

THE EFFECT OF TOURISM ACTIVITIES TOWARDS  
NATURAL RESOURCE CONSERVATION IN KILIM KARST  
GEOFOREST PARK, LANGKAWI

BY

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## ABSTRACT

Tourism is one of the key sectors that generate income to Malaysian economic. Therefore, Langkawi Development Authority (LADA) had made great effort in positioning Langkawi Island on the list of United Nations Educational, Scientific and Cultural Organisation (UNESCO) as one of a recognized Geopark in June, 2007. The international recognition from UNESCO raised Langkawi Geopark to the eyes of the world as one of the conserved geological heritage area. Nevertheless, it has been reported in 2014 the island had received a warning card due to conservation issues. The incident could affect the Geopark status of Langkawi Island. The research study believes these complications were caused by numerous factors including the excessiveness of tourism activities. This study aims to ascertain type of tourism activities that affected natural resource conservation. Several problems have been identified; 1) tourism activities increased pollution along Kilim waterways, 2) tourism activities affected natural resources and wildlife habitat in Kilim, and 3) high capacity and frequency of tourist arrivals affected bat habitat and natural heritage in Bat Cave. Data collections were obtained from structured questionnaires, semi-structured interviews and observations. Respondents were selected from local residents, staffs involved in Kilim tourism and tourists. Then, all data were analyzed using SPSS software into descriptive statistic and one-way Anova analysis. Most respondents agreed some tourism activities such as ‘Eagle Feeding’ which has been carried out during ‘Eagle Watching’ as well as ‘Boating Tourism’ had affected the natural resources in Kilim area. Hence, in order to conserve the area for future generations as well as to be continuously endorsed by UNESCO, all parties involved in Kilim Karst Geoforest Park tourism including staff, local residents and tourists should take responsibility in conserving the valuable natural resources.

**Keywords:** Kilim Karst Geoforest Park, recognition, tourism activities, conservation, natural resources.

## خلاصة البحث

السياحة هي واحدة من القطاعات الرئيسية التي تجلب الدخل للاقتصادي المالي. لذلك؛ بذلت هيئة تنمية لانكاوي (LADA) جهدا كبيرا في وضع جزيرة لانكاوي في قائمة منظمة الأمم المتحدة للتربية والعلم والثقافة (اليونسكو) بوصفها أحد المحميات المعترف بها في يونيو 2007. بعد الاعتراف الدولي من اليونسكو أصبحت لانكاوي في نظر العالم كواحدة من مناطق المحميات الطبيعية. ومع ذلك أفادت التقارير أن الجزيرة قد تلقت في عام 2014 بطاقة تذكارية لقضايا الحماية الاعمار. وقد يؤثر الحادث على الوضع الجيولوجي للجزيرة وتعتقد الدراسة البحثية أن هذه المضاعفات الناتجة عن العديد من العوامل المختلفة بما في ذلك الإفراط في الأنشطة السياحية. وتهدف الدراسة إلى التأكد من نوع الأنشطة السياحية التي تؤثر على الحفاظ على الموارد الطبيعية في منطقة (Kilim Karst Geoforest Park) لانكاوي. وقد تم تحديد العديد من المشاكل منها أن الأنشطة السياحية زادت من نسبة التلوث على طول الممرات المائية، ثم الأنشطة السياحية تؤثر على البيئة والحياة البرية في (Kilim)، كذلك كثرة ازدحام السائحين أثرت على موطن الخفافيش والتراث الطبيعي في كهوفهم. وقد تم الحصول على مجموعات البيانات من الاستبيانات المنظمة والمقابلات شبه المنظمة والملاحظات. وتم اختيار المستجيبين من السكان المحليين والموظفين المشاركين في السياحة والسائحين الذين يزورون (Kilim). وبعد ذلك تم تحليل جميع البيانات باستخدام برنامج SPSS في الإحصاء الوصفي وتحليل Anova أحادي الاتجاه. ونتج عن هذا موافقة معظم المجيبين على أن النشاط السياحي في (Kilim) قد أثر على الموارد الطبيعية في المنطقة. لذلك، ومن أجل الحفاظ على هذه المنطقة للأجيال القادمة وكذلك الاعتراف الدائم من قبل اليونسكو، يجب على جميع الأطراف المشاركة في سياحة (Kilim) بما في ذلك الموظفين، والسكان المحليين والسياح أن يتحملوا المسؤولية في الحفاظ على الموارد الطبيعية القيمة.

