VISITORS' PREFERENCES AND RECREATION VALUES FOR NATURE RECREATION IN MOUNTAIN PARKS, SABAH

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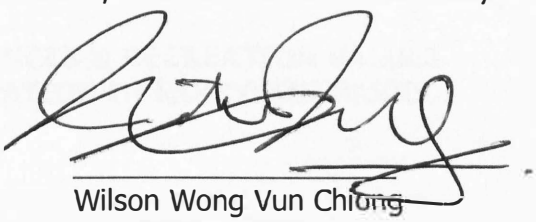

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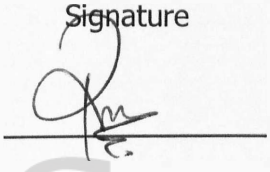

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ABSTRACT

VISITORS' PREFERENCES & RECREATION VALUES FOR NATURE RECREATION IN MOUNTAIN PARKS, SABAH

Natural attractions determine the potentials and opportunities of recreation and nature tourism development in mountain parks. Visitors' preferences on natural attractions are important to the development of recreational facilities and estimates of recreation values justify the development. This study aimed at identifying visitors' preferences and estimating the recreation values of natural attractions in Kinabalu Park and Crocker Range Park, Sabah. Analytical Hierarchy Process was applied to examine the visitors' preferences on natural attractions of flora, wildlife and scenery. Scenery-viewing (39.2%) is most preferred among visitors followed by wildlife-watching (32.2%) and flora-viewing (28.5%). GIS-based viewshed analysis was then employed for assessing the visible area of selected trails in the two parks. It is revealed that trails in Kinabalu Park are superior to trail in Crocker Range Park in terms of visible area. Contingent Valuation Method was applied to elicit the recreation values of the attractions. It is found that the recreation value for wildlife-watching is the highest among the attractions and the recreation values for all three attractions in Kinabalu Park are higher than Crocker Range Park. This study suggested that the development of recreational activities in parks must meet according to the visitor's preferences.

ABSTRAK

Tarikan-tarikan semulajadi menentukan potensi dan peluang pembangunan rekreasi dan pelancongan alam semulajadi di taman-taman gunung . Pilihan pelawat terhadap tarikan semula jadi adalah penting dalam pembangunan fasiliti rekreasi dan anggaran nilai rekreasi menjustifikasikan pembangunan tersebut. Kajian ini bertujuan mengidentifikasikan pilihan dan menganggarkan nilai rekreasi pelawat terhadap tarikan-tarikan semulajadi di Taman Kinabalu dan Taman Banjaran Crocker, Sabah. "Analytical Hierachy Process" diaplikasikan untuk menilai pilihan pelawat ke atas pengamatan tarikan-tarikan semula jadi iaitu flora, hidupan liar dan pemandangan. Pengamatan pemandangan (39.2%) merupakan pilihan tertinggi pelawat diikuti oleh pengamatan hidupan liar (32.2%) dan pengamatan flora (28.5%). Analisis "viewshed", salah satu aplikasi Sistem Maklumat Geografi, kemudian digunakan untuk menilai kawasan yang dapat dilihat ke atas denai-denai yang terpilih di dalam dua taman tersebut. Keputusan menunjukkan denai di Taman Kinabalu adalah lebih tinggi berbanding denai di Taman Banjaran Crocker daripada aspek kawasan yang dapat dilihat. "Contingent Valuation Method" pula diaplikasikan untuk memperolehi anggaran nilai rekreasi ke atas tarikan-tarikan tersebut. Keputusan kajian mendapati bahawa nilai rekreasi untuk aktiviti pengamatan hidupan liar adalah tertinggi di kalangan tarikan-tarikan tersebut dan nilai rekreasi untuk ketiga-tiga tarikan di Taman Kinabalu adalah lebih tinggi daripada Taman Banjaran Crocker. Kajian ini mencadangkan pembangunan aktiviti rekreasi mesti memenuhi pilihan pelawat.

