

URBAN FORESTRY AND ITS RELEVANCE TO TOURISM DEVELOPMENT IN SABAH*

Y.F. Lee, J. Ligunjang & S.C. Yong
Forestry Department, Sabah, Malaysia

Abstract

Urban forestry is understood to be the management of trees and forests in urban areas. It yields many environmental and material benefits. In Sabah, the environmental services of urban forestry are more important than material products. The potential of practising urban forestry in various zones and under different land ownership is evaluated. As urbanisation has occurred recently in Sabah, urban forestry has only been practised to a limited extent. Tourism is an economic sector which has gained prominence in recent years and has huge growth potential. With the numerous environmental services provided by urban forestry to make urban areas more inhabitable, the increasing tourism activities necessitate intensification of urban forestry activities. The main urban centres contain many tourist attractions, and are also the gateways to many other ecotourist destinations located throughout Sabah. With tourism high on the development agenda in Sabah, urban forestry needs to be promoted so that both locals and visitors can enjoy the numerous social, environmental and economic benefits.

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1. Introduction

Urban forestry is generally understood to be the management of trees and forests within urban areas. However, the terms “urban settlements” and “urban forestry” are sometimes ambiguous. For the sake of clarity, these terms are first discussed and defined.

The term “urban settlement” can be understood in many ways. Although one may know intuitively what is ‘urban’ and what is ‘rural’, there is no universally accepted criteria for distinguishing between these two types of settlements. The usual way is to take population thresholds. Once a nucleated settlement grows beyond a certain threshold, it becomes ‘urban’. However, the threshold used varies depending on the authorities concerned, and may even change in successive censuses (Hardoy and Satterthwaite, 1986). The United Nations (1991) has attempted to standardise data by defining settlements of over 20,000 people as ‘urban’, over 100,000 as ‘cities’, and over 5 million as ‘big cities’. In contrast, Hardoy and Satterthwaite (*op.cit.*) define any nucleated settlement of more than 5,000 as an urban centre.

In Sabah, the Integrated Coastal Zone Management (ICZM) Project (ICZM, 2004) defines an urban area as a gazetted area, with its adjoining built-up areas, which has a combined population of 10,000 or more at the time of the census. Built-up areas are defined as areas contiguous to a gazetted area and have at least 60 percent of their populations (aged 10 years or more) engaged in non-agricultural activities and at least 30 percent of their housing units having modern toilet facilities. Based on this criterion, ICZM has projected that in Sabah, “urban” population would increase from 33% of the total population in 1991, to 45% in 2005.

In this paper, the following definition of urban forestry by Carter (1995) is adopted: *Urban forestry is the planned, integrated and systematic approach to the management of trees in urban and peri-urban areas for their contribution to the physiological, sociological, and economic well-being of urban society. Urban forestry is multifaceted; it deals with woodlands, groups of trees, and individual trees where dense conglomerations of people live, involves a wide variety of habitats (streets, parks, derelict corners, etc), and is concerned with a great range of benefits and problems.*

2. Benefits of Trees and Forests in Urban Areas

Urban forests and trees play a very important role in keeping our towns and cities inhabitable. They provide high-quality living and working environments, recreation opportunities nearby and cleaner air and water. The products and services provided by trees and forests in densely populated areas are listed below:

Environmental benefits

- air pollution control
- noise pollution control
- beautification of towns and cities
- slope stabilisation and erosion control
- shade and regulation of microclimate
- enhancement of water infiltration into soil
- biodiversity conservation
- protection of water catchment

- productive use and safe disposal of urban waste
- education and recreation

Material benefits for subsistence or income generation

- food
- fodder
- timber, fuelwood and poles
- spices
- fibres
- medicines
- other non-timber products.

3. Urban Centres in Sabah

In 2004, Sabah has a population 2.822 million (World Gazetteer, 2004). For a land area of 73,620 km², this gives a population density of 38/km².