الكلمات الدلالية: Kilim Karst Geoforest Park ، الاعتراف ، الأنشطة السياحية ، الحفظ ، الموارد الطبيعية.

## ABSTRAK

Pelancongan adalah salah satu sektor utama yang menjana pendapatan kepada ekonomi Malaysia. Oleh itu, 'Langkawi Authority Development' (LADA) telah berusaha keras bagi meletakkan Pulau Langkawi dalam senarai Pertubuhan Pendidikan, Sains dan Kebudayaan Pertubuhan Bangsa-bangsa Bersatu (UNESCO) sebagai salah satu Geopark yang diiktiraf pada bulan Jun 2007. Pengiktirafan antarabangsa daripada UNESCO itu telah membangkitkan Langkawi 'Geopark' di mata dunia sebagai salah satu kawasan warisan geologi yang dipelihara. Walau bagaimanapun, pada tahun 2014 pulau tersebut telah dilaporkan menerima kad peringatan kerana isu-isu pemuliharaan. Kejadian itu boleh menjejaskan status pengiktirafan 'Geopark' di Pulau Langkawi. Kajian penyelidikan ini mempercayai bahawa komplikasi ini disebabkan oleh pelbagai faktor termasuk aktiviti pelancongan yang berlebihan. Matlamat kajian ini adalah untuk menentukan jenis aktiviti pelancongan yang menjejaskan pemuliharaan sumber alam semula jadi di Kilim Karst Geoforest Park, Langkawi. Beberapa masalah telah dikenalpasti; 1) aktiviti pelancongan meningkatkan pencemaran sepanjang laluan air Kilim, 2) aktiviti pelancongan menjejaskan alam dan habitat hidupan liar di Kilim, 3) serta kekerapan ketibaan pelancong yang tinggi bagi melawat habitat kelawar dan warisan semulajadi di Gua Kelawar telah menjejaskan kondisi lokasi tersebut. Koleksi data diperolehi daripada soal selidik berstruktur, wawancara dan pemerhatian separa berstruktur. Responden dipilih daripada penduduk setempat, kakitangan yang terlibat dalam pelancongan dan pelancong yang melawat Kilim. Kemudian, semua data dianalisis dengan menggunakan perisian SPSS ke dalam statistik deskriptif dan analisis Anova sehala. Kebanyakan responden bersetuju beberapa aktiviti pelancongan seperti 'Eagle Feeding' yang telah dijalankan semasa 'Eagle Watching' serta pelbagai jenis pelancongan yang telah menjejaskan sumber asli di kawasan Kilim. Oleh itu, untuk memulihara kawasan ini bagi generasi akan datang serta terus disokong oleh UNESCO, semua pihak yang terlibat dalam pelancongan Kilim Karst Geoforest Park termasuk kakitangan, penduduk tempatan dan pelancong harus bertanggungjawab dalam pemuliharaan sumber semula jadi yang berharga.

