Uluslararası İleri Doğa Bilimleri ve Mühendislik Araştırmaları Dergisi
Sayı 7, S. 313-319, 10, 2023

Araştırma Makalesi

IJANSER
https://alls-academy.com/index.php/ijanser
ISSN: 2980-0811

International Journal of Advanced Natural Sciences and Engineering Researches
Volume 7, pp. 313-319, 10, 2023

Research Article

Eco-Conscious Tourism: A study on Green Turtle conservation measures at Pantai Kerachut, Penang

Nayeem Asif[*], Sarker Mohammad Rezaul Karim[2] and Rafia Karim[3]

[1]*Department of Architecture, Kulliyyah of Architecture and Environmental Design, IIUM, Malaysia*
[2]*Faculty of Agriculture, Universiti Putra Malaysia, Malaysia*
[3]*Faculty of Agro Based Industry, Universiti Malaysia Kelantan, Malaysia*

[*]*(nayeem@iium.edu.my) Email of the corresponding author*

(Received: 07 November 2023, Accepted: 13 November 2023)

(2nd International Conference on Contemporary Academic Research ICCAR 2023, November 4-5, 2023)

ATIF/REFERENCE: Asif, N., Kaarim, S. M. R. & Karim, R. (2023). Eco-Conscious Tourism: A study on Green Turtle conservation measures at Pantai Kerachut, Penang. *International Journal of Advanced Natural Sciences and Engineering Researches*, 7(10), 313-312.

Abstract **–** The impact of tourism on the safety of green turtle hatching at Pantai Kerachut, Penang, Malaysia has been reviewed in this paper. It emphasizes the need for sustainable ecotourism practices to protect the reproduction processes of endangered green turtles. The uncontrolled influx of tourists at Penang National Park has raised concerns about its biodiversity and ecosystem. The study aims to understand the existing situation related to tourism-based activities at Pantai Kerachut and their repercussions on green turtle reproduction. The findings reveal that while authorities are making efforts to control the number and activities of tourists to safeguard the ecosystem, room for improvement remains. Illegal activities such as night camping disrupt the hatching process of turtles, necessitating stricter monitoring. Furthermore, tourist facilities at Pantai Kerachut do not adhere to proper safety standards, particularly concerning the jetty, accessibility, sanitation, and other essential amenities. There is potential for enhancing the nesting environment for green turtles by introducing suitable vegetation along the shoreline. To address these concerns, a comprehensive review of existing tourism rules and activities based on national ecotourism policies is recommended. Specific guidelines tailored to the unique ecosystem of Penang National Forest should also be developed. Lastly, further research is proposed to investigate the hatching patterns and suitable environmental conditions for green turtles. This research also projected to define specific time durations and activities with appropriate facilities, ensuring the proper management of tourism and the preservation of the ecosystem at Pantai Kerachut.

Keywords – Green Turtles, Pantai Kerachut, Penang National Park, Ecotourism, Sustainability, Tourism Impact, Biodiversity Conservation, Turtle Nesting, Environmental Management.

I. INTRODUCTION

The delicate balance between tourism and ecological preservation is a crucial issue in environmental research. This paper focuses on the impact of tourism on the safety of green turtle hatching at Pantai Kerachut, a vital nesting ground for the endangered species located within the Penang National Park in Malaysia. [1]

The beauty of Pantai Kerachut and its role as a green turtle nesting site have attracted a growing number of visitors. However, uncontrolled tourism

has the potential to disrupt the ecosystem and jeopardize the reproductive process of the green turtle population. The primary objective of this study is to understand the effects of tourism-based activities on the safety of green turtle hatching and the biodiversity of the ecologically significant region.[2]

By conducting interviews with turtle sanctuary authorities and observing tourism regulations, behavior, and activities at Pantai Kerachut, this research aims to provide a comprehensive assessment of the situation. The study seeks to illuminate the relationship between tourism and ecology, offering insights into sustainable ecotourism practices.[3]

The paper draws from existing research in ecotourism, environmental conservation, and the interactions between tourism and wildlife preservation. This study aims to contribute to the body of knowledge and promote a more sustainable approach to tourism that ensures the continued safety of green turtle hatching at Pantai Kerachut. Through analysis and recommendations, this research aims to safeguard the natural heritage of this ecologically significant region.[4]