Based on the ICZM criterion, there are 15 towns/cities which are considered to be urban centres in Sabah. These 15 centres have a combined population of 1,285,900 (Table 1), or 45.6% of the total population of Sabah. This figure is lower than the proportion of urban population at the national level, which has increased from 51% in 1991 to 62% in 2000 (Department of Statistics, 2004). The location of the major cities and towns in Sabah is shown in the map in Appendix 1, while the major cities in Malaysia and their location are given in Appendices 2 and 3 respectively. Although the urban centres are small, occupying small areas and appearing only as dots on maps, the large human populations underscore the importance of urban forestry in these areas.

Table 1. Population of cities / towns for past 15 years (World Gazetteer, 2004)

Town/City	Population 1991	Population 2000	Population 2004
Kota Kinabalu	160,100	305,400	331,900
Sandakan	157,200	275,400	299,300
Tawau	124,700	213,900	232,500
Lahad Datu	45 100	74,600	81,100
Putatan		61,800	67,200
Donggongon		56,500	61,400
Keningau	16,100	43,900	47,700
Semporna		43,300	47,100
Kudat	21,900	26,700	29,100
Ranau	12,800	15,600	17,000
Kunak	11,000	15,600	17,000
Papar		15,200	16,500
Beaufort		12,500	13,600
Kinarut		12,400	13,500
Kota Belud		10,100	11,000
Total		1,182,900	1,285,900

4. Urban Forestry Potential under Different Conditions

Although urbanisation is a recent phenomenon and urban forestry has not been actively practised in Sabah, it is instructive to evaluate the potential of urban forestry under different circumstances. Appendix 4 summarises the potential of urban forestry under different conditions of land cover, while Appendix 5 gives the relationship of land ownership to access and the potential of establishing or maintaining urban forests and trees.

5. Current Status of Urban Forestry in Sabah

The urban centres in Sabah are mostly recently established. In these areas, urban forestry activities which have been carried out are mainly confined to:

- Management of some forested land
- Planting and maintenance of ornamental trees

The main objectives of these activities are for generating environmental benefits, rather than production of material benefits. These benefits are described in Section 2. Other aspects of urban forestry have largely not been actively practised, and institutional arrangements for urban forest management have not been well defined in Sabah. Nevertheless, a lot of emphasis is given to forest and nature in the major cities of Sabah, thanks to the centuries of Sabahans' tradition of living in harmony with nature. The following nicknames given to the three largest cities reflect their close association with urban forestry:

Kota Kinabalu: ***Rainforest City***
Sandakan: ***Nature City***
Tawau: ***Planters' Land*** (Bumi Peladang)

Sabah still has 4.7 million hectares of gazetted forests and at least 1 million hectares of other tree crops (mainly oil palm). This gives a total of more than 5.7 million hectares, or 77% of the total land mass of Sabah under tree cover. With such an extensive area covered by trees and forests, it is not surprising that pristine or little disturbed forests still exist in the urban centres. Some of these protected pristine forests have been developed for recreational and educational purposes. The management of three of such pristine forest areas, respectively in the three largest cities of Sabah, are briefly described below. The most important guiding principle for the management of these protected areas is environmental sustainability.

5.1. Kota Kinabalu City Bird Sanctuary

This 24-hectare patch of mangrove forest is the remainder of an extensive mangrove belt that existed around the coastal city of Kota Kinabalu in the recent past. It was gazetted as a bird sanctuary in September 1996. It is located 2km from the city centre. The following facilities are provided:

- 1.5 km of boardwalk
- Observation towers and pavilions for bird watching

- Mini-library
- Audio-visual room
- Exhibition hall and children's learning laboratory
- Centre for nature-based activities

The facilities are provided mainly for educational and recreational purposes. Bird-watching is a popular activity because this sanctuary is a home to more than 83 species of birds.

The Likas Wetland Sanctuary Management Committee is the coordination and management body for this sanctuary, with World Wide Fund for Nature Malaysia serving as the secretariat.

5.2. Sandakan Rainforest Park

Sandakan Rainforest Park is an area of 210 hectares situated at about 8 km from the centre of Sandakan city. It consists mainly of pristine forest. The unique feature of this Park is that it is the type locality of more than 70 species of trees and other plants. In other words, these species have been described based on the plants found within this forest. This forest is thus of very great scientific and historical importance. The following facilities have just been completed for visitors:

- A car park for 120 vehicle capacity
- 3 km of jogging trails/bicycle track
- Administration building

Other facilities which have been planned are observation towers, camping site, picnic ground, nature trails with pavilions, exhibition hall, visitors' centre and interpretation materials.