**Kata kunci:** Kilim Karst Geoforest Park, pengiktirafan, aktiviti pelancongan, pemuliharaan, sumber alam semula jadi.

## APPROVAL PAGE

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## LIST OF ABBREVIATION

UNEP	United Nations Environment Program
WTO	World Trade Organisation
UNESCO	United Nations, Educational, Scientific and Cultural Organization
LADA	Langkawi Development Authority
NAHRIM	National Hydraulic Research Institute of Malaysia
KKKLB	Koperasi Kampung Kilim Langkawi Berhad
PAHs	Polyaromatic Hydrocarbons
NEP	New Environmental Paradigm
GGN	Global Geopark Network
KEN	Kumpulan Ekonomi Nelayan
KPSP	Komuniti Pengurusan sumber Perikanan
UKM	Universiti Kebangsaan Malaysia
SPSS	Statistical Packages for the Social Sciences

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# **CHAPTER ONE**

## **INTRODUCTION**

### **1.0 RESEARCH BACKGROUND**

The natural environment has been an object of desire for worldwide tourists since the Industrial Era. Humans are attracted to the physical environment by various factors such as traditions, spiritualism, exploration, hunting, fishing, outdoor recreation, attraction to countless wildlife, and for healthy environment (Meyer, 2006). Nevertheless, the higher volume of tourist exploited the natural environment, the higher potential it could be destructed. Stephen, L.J (2004) proclaimed that there were four major factors that contributed to deterioration in environmental quality under pressure from tourism activities:

- I. The greatness of tourism.
- II. The elasticity of the ecosystem.
- III. The length of construction time taken by the developer.
- IV. Transformation of recreational development, which may change the recreational resource.

The increasing demands for ecotourism and nature-based tourism in recent years have also created more impacts on the natural environment. Globally, air travel and other vehicles meant for travelling contribute to the increasing causes of greenhouse gas emissions, habitat loss, and degradation of various types of environments, such as coastal areas, mountains and wilderness areas, rural areas and small islands. Those environmental changes affecting land, air, and water (Wong, 2002).

The environmental impacts of tourism spread with the increasing awareness of environmental issues in 1970's. It is the combination of creating tourism as a form of economic development and simultaneously brings conservation issues together (David, C., 2004). To a large extent, research on the environmental impacts of tourism is still "relatively immature and true multidisciplinary approach to investigation has yet to be developed" (Holden, 2000). Thus, the truthful opinion of Holden should be agreed as the environmental impacts of tourism have to be explored by all parties that involved in tourism activities. Furthermore, Landscape Architects and Planners have argued that, with effective design and management, the existence of "symbiosis" between tourism and the environment is possible to reach (David, C., 2004). Mike, C. (2004) added that, such "symbiosis" is essential to "sustain" the environment and the concept is known as "sustainable development". Thereafter, the term "ecotourism", was used in the mid-1980s. Those terms and concepts are created to suggest a symbiotic relationship between tourist and the natural environment. It is not only possible but perhaps it also the utmost step in balancing tourism and conserving the natural resources.

On the other hand, United Nations Environment Program and World Trade Organisation (UNEP and WTO, 2002) proclaimed that ecotourism embraces the principles of sustainable tourism, concerning the economic, social and environmental impacts of tourism. They also embrace the following specific principles that differentiate it from the wider concept of sustainable tourism:

- I. Contributes to the conservation of natural and cultural heritage,
- II. Includes local and aboriginal communities.
- III. Interprets the natural and cultural heritage of the destination to visitors.
- IV. Encourages independent travellers or tourists in small group size.

Therefore, both tourism and natural resources are significant to the economic growth and human well-being. The tourism activities contribute revenues to the country and inspire human to appreciate the natural environment. At the same time, the natural resources contribute to the economy and support the cycle of the natural ecosystem. On the other hand, balancing tourism and resource conservation are essential in order to support the economic growth and to sustain the natural environment. Therefore, knowledge on the effect of tourism activities towards natural resource is imperative in sustaining the environment.

