MANAGING FOREST RECREATIONAL AREAS USING ENVIRONMENTAL INDICATORS AS A FEEDBACK MECHANISM: A CASE STUDY AT SUNGEI TUA, SELANGOR

CHAPTER 1

INTRODUCTION

Background

The demand for outdoor recreation is high (Glyptis, 1991), as is obvious to anyone even moderately familiar with the situation (Clawson and Knetsch, 1966). Woodland recreation include organised and informal events, from holiday villages and orienteering, through off-road cycling, long distance footpaths and bridleways, to walking the dog, trim trials and quiet country rambles (Thomas et al., 1994). These sentiments were echoed by Hummel (1992), who acknowledged that forest and woodland not only form an integral part of the rural environment, but also are offering both recreational opportunities, as well as a conduit for public access into the countryside. Thus, forest are much more than trees; sound of wind through trees, glimpses of fauna, smell of the woods and the lush abundance of moss and carpets, make it possible for people to obtain their enjoyment from the woods and forest (Anon, 1992b). As such, there is something for everyone and at every season in the forest (Anon, 1992b).

Despite the available myriad of recreational opportunities associated with the

forest, there is much debate as to whether recreation constitutes an activity or an experience arising out of the recreational act. Many recreational scientists such as Jubenville (1976), Pigram (1983), Douglass (1990) and Glyptis (1991) have consistently recognised recreation as an activity, rather than an experience. As such, recreation means the packaging of opportunities settings from where the visitors select the ones which they find their desired levels of satisfaction. Through this approach, picnicking becomes recreation, hiking becomes recreation, swimming becomes recreation and so on. As a result, the activity approach has many advantages, such as the ease of identifying who participate in which activities, when, where and for how long. However, this approach does not consider the reason why the visitor is partaking in the activity, nor does it consider the type of experience or dependent satisfaction, which the visitor derived from the activity (Driver and Brown, 1978). This type of activity related recreation, assumes that supply defines preference i.e. the visitor will find his desired level of satisfaction from the resource based activity (Clawson and Knetsch, 1966).

On the other hand, Butler (1968), Driver and Brown (1978) and Tinsley and Kass (1980) questioned this approach and proposed that recreation be viewed as an experience rather than an activity, since visitor's experience is usually associated with human actions and behaviour. Under this approach, recreation will consist of more than just participating in an activity, but rather the provision of packages of opportunities and attempts to motivate the visitors, as well as to elicit those responses from them that are most instrumental in satisfying their needs and desires (Driver and Brown, 1978). Thus, the quality of the experience attained by the visitors is valued, such that they will return to partake in the recreational site in the future.

However, Clawson and Knetsch (1966) proposed a middle course whereby, recreation is acknowledged as being both an activity, as well as an experience. They proceeded to classify recreation into three broad categories. At one extreme are the User-Oriented Areas, where they find their level of self-actualisation or as Driver and Brown (1978) aptly put as the psychological derivatives ensuing from an activity, in a setting. Another important characteristic is their ready accessibility to the users. At the other extreme, are the Resource Based Areas. Their dominant characteristics are the outstanding physical resource, which is normally a composite of the bio-physical, managerial and social conditions, within which the activities can be pursued, while the Intermediate Areas lies between these extremes, both geographically and in terms of usage.

Glyptis (1991) echoed these sentiments in her dual classification of recreation. She added that for resource based recreation, the character and conservation of the resource areas are the paramount concerns. For visitor-oriented recreation, the need to cater and design for the activities and to provide opportunities in readily accessible places are more important than their location *per se*. Indeed, in some instances the more appropriate emphasis may be entertainment within recreation areas, rather than the enjoyment of it.

Despite the differing opinions regarding outdoor recreation, their benefits are seldom in doubt. It is polymorphous, but the results are the same (Douglass, 1990). It revitalises a person's vitality, initiative, and perspective of life (Butler, 1968; Wan Sabri et al.,1983), thereby preparing the individual to return to his toil (Douglass, 1990). In addition, forest recreation also avails the opportunity to breathe fresh air, relax, enjoy

the scenery, or take healthy exercise and observe nature (Hummel, 1992). In this respect, recreation possesses a value of almost a therapeutic kind (Clawson and Knetsch, 1966).