Currently, the Sandakan Rainforest Park is jointly managed by the Forestry Department and the Sandakan Municipal Council.

5.3. Gemok Hill Information Centre

Gemok Hill Forest Reserve is a virgin jungle covering an area of 446 hectares located at about 11 km from the centre of Tawau city. It is popular among local tourists. The favourite activities in this recreational forest are jungle trekking, hiking, camping and sightseeing. The following facilities are available:

- Canopy walkway
- Information centre
- Pavilions
- Staff quarters
- Children's playground
- Guest house for visitors
- Nature trails

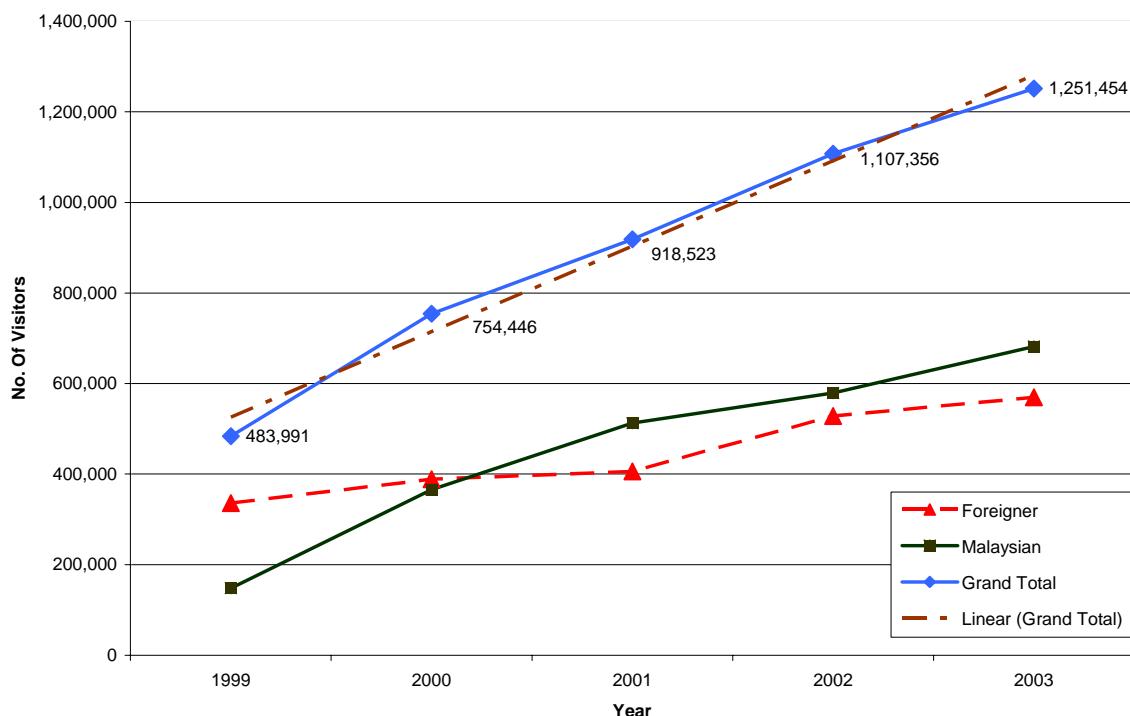
Gemok Hill Information Centre is managed by the Forestry Department.

6. Relationship of Urban Forestry to Tourism

Tourism is one of the three sectors which the State Government of Sabah focuses on in its current development agenda. The importance of the tourism sector in Sabah has increased drastically in recent years. This sector has also been identified as having tremendous growth potential.

