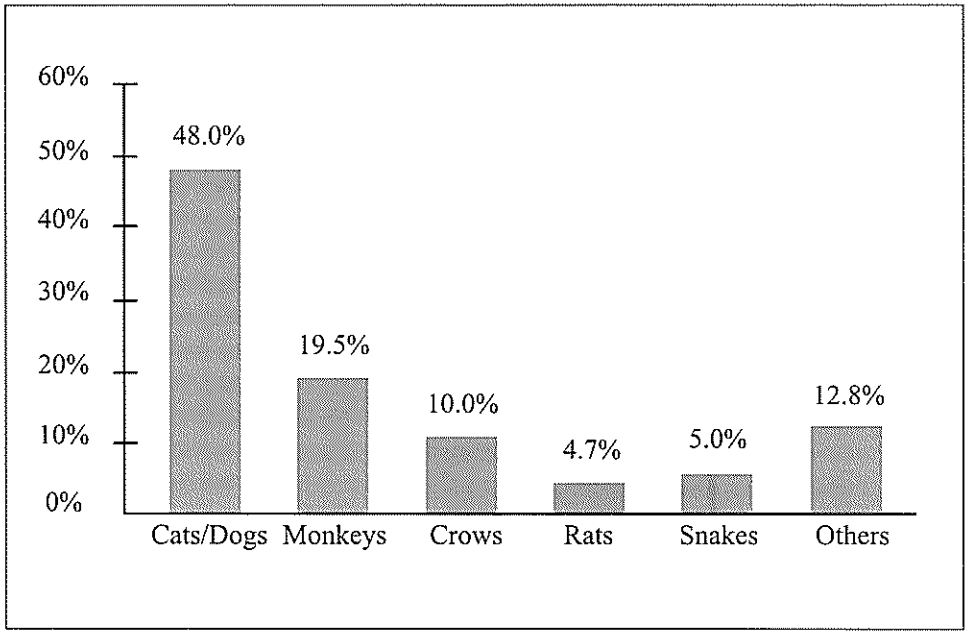
Statements	Percentage
Yes	38
No	60
Not sure	2

d) Families of Urban Wildlife

Further analysis was conducted to observe trends between residential schemes. It was observed that among six residential schemes, the residents from Taman Tun Razak recorded the highest number of residents having had past experience with wildlife. This constituted 51.5% of the residents surveyed in the area. From the site visits conducted by the researcher at the study area, it was observed that the most common wildlife observed in Taman Tun Razak were monkeys that posed a major problem in the neighbourhood. Besides breeding in large numbers, the high population of monkeys in the area is due to the contiguity of forest to the residential scheme. Most monkeys were observed to be in forest vicinity that provides a corridor and wild patch for the primates to breed and forage.

Since there was no database provided by the Department of Wildlife and National Parks listing typology of urban wildlife, the researcher has limited the wildlife typology as wildlife species commonly found in urban residential schemes in tropical countries only. These include birds, invertebrates including butterflies and dragonflies, amphibians and mammals. However, the respondents included dogs and cats (domesticated animals) as wildlife (Figure 1).

Figure 1: Experience of Residents with Families of Wildlife



e) Types of problems

The respondents were forwarded the open-ended questions to list down the problems they experienced with urban wildlife. The answers were then categorized into four major groups of problems that comprised (a) being dangerous to human beings and pets (b) causing damage to properties, (c) being a general nuisance and (d) others. The results were tabulated in Table 9. The analysis revealed that a majority of problems are categorized as wildlife being a general nuisance (68.6%).

The wildlife also caused damage to properties which included damage to house compounds, cars, fruit trees and furniture (17.2%). Residents were also concerned about the dangers the wildlife posed to humans especially children and pets. However, this only constituted 11.8% of the complaints on wildlife. The major source of complaints was towards monkeys and snakes encroaching their residence, presumably in search for habitat needs including food and shelter. This raised fear on the safety of the occupants.

Table 9: Types of Problems Associated With Urban Wildlife

Statements	Percentage
Dangerous to human and pets	11.8
Damage to properties	17.2
General nuisance	68.6
Others	2.5

DISCUSSION

The research identified positive attitudes (measures by feelings, knowledge and behavior/experience) of urban residents on common urban wildlife. These attitudes differ by socio-demographic segments such as age, gender, levels of education, household incomes, ownership of homes and length of stay in the neighbourhoods. The results indicated that the residents displayed strong preferences toward naturalistic elements for the neighbourhood landscape comprising shade trees, flowering and fruit trees, and wetlands (ponds and lakes), compared to man-made elements such as benches and fences, monuments and sculptures, and paved areas. Many residents favoured and expressed feelings of enjoying upon viewing small birds, butterflies and squirrels, and those considered a nuisance include crows, frogs and snakes and tortoise. Their enjoyment may be attributed to their appreciation of the psychological and social benefits of living with nature, including wildlife.

The research discovered that urban residents looked forward to seeing an increase in the selective wildlife population, regardless of their past experience with the wildlife. The findings from the research confirmed that there is a relationship between experience and the respondents' feeling toward animals in the neighbourhood. The respondents identified that a majority of the experiences they encountered were in fact, with domesticated animals such as dogs and cats, followed by monkeys, snakes, crows, rats and others. Other wildlife encountered included bats, squirrels, birds and foxes. Nevertheless urban residents concerned about the problems caused by other wildlife. Considered as dangerous by the residents, monkeys were the animals that the residents have encountered the most negative experiences with. The management aspects of wildlife must be integrated as part of design consideration for neighbourhood green spaces to function effectively as wildlife habitats.

CONCLUSION

The research examined residents' attitudes toward urban wildlife in their neighbourhoods and concludes that there could be alternative views relating to the scope and process

of investigation conducted by the research. The result however revealed the positive feedback from the findings that the resident can distinguish between wildlife and more obviously the research has achieved in making a significant contribution to the study on sustainable urban neighbourhood designs.

This research has also identified the growing interest for wildlife habitat designs in urban neighbourhood amongst the stakeholders including clients (housing developers), residents and practitioners. The urban residents attitudes gauged from the survey conducted provide a deeper understanding on the importance of relationship between residents and wildlife, within the tropical context. This study supported previous research made by Dagg (1970), Brown and Dawson (1978) and Harrison et al. (1987) who emphasized that contact with nature is beneficial for human health and should be encouraged. While most urban wildlife literatures in Malaysia focused on the management aspects of invasive and dangerous wildlife species, this research has increased knowledge on the positive values of urban wildlife, and highlighted the approaches that can be taken to bring urban wildlife into neighbourhoods.

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