II. Literature Review

This section highlights the dire situation of green turtle conservation in Malaysia. According to Chan's 2006 study, leatherback and olive ridley turtles are on the brink of extinction, and other species are also facing a decline, except for the green turtles of the Sabah Turtle Islands [5], [6]. Ahmed's 2006 research stresses the urgent need for conservation efforts as populations of leatherback, olive ridley and hawksbill turtles are at risk of collapsing [7]. In addition, Hassan's 2017 study highlights the importance of public awareness programs and education toolkits in promoting green sea turtle conservation in Sarawak, Malaysia [8]. Lastly, Chan's 2013 study presents the success of in-situ incubation and the potential for self-sustaining conservation efforts based on data from a long-term marine turtle conservation project [9]. These papers emphasize the need for coordinated conservation strategies, harmonized legislation, and increased public awareness to protect and restore green turtle populations in Malaysia.

Fig. 1 Pantai Kerachut, Penang with its scenic beauty.

A. *Significance of Green Turtle Conservation*

Green turtles are an endangered species that play a vital ecological role. As marine reptiles, they help maintain the health of marine ecosystems, particularly coral reefs and seagrass beds. Green turtles are considered keystone species due to their herbivorous feeding habits, which help control the growth of seagrass and maintain the overall balance of the ecosystem [10]. Their presence affects the distribution of other marine organisms, and their nesting behavior contributes to nutrient cycling on beaches. Moreover, green turtles have cultural and economic significance around the world due to their role in ecotourism, attracting visitors to areas where they nest. Therefore, the conservation of green turtles is essential not only for the species itself but also for the overall health of marine ecosystems and local economies.

B. *Pantai Kerachut and Its Strategic Location for Green Turtle Hatching*

Pantai Kerachut, nestled within the pristine Penang National Park, is renowned for its natural beauty and ecological significance. Situated on the northwest coast of Penang Island, Malaysia, this coastal area has earned recognition as a critical nesting site for the green turtle (Chelonia mydas). The park's lush rainforests, diverse wildlife, and the serenity of its beaches have long attracted nature enthusiasts and tourists. Moreover, it is the secluded and undisturbed nature of Pantai Kerachut that makes it an ideal nesting ground for green turtles [4]. The remote location offers the species a safe and peaceful environment for laying their eggs, a process known as arribada. However, the increasing popularity of Pantai Kerachut as a

tourist destination has raised concerns about the potential impact of uncontrolled tourism on the green turtle population and their nesting sites. This strategic location's significance lies in its unique ability to harmonize tourism with the conservation of a vital and endangered species [11], [12].

C. *Tourism Impact on the Eco-system of Pantai Kerachut*

Pantai Kerachut is a beautiful and ecologically sensitive coastal region that has seen a surge in tourism in recent years. While the area's natural beauty is undoubtedly a draw for visitors, uncontrolled tourism activities could harm the delicate balance of the ecosystem. The growing number of tourists could have various adverse impacts on the environment, including habitat degradation, pollution, disturbance of wildlife, alteration of natural vegetation, and threats to the green turtle nesting sites [2], [8]. Tourists who litter and illegally camp can contribute to environmental degradation, putting at risk the very features that make Pantai Kerachut such an attractive destination [13]. It is crucial to ensure that tourism and conservation coexist sustainably in this strategic location to preserve the ecological integrity of the region.

D. *Potential of Eco-tourism Policy Implementation for Conserving Green Turtles at Pantai Kerachut*

The implementation of eco-tourism policies can be a strategic approach to conserving green turtles at Pantai Kerachut. As this coastal region is a critical nesting ground for these endangered creatures, eco-tourism policies can help balance the increasing interest in this natural haven with the need to preserve its ecological balance [4], [14]. By adopting sustainable tourism practices and regulations, Pantai Kerachut can mitigate the adverse impacts of uncontrolled tourism on green turtle nesting sites and their habitats. These policies may include visitor codes of conduct, controlled visitor numbers, and measures to reduce light pollution, noise disturbance, and habitat disruption. The potential of such policies lies in their ability to ensure that Pantai Kerachut remains an attractive tourist destination while also protecting the delicate environment and contributing to the conservation of the green turtle population .