Figure 1. Statistics of visitors to Sabah, 1999-2003

(Source:Tourism Unit, Forest Research Centre, Sabah)



The number of visitors to Sabah has increased steadily in the last few years (Figure 1). Sabah received 1.25 million visitors for the year 2003. The top five countries of origin of the visitors are Indonesia (34%), the Philippines (25%), Taiwan / Republic of China (24%), Brunei (11%) and Singapore (6%). The State Government of Sabah has set the target of 2.7 million tourist arrivals by 2007 (New Straits Times, 2004), or about 116% increase over the number in 2003. It has been estimated that receipts from tourists in Sabah in 2002 exceeded RM1 billion, making tourism a major revenue earner (New Sabah Times, 2004).

Within the tourism sector, the main subsector that brings in many affluent foreign tourists to Sabah is ecotourism (which can be defined as sustainable, and environmentally and socially responsible nature-based tourism). One of the main reasons for tourists to come to Sabah is to enjoy its nature and wildlife. In addition to being tourist destinations themselves, the main

urban centres serve as the gateways to most of the popular ecotourist destinations in Sabah, as shown in Table 4. Many of these ecotourist destinations in close proximity to or within the urban centres, making Sabah “nature at the doorstep” for visitors to enjoy. Thus it is important for those aspects of urban forestry which support tourism, particularly ecotourism, to be given high priority and urgent attention.

Table 4. Cities / town which serve as gateway to popular ecotourist destinations in Sabah

City / Town	Popular Ecotourist Destinations
Kota Kinabalu	Tunku Abdul Rahman Marine Park Kinabalu Park Poring Hot Spring Rafflesia Information Centre Crocker Range National Park Kawang Recreational Forest
Sandakan	Sepilok Orang Utan Rehabilitation Centre / Sepilok Forest Reserve Lower Kinabatangan Wildlife Sanctuary Gomantong Caves Selingan Turtle Islands Lankayan Island Labuk Bay Proboscis Monkey Sanctuary
Tawau	Maliau Basin Tawau Hill Park Sipadan Island Madai Caves & Madai Waterfall
Lahad Datu	Danum Valley Darvel Bay Tabin Wildlife Reserve

7. Conclusions

Urbanisation in most parts of Sabah occurred very recently. As such, urban forestry is practised only to a limited extent in Sabah. Tourism is an economic sector which has gained prominence in recent years and has huge growth potential. With the numerous environmental services provided by urban forestry to make urban areas more inhabitable, the increasing tourism activities necessitate intensification of urban forestry activities. These urban centres contain many tourist attractions and are also the gateways to many other ecotourist destinations located throughout Sabah. With tourism high on the development agenda in Sabah, there is a need to promote urban forestry so that locals and visitors can enjoy the numerous social, environmental and economic benefits.

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Appendix 1. Major cities and towns in Sabah



Source: www.malaysia-maps.com

Appendix 2. Major cities and towns in Malaysia (World Gazetteer, 2004)

Rank	Place	Administrative Division	Population 1991	Population 2000	Population 2004
1	Kuala Lumpur	Kuala Lumpur	1 145 100	1 297 500	1 410 300
2	Klang	Selangor	368 200	631 700	686 600
3	Johor Bahru	Johor	442 300	630 600	685 400
4	Ipoh	Perak	468 800	574 000	623 900
5	Ampang Jaya	Selangor	287 800	475 300	516 500
6	Petaling Jaya	Selangor	351 700	438 100	476 100
7	Kuching	Sarawak	277 300	423 800	460 600
8	Subang Jaya	Selangor	78 500	423 300	460 100
9	Shah Alam	Selangor	158 100	319 600	347 400
10	Kota Kinabalu	Sabah	160 100	305 400	331 900
11	Seremban	Negeri Sembilan	193 000	291 000	316 300
12	Kuantan	Pahang	201 300	289 400	314 500
13	Sandakan	Sabah	157 200	275 400	299 300
14	Kuala Terengganu	Terengganu	228 700	255 100	277 300
15	Kota Bahru	Kelantan	234 600	252 700	274 700
16	Tawau	Sabah	124 700	213 900	232 500
17	Kajang-Sungai Chua	Selangor	99 900	207 300	225 300
18	Taiping	Perak	186 800	199 300	216 700
19	Selayang Baru	Selangor	134 500	187 700	204 000
20	Alor Setar	Kedah	165 100	186 500	202 700
21	George Town	Pulau Pinang	219 400	180 600	200 000