Meanwhile in Peninsular Malaysia, forest recreation is more of an activity undertaken within the forest domain, than as an experience. Dominant characteristics revolve around the forest resource and within which visitors partake in activities relevant to the resource base. Activities commonly associated with forest recreation in Peninsular Malaysia include picnicking, sightseeing, short hikes, swimming, butterfly collecting, watching and sometimes fishing in remote Forest Recreation Areas (FRAs) (Winston and Luqman, 1972; Kamaruzaman, 1981; Wan Sabri et al., 1983; Chin, 1993; Wan Sabri, 1993). As such, forest recreation is generally associated with day-use activities (Anon, 1994). However, with infrastructure development such as chalets and campgrounds in major FRAs, overnight stay is becoming popular (Anon, 1994).

Nevertheless, recreation within the Forest Reserves (FR) had been undertaken long before such areas were designated as FRAs. The earliest evidence of such recreation was provided by the gazettement of Gunung Tahan (the present-day Taman Negara) in Pahang as a Wildlife Reserve in 1925 (Jasmi, 1993). Maxwell Hill (present-day Bukit Larut) in Perak, Gunong Jerai in Kedah, Fraser's Hill and Cameron Highland both in Pahang are among the earliest FRAs in the peninsula. These areas offered respite from the humidity and heat of the lowlands for British colonial officers (Butcher, 1979) and a few local elites (Abdul Kadir, 1983). These areas are mainly montane and the upper hill forest and set amidst temperate flower gardens with a background of tea plantations, vegetable farms and rolling green mountains (Wong, 1994). Forest

recreation then, was the purview of a few and privileged, rather than the pursuits of many.

Since independence, the country has undergone rapid industrialisation as guided by a series of five-yearly Malaysia Plan. It has resulted in increase in disposable income, rapid urbanisation, improved and cheaper forms of communication and the expectations of a better quality of life. Continued growth in real income has given more people greater sums to spent on leisure (Patmore, 1983). Seeking relief from the daily toil of work and pressure of daily life, increasing number of Malaysians are "returning-to-nature" by visiting FRAs and this has resulted in a steady growth of recreation in natural settings in the peninsula (Wan Sabri, 1993).

Generally, most of the natural areas offering nature based recreation are located within the pristine tropical rainforest, which is species rich (Whitmore, 1975) and attractive to visitors because of their natural and cultural characteristics (Wong, 1994). However, these natural areas are ecologically fragile, and will not be able to withstand much recreational pressure without proper management control (Chin, 1993). In terms of recreation, the forest has now been recognised, as a primary rather than a secondary source of recreational outlets in Malaysia (Anon, 1994). On one hand is the need to provide for high quality recreational opportunities, while on the other, there is a need to ensure that such activities do not threaten the resource upon which other forestry activities, such as timber production, water resource, biodiversity and genetic conservation, carbon sink, flood and erosion control, depend.

In response, the Forestry Department Peninsular Malaysia (FDPM) has established a total of 99 Forest Recreational Areas (FRA), encompassing 9,796 hectares (ha) in the peninsula (Anon, 2000) to cater for this demand. Though recreational potential of most FRAs in the peninsula has not been determined there are nevertheless, some FRAs like those of Kanching, Sungei (Sg.) Tua and Sg. Chongkak in Selangor, are becoming very popular. Attendance during the week-end, averaging about 4,100 visitors in each site on a single day has been recorded in Kanching FRA (Berkmuller et al., 1994). As a result of increased participation in forest recreation, it is inadvertent there are activities that could bring negative impact on the natural resource of the area, as well as detracting the visitors' recreational opportunities.