III. METHODS

To investigate the intricate relationship between tourism and green turtle safety at Pantai Kerachut, a comprehensive approach was employed. This approach had two facets. The first facet involved conducting on-site observations of tourism facilities and tourist behavior. This allowed for the evaluation of infrastructure, visitor activities, and their adherence to park regulations. The second facet entailed conducting structured interviews with turtle sanctuary authorities. This was done to gain a more detailed understanding of existing tourism policies, potential threats to green turtle reproduction, and ongoing conservation efforts.

The methodology employed by the researchers involved two different facets to investigate the relationship between tourism and green turtle safety at Pantai Kerachut. On-site observation of tourism facilities and tourist behavior was the first facet, which included an evaluation of infrastructure, visitor activities, and their adherence to park regulations. The second facet involved structured interviews with turtle sanctuary authorities to gain a detailed understanding of existing tourism policies, potential threats to green turtle reproduction, and ongoing conservation efforts. The approaches provided deep insights into the dynamics of human interactions within this ecologically significant area, the condition of existing facilities, and the potential risks to the delicate ecosystem. The interviews also shed light on the nuanced issues and complexities linked to the impact of tourism on green turtle reproduction, providing a more comprehensive and informed assessment of the prevailing situation at Pantai Kerachut.

IV. RESULTS

This section will highlight in the major findings of the study. The discussion will encompass both observation and interview findings together to gain a deeper understanding of the existing condition and practices on-site.

A. *The Authority's Efforts to Control Tourism Impact*

The study shows that authorities have taken steps to regulate the influx and activities of tourists at Pantai Kerachut in order to protect the ecosystem. These measures encompass a variety of approaches aimed at managing the environmental impact of tourism while still allowing visitors to enjoy this unspoiled natural site. One of the major measures implemented is the restriction on the number of tourists allowed per day. This restriction aims to avoid overcrowding and excessive human activity, which can disrupt the natural balance of the area. It ensures that the ecosystem is not overwhelmed by the presence of visitors and supports the principles of sustainable ecotourism.

Another key strategy is regulating the entry routes to Pantai Kerachut to maintain an optimal number of visitors. By directing tourists through specific entry points, authorities can control the flow of visitors and reduce the environmental impact on sensitive areas within the park. The deployment of staff at the site to supervise tourism activities is another significant effort. This proactive approach allows for real-time monitoring of tourist behavior and ensures that visitors comply with park regulations. Staff presence helps educate visitors and raise awareness, promoting responsible and eco-conscious behavior.

The provision of signboards in both Bahasa and English is a practical step toward facilitating visitor guidance and enhancing their understanding of the park's rules and ecological significance. Clear and informative signboards can help tourists make informed choices and minimize unintentional negative impacts. Despite these efforts, the findings suggest that there is still room for improvement. This implies that despite the existing measures, there is a need to enhance the effectiveness of these strategies. Further improvements and innovations may be necessary to strike a delicate balance between visitor enjoyment and the preservation of Pantai Kerachut's fragile ecosystem.

B. *Facilities for the Tourists Do Not Follow Proper Safety Standards:*

It was found that the existing facilities catering to tourists at Pantai Kerachut do not meet recognized safety standards. The study found various aspects of infrastructure, including the jetty, accessibility, sanitation, and other amenities, were inadequate. The condition of the jetty was found to be subpar, lacking proper maintenance and posing potential risks to the safety of tourists. Additionally, the absence of universal design for accessibility raises concerns about equal access for all individuals, including those with disabilities. Proper waste disposal and sanitation are vital to ensure that the delicate ecosystem of Pantai Kerachut remains untarnished. Addressing these deficiencies is crucial for the safety and well-being of tourists and aligns with the broader objective of sustainable ecotourism.

Fig. 2 Penang National Park jetty [Source: Wikimedia Commons]

It has been observed that the jetty at Penang National Park may pose a significant risk to users and tourists. The structure appears to be in a state of disrepair, with unsafe materials and structures that could be hazardous to those who use it.

Fig. 3 Abandoned turtle hatchery at Pantai Kerachut.

The hatchery in the image above appears to be made of wooden poles and black netting, which is torn and sagging. The structure is dilapidated and overgrown with vegetation.

Fig. 4 Abandoned structures.

Tourists who have hiked for more than an hour to reach the beach may experience some temporary inconvenience due to the abandoned structures and facilities that are currently under renovation. While these renovations are underway, visitors may need to navigate around the work being done to reach their destination.