### **1.1 SIGNIFICANCE OF ISSUE**

This research is significant towards the issue of natural resource conservation in Kilim Karst Geoforest Park as it is one of the Geoforest Park in Langkawi Geopark that possessed the most natural heritage site for tourists visit if compared to Machinchang Cambrian Geoforest Park and Dayang Bunting Marble Geoforest Park (Langkawi Development Authority, 2007). Moreover, the ‘Geopark Status’ needs to be renewed in every four years of endorsement by UNESCO ( United Nations, Educational, Scientific and Cultural Organization) and one of the major criteria of retaining the Geopark Status is protection and conservation of geological heritage (LADA, 2007). In conjunction with the issue, The Star Online (2014) reported Langkawi Geopark had being issued a “yellow card” by UNESCO for its second endorsement application. Consequently, LADA worked very hard to retain the Geopark Status.

As indicated earlier, tourism is one of the vital contributions to the economy of this nation. Malaysia aims 3 million tourist arrivals to Langkawi yearly and contributes RM3.8 billion to the economy (Sharkawi, 2014). The high number of tourist arrivals to Langkawi Island is definitely because of various attractions that have been offered by

the island to the tourists. One of them is the endorsement of the island to a geopark status by United Nations Educational, Scientific and Cultural Organization (UNESCO) in Jun 2007. Thus, as one of a Geoforest Park in Langkawi Geopark, Kilim Karst possesses multiple of natural assets, which have been continuously attracting thousands of tourists yearly to experience its enchanting ambience. Although tourist arrival is beneficial to local resident as well as to the country in economic wise, conservation effort should not be neglected. Therefore, this research is executed to discover whether tourism activities in Kilim Karst Geoforest Park has had affected the conservation process of the area.

According to Elmira, S. (2011) the natural characteristics of local ecosystems with coral reefs, sand beaches, and mangrove in Langkawi Geopark are affected from threat by poor waste management. In addition, boats which are the vital tourist transportation throughout Langkawi Geopark have worsen the situation by affecting the natural resources such as mangrove depletion and erosion of the riverbank by wake current produced by the boat engine. Shahbudin et. al (2011) stated that wake current from boating activities contributed 6% to mangrove degradation in Kilim Karst Geoforest Park. Meanwhile, Nasher et. al (2013), identified that one of the most significant polluting components of petroleum from boating in Langkawi is polycyclic aromatic hydrocarbons. Furthermore, Mazlin et. al (2005) mentioned that water in Kilim River is not in good condition and might need a conventional treatment.

Moreover, another tourist destination that is affected by tourism activities is the Bat Cave. It is one of the natural heritage of Langkawi Geopark which is also located in Kilim Karst Geoforest Park. It is important to inspect whether the quantity of bats in Bat Cave are reducing since the cave was open to public in 2007 as the bat habitat is one of the main attractions to the cave. Thus, it is foreseen that the boost in tourism

industry would significantly affect natural resources in Kilim Karst Geoforest Park and Langkawi Geopark as a whole.

## **1.2 RESEARCH PROBLEMS**

Tyler (2014) identified Langkawi was slammed by UNESCO with a warning notice to upgrade the Island according to Global Geopark Network guidelines or to be delisted from Geopark Status. “Work on to retain Geopark status”,(2015) further explained that in 2011, UNESCO had recommended the management of Langkawi Geopark to improve the facilities, signage, public awareness, conservation efforts, cleanliness and local participations in their projects. Therefore, to ensure that Langkawi will be continually endorsed as a Geopark in more years to come, full effort needs to be upsurged in order to comply with the given guidelines.

Nevertheless, all those information are considered as false news by Langkawi Development Authority (LADA) as Langkawi Geopark managed to retain the Geopark status in year 2015 from UNESCO after the hard upgrading work which have been done by LADA and all the Geopark team. Therefore, in order to retain the geological and natural heritage of Langkawi Geopark, conservation works need to be done continuously without fail.

### **i. Tourism Activities Increased Pollution along Kilim Waterways**

Wong (2002) stated four types of pollution produced by tourism which are air pollution, untreated waste water, solid waste disposal and noise pollution. However, the level of environmental impacts depends on the usage rates, type of recreational activities and climatic factors (Sun and Walsh, 1998).