In response, FDPM has incorporated the multi-disciplinary approach covering recreation, eco-tourism, conservation of biodiversity and genetic diversity in its 1992 revision of the National Forestry Policy, 1978 and under which, community forestry programmes will be intensified to cater for public needs in recreation and tourism (Anon, 1993). Backing the forest policy on recreation is the National Forestry Act 1984 and its amendment in 1993, where the objective of Recreational Forest are redefined for purposes of conserving sufficient areas as places for recreation, eco-tourism, as well as to enhance public awareness in forestry.

Environmental degradation stemming from overuse is already evident in FRAs, especially those around the nation's capital, Kuala Lumpur. Evidence stems from denuded ground cover (Berkmuller et al., 1992), eroded trails (Musa, 1983), compacted soil (Kamaruzaman, 1981), exposed tree roots (Noor Azlin et al., 1993), some tree removed for firewood and burnt tree trunks (Yap and Noor Azlin, 1990). As such, there

is need to understand these impacts, as well as to use these environmental indicators as a feedback mechanism to provide useful insights for managing both the natural resource and recreational opportunities.

This background on forest recreation will provide a context for this study and sets the stage for a better understanding of the effects of recreational impact on the edaphic environment, as represented by soil, vegetation cover and water quality. They serve as good starting point for monitoring changes to the resource settings, resulting from recreation.

Necessity of this Study

Until recently, with the exception of Mount Kinabalu National Park in Sabah (Habibah, 1993) and Taman Negara in Peninsular Malaysia (Jasmi, 1993), there has not been an overall survey on the recreational potential of FRAs in the peninsula. Routine maintenance of FRAs is carried out as part of the activity of the FDPM, but further development is dependent on the interest of the District Forest Officer at the time, or when a need becomes obvious (Chin, 1993). Since no overall development plan has been developed for these FRAs, all modifications to these sites are carried out on an *ad hoc* basis (Wan Sabri et al., 1983) and until recently, there is little urgency for preparing a development programme for FRAs, not to mention the undertaking of recreational research or the preparation of annual reports of progress of forest recreation (Anon, 1994). However, specific studies on some FRAs have been undertaken; in Kanching, Selangor by Mazlan (1982), Gunong Jerai, Kedah by Abdul Kadir (1983), forest plantation in Peninsular Malaysia by Sheikh Ali and Mohd. Basri (1983), Sg. Congkak,

Selangor by Lai and Amat Ramsa (1993), and Nik Mustafa (1993). These were on an *ad hoc* basis (Wan Sabri et al., 1983), subject specific and limited in scope and depth to meet the long term development requirements of the FRAs (Chin, 1993). In the light of increasing recreational demand (Wohlfarth, 1982; Wan Sabri, 1993) and environmental awareness (Sham, 1993), there is a need to ensure orderly development of these FRAs, especially with regard to its resource base, from which recreational activities depend.

FRAs, especially around urban areas are becoming very popular, like those in the vicinity of Kuala Lumpur, such as Kanching, Sg. Congkak, Sg. Tekala, Sg. Tua and Lentang, are subjected to considerable use by the population and nature oriented visitors (Wan Sabri et al., 1983; Lai and Amat Ramsa, 1993; Nik Mustafa, 1993). Entry counts in these amenity forests near Kuala Lumpur showed annual visitation of over 300,000 people (Berkmuller et al., 1994). Factors such as population growth, improved socio-economic conditions, available leisure time as discussed earlier in this chapter and also by Wan Sabri et al. (1983), Tobias and Mendelsohn (1991), Mohd. Nasir (1993) and Wan Sabri (1993), have contributed significantly to outdoor recreational demand and is likely that the number of visitors participating in outdoor recreation (Mohd. Nasir, 1993; Wan Sabri, 1993), including the FRAs (Wohlfarth, 1982) will increase significantly.

Since forest recreation in Peninsular Malaysia is regarded more as a resource based activity (Wan Sabri et al., 1983), rather than as a user-oriented activity (Driver and Brown, 1978), the relation between recreation and other land use, importance of recreation on conservation, and the compatibility or conflict between recreational pursuits are currencies for concern. As such, there is an urgent need to monitor and

develop the resource based components of forest recreation and the effectiveness with which it can be done is the concern of this study.