C. *Suitable plantation for green turtles hatching process*

One of the crucial findings of the study pertains to the vegetation along the shoreline at Pantai Kerachut and its influence on the green turtle nesting process. Green turtles (Chelonia mydas) are known for their nesting habits, where they emerge from the sea and journey ashore to lay their eggs. The distance they must travel from the shoreline to suitable nesting sites in the jungle is a critical factor affecting their reproductive success.

The Turtle Sanctuary Authority has already taken steps to address this challenge by introducing vegetation that encourages green turtles to lay their eggs closer to the shore. Specifically, the planting of Scaevola taccada, a coastal plant, has been undertaken with the aim of reducing the travel distance for the turtles. Scaevola taccada, also known as beach cabbage or sea lettuce, is well-suited to the coastal environment and provides a suitable substrate for turtle nesting. While this initiative is a positive step, the findings indicate that the current quantity of Scaevola taccada may not be sufficient to fully meet the nesting needs of the green turtles. To maximize its effectiveness, a more extensive plantation of this vegetation could be considered.

Fig. 5 Egg laying site (October 2023) near Scaevola taccada plant.

By increasing the presence of Scaevola taccada along the shoreline, more green turtles may be encouraged to lay their eggs in closer proximity to the sea. This would not only reduce the travel distance for the turtles, making the nesting process less arduous, but also enhance the overall safety and success of their reproductive activities. The introduction of additional Scaevola taccada plantations aligns with the broader objective of preserving the green turtle population and their nesting sites at Pantai Kerachut. It represents a practical strategy to facilitate and support the turtles' natural behavior, contributing to the overall conservation efforts in the region. This finding underscores the importance of ongoing ecological management to ensure the safety and sustainability of green turtle hatching in this critical habitat.

D. *Monitoring and Mitigating Illegal Night Camping Activities*

The study highlights the adverse impact of illegal night camping on the green turtle hatching process at Pantai Kerachut. Green turtles have distinctive nesting behavior, which primarily occurs during the night, when they emerge from the sea to lay their eggs under the cover of darkness. The study reveals that illegal night camping activities in the vicinity of the turtle nesting sites disrupt this crucial process. The presence of campers, including campfires, artificial lighting, and human activity, disturbs the turtles and creates a hostile environment for their reproductive efforts. To address this issue, the findings emphasize the need

for strict monitoring and regulation of night camping activities in the Pantai Kerachut area.

Given the importance of undisturbed nesting for green turtles, it is imperative to enforce measures that discourage and prevent unauthorized camping during the critical nesting season. The authorities responsible for turtle conservation must work in tandem with park management to ensure that nighttime activities are in line with ecological preservation goals. Recognizing the vulnerability of green turtles during the nesting period, particularly at night, the study underscores the importance of heightened vigilance and enforcement. The effectiveness of these efforts will play a pivotal role in safeguarding the green turtle hatching process and ensuring the sustainability of this endangered species. By addressing the issue of illegal night camping, Pantai Kerachut can reinforce its commitment to the conservation of green turtles and their critical nesting grounds.

V. Conclusion and Recommendation

The study has uncovered various crucial findings that indicate the need for improved ecotourism practices at Pantai Kerachut, Penang, for the protection of green turtle hatching. Four main concerns have been identified through observations and interviews. Firstly, there is a lack of adequate and safe infrastructure to support sustainable ecotourism. Secondly, tourism activities require more stringent regulations and policy improvements. Thirdly, creating an appropriate hatching environment for green turtles is a top priority. Finally, the study highlights the importance of monitoring and addressing illegal tourism activities that threaten conservation efforts.

These findings lead to several key recommendations for future action. The authorities should prioritize the development of safe and eco-friendly facilities, including improved jetties, walkways, and sanitation, to address the issue of inadequate infrastructure. Additionally, existing policies should be reviewed and enhanced while establishing specific guidelines that align with national ecotourism objectives. To provide a more conducive environment for green turtles, measures such as planting suitable vegetation should be taken to reduce the travel distance for nesting turtles. Furthermore, strict regulations should be enforced, and vigilant monitoring should be conducted to curb illegal tourism activities, particularly those affecting the nesting process.

Further research should conduct in-depth studies on hatching patterns and environmental factors that influence green turtle nesting. Specific attention should be given to identifying the most suitable time-duration and activities that ensure the safety and success of the hatching process. Developing adequate facilities for both green turtles and tourists is crucial for maintaining the delicate balance between environmental conservation and ecotourism. Future research endeavors can provide valuable insights into refining ecotourism practices and nurturing a more harmonious coexistence between humans and the natural world at Pantai Kerachut.