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LIST OF DIAGRAMS

LIST OF ABBREVIATION

AHP	Analytical Hierarchical Process
AIP	Aggregation Individual Preference
CBD	Conservation for Biological Diversity
CVM	Contingent Valuation Method
CRP	Crocker Range Park
GIS	Geographical Information System
IUCN	International Union for Conservation Nature
KP	Kinabalu Park
MOSTI	Ministry of Science, Technology & Innovation
MoTCE	Ministry of Tourism, Culture and Environment Sabah
MTC	Malaysian Timber Council
MDG	Millennium Development Goals
MTPB	Malaysia Tourism Promotion Board
NRE	Ministry of Natural Resources and Environment
PA	Protected Area(s)
PRF	Permanent Reserved Forest
RDC	Rainforest Discovery Center
SDC	Sabah Development Corridor
SFD	Sabah Forestry Department
STPC	Sabah Tourism Promotion Corporation
SWD	Sabah Wildlife Department
TCM	Travel Cost Method
UN	United Nations
UNEP	United Nations Environment Program

UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
WWF	World Wide Fund for Nature
WCPA	World Commission on Protected Areas

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CHAPTER 1

INTRODUCTION

1.1 Background

Mountain Parks are unique in many ways. Its geological features shaped by millions of year together with the different climatic condition, flora and fauna provide a setting of unique environment. Many mountains and mountain ranges are left in natural state and primary used for ecotourism. Ecotourism can be more beneficial over the long term than extractive industries such as logging and mining (Cunningham & Cunningham, 2006). It generates direct and indirect revenue to the parks and community, and at the same time also provides ecosystem services (watershed, erosion control, carbon sequestration etc).

Park visitation plays a significant role to the economic development not only to the park itself but also to the community living around it. Visitation rate is generally influenced by the quality the parks are able to provide. Kinabalu Park for instance, received 472,173 visitors in 2009 while the Crocker Range Park received about 16,946 visitors. The difference of visitation might be influenced by the quality and other factors.

The quality of a park is very important element to attract visitors apart from providing good facilities and services. According to Robins (1987), view quality is weighted 25% and equally with wilderness, solitude, and primitive recreational experience in the Wilderness Evaluation System. According to Shelby *et al.* (2005), scenic quality can be an important and perhaps the dominant consideration. Visitors also exhibit definite preferences for particular tree species (Garrod & Willis, 1993), and are generally ready to partake in a variety of natural resource based activities.

View quality rating is an important component of land management that is still undergoing parameter definition and technical development (Germino *et al.*, 2001). Both approaches are applied to tasks such as identifying areas of scenic

beauty, estimating the visual impact of landscape changes, or comparing the quality of different views. These applications require consideration for viewer perception and incorporating higher-order variables of preference, such as information and psychological variables (Kaplan & Kaplan, 1982). Technical challenges include the incorporation of readily obtainable land cover and elevation data to produce accurate viewshed simulations with practical computer methods (Bishop and Hulse, 1994; Crawford, 1994).

Valuation of a public goods and services such as a national park presents a unique set of circumstances which requires a unique approach. Recreation values are often estimated by using Travel Cost Method (TCM) or Contingent Valuation Method (CVM). The Contingent Valuation or willingness-to-pay approach relies heavily on the quality survey responses from visitors, which in itself can be adversely affected by survey design and visitor characteristics. It can be concluded that the contingent valuation approach remains the most effective valuation approach at present despite its imperfections (Elliot *et al.*, 2001). The recreation value for Kinabalu Park was estimated at RM 368.5 million for the year 1997 by Phua & Minowa (2004). The Crocker Range Park's recreation value is yet to be estimated.

Recreation valuation methods thus far focused primarily on measuring consumer surplus. Early applications derived consumer surpluses from demand models usually estimated with the Travel Cost Method approach. The Travel Cost Method (TCM), Contingent Valuation Method (CVM), Unit Day Value approach (UDV), Hedonic, Benefit Transfer, and Cost-based methods are amongst valuation methods in recreation valuation. Amongst these, the Travel Cost Method and Contingent Valuation Method (CVM) are the most frequently used methods by researchers to perform recreation valuation.