Appendix 3: Location of major cities and towns in Malaysia



http://www.lib.utexas.edu/maps/cia00/malaysia_sm00.jpg

**Appendix 4. Zonation of urban forestry potential in urban areas in Sabah
(adapted from Carter, 1995)**

Nature of land cover	Type of location	Type of urban forestry
Paved, roofed, densely urban complexes devoid of open areas of vegetation and water bodies.	City central business districts; market areas and possibly shopping centres; some industrial zones	Avenue trees on main streets; as lines screening markets or factories.
	High density, low income housing	Likely to be limited.
Suburban mosaic of houses, roads, and gardens.	Older, spacious high income inner suburbs.	Mature avenue trees. In gardens, trees primarily for ornamental purposes; perhaps some food trees.
	Medium density housing with small back-yards.	Probably younger avenue trees. In gardens, some trees for ornament and food.
New suburbs, devoid of mature trees	Outer suburban areas, new housing estates; some shops and office complexes.	Possibly some young trees already planted; potential for increased tree planting.
Corridor zones of wild plants	Railway, canal, power line and some arterial roadsides	Trees lining communication links; possible environmental and production benefits.
Landscaped open spaces	City parks and gardens, racecourses and sports grounds	Trees primarily for environmental enhancement; in parks and gardens, could be managed partly for production.
Derelict land and construction sites	Land adopted by the local community	Potential for community tree planting if usufruct perceived to be secure.
	Abandoned land	Possible tree planting after consultation with land owners
Steeply sloping, erosion prone land on urban fringe	Recently established self-help housing	Few trees; possibly some planted as boundary markers.
	Well established self-help housing	Trees planted for production and ornament in homegardens.
	Protected vegetated slopes	Tree cover managed for watershed protection, recreation and (possibly) limited production.
Small woodlands within the city	Patches of conserved forest, woodland parks	Mature indigenous trees, generally left intact.
Tree covered areas on the city outskirts (other than on steeply sloping land)	Degraded natural forest or plantations	Indigenous and exotic species for timber and other uses.
Water bodies	Rivers, canals, lakes and fish ponds	None within the water body itself.
Modified water bodies	Swamps, coastal marshes inhabited by fishing communities	Mangrove and other swamps.

Appendix 5. Access and urban forestry potential in relation to land ownership
 (adapted from Carter, 1995)

Category	Sub-Categories	People's Access	Urban Forestry Potential
Private land	Individual owner occupied	closed; usually strongly controlled by owner	high; trees planted for ornamental and material benefits
	tenanted (short period - perhaps one year)	closed; fairly controlled (by owner and tenant)	low
	leased (often for a period of many years)	closed; controlled (by owner and lessee)	medium; possibly some trees cultivated for material benefits
	illegally occupied	variable, as is the control (by occupant and owner) over land use	low, unless tenure is perceived <i>de facto</i> as fairly secure.
Corporate (company) land	multi-national company (premises in worldwide locations)	closed; usually strongly controlled (by company)	high; trees around premises planted for environmental enhancement
	national company (premises in various parts of the country)	closed; probably strongly controlled (by company)	variable, but could be tree planting for environmental enhancement
	small local business (single premises)	closed; control (by business owner) probably varies	variable, as above.
“public” land	State - departmental control (eg. irrigation, highways, forestry, etc.)	often open; control (by department) varies	probably high; trees planted for environmental enhancement
	urban/municipal city council	often open; control (by council) varies	probably high; trees mainly planted for environmental enhancement
	community land, owned collectively under customary law, or donated for the use of local people	usually controlled by common property arrangements	may be high; trees may be planted for a variety of purposes
	land owned by schools and religious and other special interest groups	usually controlled by common property arrangements	medium; possibilities for tree planting for environmental, educational and material purposes
	illegally occupied (may fall under any of the above categories, but most likely State or council land)	variable, as is the control (by occupant and owner) over land use	low, unless tenure is perceived <i>de facto</i> as fairly secure.