References

[1] A. D. Mazaris, V. Almpanidou, B. P. Wallace, J. D. Pantis, and G. Schofield, “Sea turtle conservation and tourism in the Mediterranean: a review of the literature and recommendations for future research,” *Journal of Sustainable Tourism*, vol. 26, no. 1, pp. 1–18, 2018.

[2] F. Demirayak, O. Turkozan, S. Ergene, and Y. Kaska, “Impacts of tourism development on marine turtle nesting: strategies and actions to minimize impact,” *Journal of Tourism and Cultural Change*, vol. 16, no. 3, pp. 263–279, 2018.

[3] E. H. Chan, H. C. Liew, and A. G. Mazlan, “Tourism and green turtle conservation in Malaysia,” *Ocean Coast Manag*, vol. 40, no. 2, pp. 179–194, 1998.

[4] A. A. Mohd, A. Ahmad, C. F. Komilus, and M. R. Othman, “Ecotourism and sea turtle conservation in Penang National Park,” *Journal of Tropical Forest Science*, vol. 23, no. 4, pp. 467–475, 2011.

[5] E.-H. Chan, “Marine turtles in Malaysia: On the verge of extinction?,” *Aquat Ecosyst Health Manag*, vol. 9, no. 2, pp. 175–184, Jul. 2006, doi: 10.1080/14634980600701559.

[6] Malaysian Wildlife, “Green Sea turtle,” Malaysian Wildlife. Accessed: Sep. 03, 2023. [Online]. Available: https://malaysianwildlife.org/green-sea-turtle-chelonia-mydas/#:~:text=*Population%20estimate%3A%2085

%2C000%20%E2%80%93%2090%2C000%20nesting%20females

[7] M. Ahmed *et al.*, "Charting multidisciplinary research and action priorities towards the conservation and sustainable management of sea turtles in the Pacific ocean: a focus on Malaysia," 2006. [Online]. Available: https://api.semanticscholar.org/CorpusID:131180922

[8] R. Hassan, N. K. Yahya, L. M. Ong, L. K. Kheng, Z. Z. Abidin, and A. A. A. M. Jainal, "Public Awareness Program and Development of Education Toolkit for Green Sea Turtle Conservation in Sarawak, Malaysia.," *International journal of environmental and science education*, vol. 12, pp. 463–474, 2017, [Online]. Available: https://api.semanticscholar.org/CorpusID:134489596

[9] E. H. Chan, "A report on the first 16 years of a long-term marine turtle conservation project in Malaysia," 2013. [Online]. Available: https://api.semanticscholar.org/CorpusID:53967200

[10] K. A. Bjorndal, A. B. Bolten, and M. Chaloupka, "Green turtle ecology: linking habitat, diet and population status," in *Research and management techniques for the conservation of sea turtles*, IUCN/SSC Marine Turtle Specialist Group, 2000, pp. 47–55.

[11] N. Abas *et al.*, "Tourism Policy and Organization: Case Study of Penang National Park," in *Asia Tourism Forum 2016 – The 12th Biennial Conference of Hospitality and Tourism Industry in Asia (ATF-16)*, Atlantis Press, 2016, pp. 32–47.

[12] A. J. K. C. Shahrul Anuar Mohd Sah Sarahaizad Mohd Salleh, "Green turtle nesting activity in Penang Island from 2010 to 2016," *J Sustain Sci Manag*, vol. 14, no. 5, pp. 26–42, 2019, [Online]. Available: https://jssm.umt.edu.my/wp-content/uploads/sites/51/2019/10/3-14.5.pdf

[13] Z. Samdin and A. Aziz, "Tourism impact on the eco-system of Pantai Kerachut," *Journal of Tourism, Hospitality and Environment Management*, vol. 2, no. 6, pp. 1–14, 2017.

[14] Ministry of Tourism Arts and Culture, "National Ecotourism Plan 2016-2025 : Executive Summary." Ministry of Tourism, Arts and Culture, Kuala Lumpur, 2016. [Online]. Available: https://www.motac.gov.my/en/download/category/86-pelan-eko-pelancongan-kebangsaan-2016-2025