The incorporation of Geographic Information System (GIS) on recreation assessment is gaining momentum. Whilst GIS could provide beneficial analytical tools, such as view-shade analysis, it also is a beneficial tool in decision-making process or cost-benefit analysis in environmental valuation. According to Heywood

et al. (1994), in modeling ecosystem processes, GIS is useful as it has the capacity to incorporate the complexities of the spatial dimensions involved. The tool is particularly useful in mountainous regions, where complex topography and distinct environmental gradients require special consideration of spatial patterns. The use of GIS to map and model natural capital adds a new dimension to environmental economics and is worthy of further investigation. GIS is probably the most effective instrument for introducing a spatial dimension to economic valuation, through the use of spatial economic valuation methodology and production of economic value maps (Eade & Moran, 1996). The usefulness of GIS in environmental valuation has provided relatively robust models for predicting visitation to study sites, offers promising ways forward for benefit transfer analysis (Englin & Mendelsohn, 1991). For instance, the demand function discussed here has been used to produce maps of recreational value estimation which are directly comparable with other land use valuation (Lovett *et al.*, 1997).

View can be analyzed by using the Viewshed analysis tool from the GIS software. View is an environmental value of increasing concern, yet analytical approaches for evaluating viewshed are not well developed (Brown, 1994). View shed analysis can follow several approaches, each suitable for different applications (Arthur *et al.*, 1977). While the planimetric approach appeared superior for quantifying the dimensions (areal extent, relief, depth) of viewsheds, the panoramic computer simulations of viewsheds were superior for representing the composition (landcover, diversity, edge) of views observed at ground level (Germino *et al.*, 2001). A three-dimensional GIS model, which includes the effects of slope, aspect, and distance, as well as the height of landscape features, is used to calculate the proportion of land-cover areas that make up the view also known as Visual Magnitudes (Grêt-Regamey *et al.*, 2007).

1.2 Problem Statement

At the 1992 Earth Summit, the governments of the world recognized protected areas as economic institutions which have a key role to play in the alleviation of poverty and the maintenance of the global community's critical life-support systems. This new perspective on for protected areas requires an awareness and

understanding of the economic values generated by protected areas to assist in decision-making process (Phillips, 1998). The number of visitation is an important element for parks. It influences the sustainability of the protected area and the socio-economy of the population surrounding it. Visitors are attracted to a park which offers natural attractions; scenic view, unique flora and fauna, and other combined factors. While site quality plays a prominent role in attracting visitors to the area, evaluation of recreational economic value is getting more attention in today's decision-making processes and planning.

The need to address the study of site quality factors is important. Understanding the site quality factors will provide useful knowledge and information in planning and management of nature parks.

Recreation experience is an important element that needs to be dealt with. As mentioned above, the economic element of parks is getting more important in today's management. Comparative evaluation of recreation value of two mountain parks in Sabah will provide better understanding of the economic value of parks and therefore provide vital information for the decision-making process.

1.3 Research Objectives

In general the objective of this study is to evaluate preference and recreation value of natural attraction in mountain parks of Sabah namely Kinabalu Park and Crocker Range Park. Specifically, the objectives of this study are;

1. to examine the visitors' preferences on viewing natural attraction activities in mountain parks.
2. to assess and compare the mountain view of trails in Kinabalu Park and Crocker Range Park.
3. to estimate and compare the recreation value of Kinabalu Park and Crocker Range Park.

1.4 Justification

The valuation of ecosystem services has become one of the most significant and fastest evolving research areas in environmental and ecological economics. The need to conduct valuation is exceptionally essential in demonstrating the economic benefits of the investment from resource allocation. The ability to quantitatively model scenic beauty would greatly enhance the incorporation of visual analysis into recreation management (Germino *et al.,* 2001).

As the Crocker Range Park (CRP) is receiving fewer visitors compare to Kinabalu Park, the full potential of recreation opportunities of CRP has yet to be explained. Thus, this study is committed to explore the natural attraction factors that influence visitation to mountain parks. Thereafter, recommendations in enhancing the visitors' recreational experience could be given and thus it could partly reduce visitor congestion in Kinabalu Park.