The Problem

Since there is no overall development plan for FRAs in Peninsular Malaysia (Anon, 1994), its development has been on an *ad hoc* basis (Wan Sabri et al., 1983) depending upon the individual efforts of each of the District Forest Officer at the time or when the needs become obvious (Chin, 1993). As such, the development of FRAs, especially in Peninsular Malaysia has been top-down with administrators, planners and politicians playing key roles in deciding on the facilities to be provided for the public (Wong, 1994), rather than on one based on the resource sustainability.

In the process of pursuing physical development within these FRAs, scant consideration is given to the environmental impacts of recreational use. Site deterioration, such as soil compaction and erosion (Dotzenko et al., 1967; Cole, 1989), loss of ground cover (Frissell and Duncan, 1965; Berkmuller et al., 1992), degradation of water quality (Barton, 1969; Lai, 1983), are only obvious when the recreational used exceed its carrying capacity. As such, information between recreational use or site utilisation and its carrying capacity has been lacking. For most forest recreation sites, the users simply use it because they are provided for, not because they are the most desirable features. Under such circumstances, what the visitors receive from forest recreation may not match their desired level of preference and neither do they match the bio-physical requirements of the resource base.

Fundamentally, what we need to know is how the bio-physical components of the resource can best match the recreation opportunities, without site deterioration. Since the ability of providing recreation opportunities within the forest rest with the FDPM, information of such relationship is a pre-requisite to enhance the sustenance of FRAs. As such, the use of environmental indicators as a feedback mechanism to determine both positive and negative effects of recreational impact on the resource base is in order. Of interest are the differences in indicators' attributes to the different recreational impact.

Objective of Study

The following objectives are posited for the study:-

1. To examine the forest as a recreational resource, its diversity and the competing claims with which forest recreation must co-exist.
2. To identify and determine suitable environmental indicators in monitoring changes in the recreational resource.
3. To determine the sensitivity and use of environmental parameters and scaling measurements in assessing recreational impact on FRAs.
4. To determine whether environmental indicators can be beneficial towards sustaining those FRAs.

The following general propositions are promulgated based upon these objectives:-

1. Develop an understanding of the evolution and contemporary significance of forest recreation, and factors affecting the edaphic environment.
2. Variations in environmental indicators are in response to different recreational impacts.
3. Environmental indicators can be indicators of degradation, as well as indicators of quality.
4. Embrace the relationship between recreational impact and the bio-physical components of the resource in the provision of recreational opportunities.
5. Alterations in ecological environmental succession warrant different applications of resource management.

Limitation of Study

This study deals entirely with FRAs in Peninsular Malaysia, since constitutionally forestry is State matter and application of forest laws in Peninsular Malaysia are different from those in Sabah and Sarawak. Owing to differences such as these and the different planning systems used, render such comparisons inappropriate or, at least, difficult to do justice to, in the confines of this study.

This study confined to Sg. Tua FRA, Selangor, considers the impact of recreation on the edaphic environment, and is limited to the components of soil, vegetation and water quality. It must be recognised that limitations exist in the transferability of results since Peninsular Malaysia itself differs environmentally,

especially in terms of topography, geology and rainfall, which in turn affect soil, vegetation and water quality.

Organisation of Chapters

The study consists of seven investigating parts plus a concluding part. Chapter 1 presents the background of the study, while Chapter 2 is a review of literature that explores the factors that led to the identification of suitable environmental indicators. Chapter 3 provides the historical perspective and administration in characterising FRAs. This review provides an insight to the background and development of FRAs in Peninsular Malaysia.

Based on this insight of the reviewed part, Chapter 4 embodied the development of methodology, arising from the choices of environmental indicators to monitor recreational impact. This part also considers the influence levels of the environmental indicators.

Chapters 5, 6 and 7 are the results and discussion of the analyses of soil, vegetation and water quality response to recreational impact respectively. Chapter 8 provides the summary, conclusion and recommendations from which management implications can be drawn or encumbered, to better manage the FRAs in Peninsular Malaysia, as well as of the challenges that lie ahead.