CHAPTER 2

LITERATURE REVIEW

2.1 Tourism Industry

The growth of global tourism industry over the years has been enormous with international tourism receipts accounted for US$ 944 billion in 2008. The tourist arrivals have continued to grow – from 25 million in 1950, to 277 million in 1980, to 438 million in 1990, to 684 million in 2000, reaching 922 million in 2008 and expected to reach 1.6 billion by year 2020 (Diagram 2.1). In 2008, travel for leisure, recreation and holidays accounted for half of all international tourist arrivals (51% or a total of 467 million arrivals) while the remaining reported travelling for business and professional purposes, visiting friends and relatives, religious reason, health treatment, etc (UNWTO, 2010).

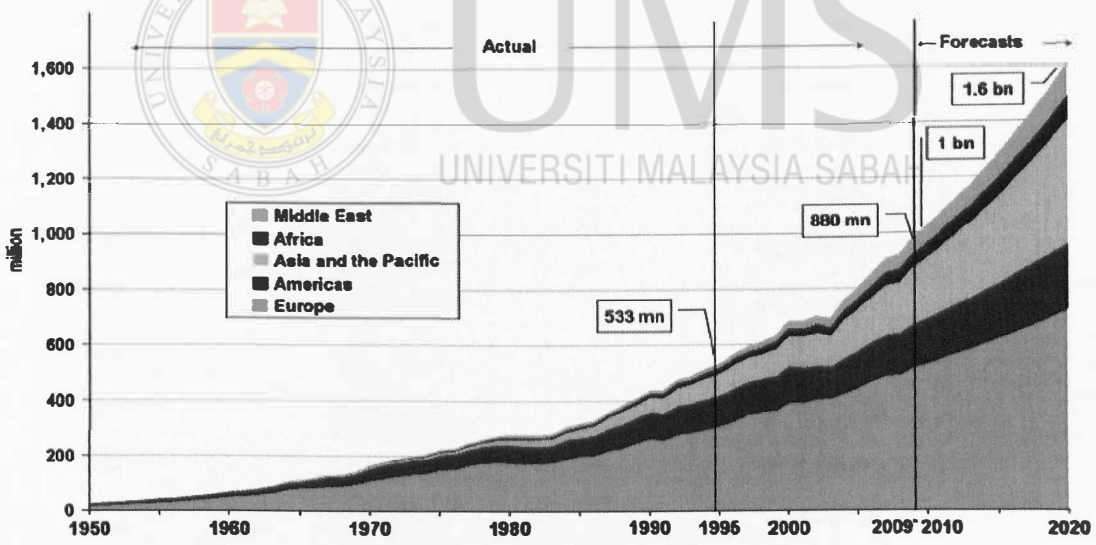

Diagram 2.1: **Projection of International Tourist Arrivals by region (Million)**

Source: UNWTO (2010)

2.1.1 Tourism Industry in Malaysia

Tourism is contributing significantly to Malaysia's Economy in boosting employment, gross domestic product and national revenue. With more than 50 percent of forested area in Malaysia, it provides great opportunity and potential for nature tourism or ecotourism.

The tourism industry in Malaysia has been registering impressive growth over the last few years. The total number of tourist arrivals reached 24.6 million in 2010 with receipts estimated at a whopping Malaysian Ringgit (MYR) 56.5 billion Visitor arrivals and tourism receipt in Malaysia will continue to exhibit continuous growth. Visitor arrivals and tourism receipts in 2010 show an increase by 241% and 326% respectively for the past 10 years from year 2000 (Table 2.1).

Table 2.1: Tourist arrivals & receipts to Malaysia

YEAR	ARRIVALS	RECEIPTS (RM)
2010	24.6 Million	56.5 Billion
2009	23.6 Million	53.4 Billion
2008	22.0 Million	49.6 Billion
2007	20.9 Million	46.1 Billion
2006	17.4 Million	36.3 Billion
2005	16.4 Million	32.0 Billion
2004	15.7 Million	29.7 Billion
2003	10.5 Million	21.3 Billion
2002	13.2 Million	25.8 Billion
2001	12.7 Million	24.2 Billion
2000	10.2 Million	17.3 Billion
1999	7.9 Million	12.3 Billion
1998	5.5 Million	8.6 Billion

Source: Malaysia Tourism Promotion Board, MTPB (2011)