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Visitors' Biodiversity Knowledge: A Case Study at Pantai Redang, Sekinchan, Selangor

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Abstract

The knowledge of biodiversity conservation is essential to encourage proactive efforts in reducing the rapid rate of species extinction and population decline, thereby ensuring its sustainability for the enjoyment of future generations. This study aims to assess the level of individual knowledge regarding biodiversity conservation at Pantai Redang, Sekinchan, Selangor. Adopting a cross-sectional design and quantitative methodology, the research employed convenience sampling involving 123 participants and conducted both reliability and descriptive analyses. The results indicate a high level of individual knowledge on biodiversity conservation among respondents, with a mean score of 3.55, suggesting good knowledge levels. The reliability analysis demonstrated excellent internal consistency, yielding a Cronbach's alpha of 0.960. These findings suggest that visitors to Pantai Redang, Sekinchan, Selangor are generally mindful of biodiversity conservation. Consequently, knowledgeable visitors are more likely to ensure that tourist destinations are kept free from pollution and safeguarded against harmful exploitation.

INTRODUCTION

Biodiversity refers to the richness and variety of life on Earth, encompassing its capacity to adapt to changing environmental conditions and ensure the survival of species. It is, therefore, regarded as a priceless natural asset that must be preserved for future generations (Cesco et al., 2021). However, biodiversity extends beyond the sheer number of species present in a given region; it also encompasses the balance among populations of different species and the number of individuals within each species (Greenpeace Middle East and North Africa, 2024). In addition to providing communities with material wealth and livelihoods, biodiversity fosters social cohesion, resilience, security, health, and the freedom to make choices and take action (Milkisso, 2020).

Furthermore, sustainable human development is deeply intertwined with biodiversity (Wei et al., 2020). Alarmingly, an estimated one million plant and animal species are currently at risk of extinction due to human activities, with approximately 68% of global biodiversity lost in the past five decades (Hooykaas et al., 2020).

Public understanding and perceptions of biodiversity significantly influence conservation outcomes, as human actions—and inactions—can lead to environmental degradation, climate change, habitat destruction, and the depletion of natural resources (El & Chait, 2020).

Biodiversity education is therefore a critical component of environmental discourse, equipping individuals with a profound understanding of the interdependence between living organisms and their environments. By fostering awareness of the consequences of human actions, biodiversity education cultivates respect for nature and the life it sustains (Audrin, 2022). Moreover, environmental education empowers individuals to investigate environmental challenges, develop solutions, and take action to improve ecological conditions. Strengthening public comprehension of the value of biodiversity, along with the threats it faces, is essential to raising awareness, enhancing public consciousness, and encouraging active participation in local conservation efforts (El & Chait, 2020). Education is thus widely recognised as a vital instrument for advancing sustainable development and shaping positive attitudes and behaviours toward environmental and developmental issues (Franzolin et al., 2021).

Malaysia's rich coastal resources and maritime heritage have historically played a crucial role in national economic growth and food security (Obi et al., 2025). Peninsular Malaysia is lined by approximately 4,800 kilometres of coastline (Nor Shahida, 2022). However, rapid development in recent decades has posed significant threats to various biodiversity species. Notably, the year 2020 was designated as the "Biodiversity Super Year," marking significant milestones since the Convention on Biological Diversity (CBD) was opened for signature at the Rio de Janeiro Earth Summit on June 5, 1992. The CBD officially came into force on December 29, 1993, and Malaysia became a party to the Convention on September 22, 1994, after signing it on June 24, 1994. By ratifying international agreements such as the CBD, Malaysia is legally bound—under the international legal principle of pacta sunt servanda ("agreements must be kept")—to uphold its commitments to biodiversity conservation (Wan Izatul, 2020).

Given the ecological and economic significance of Malaysia's coastal regions, understanding the potential impacts of human activities on local biodiversity is imperative. Pantai Redang, Sekinchan, Selangor, for example, is renowned for its "wishing tree," geese, shorebirds, and variety of seafood vendors. The Sekinchan Wishing Tree, located near Pantai Redang, is a notable landmark adorned with thousands of crimson ribbons tied to its branches (Selangor Travel, 2021). This destination serves as a popular recreational site, attracting visitors for sightseeing and picnicking. Such activities, while economically beneficial, may inadvertently affect local biodiversity—often without visitors' awareness.

Accordingly, this study seeks to assess visitors' understanding of biodiversity conservation at Pantai Redang, Sekinchan, Selangor. By evaluating public knowledge in this context, the research aims to identify knowledge gaps and provide insights that can guide future environmental awareness campaigns and community-based conservation initiatives in Malaysia.

LITERATURE REVIEW

Biodiversity conservation is essential for safeguarding ecosystems and ensuring the coexistence of humans with other living organisms. The integration of Traditional Ecological Knowledge (TEK) plays a pivotal role in this process, as Indigenous Peoples and Local Communities (IPLCs) have, for millennia, managed, preserved, and sustainably utilized seascapes and coastal landscapes (Fajardo et al., 2021). Their cultural traditions and customary practices have proven vital for biodiversity protection, and the international community increasingly acknowledges their central contribution to achieving global biodiversity targets. Nevertheless, despite growing scientific understanding, biodiversity continues to decline at alarming rates, primarily driven by unrestrained economic growth, which has transformed much of the planet and triggered unprecedented biodiversity loss (Moranta et al., 2021).

In African contexts, TEK—which encompasses local customs, taboos, and sacred areas—has been instrumental in in situ natural resource management (Sinthumule, 2023). These indigenous practices often reflect a profound respect for nature, offering valuable lessons for modern conservation strategies. However, modernization and shifting cultural norms threaten the preservation of these knowledge systems (Sinthumule, 2023). This is equally relevant to local contexts such as Pantai Redang, Sekinchan, Selangor, where traditional knowledge and individual environmental understanding can significantly influence conservation outcomes.

Individual and community awareness are critical to biodiversity conservation. Zannini et al. (2021) highlight the importance of recognizing localized and traditional knowledge systems, which remain underrepresented in academic literature. In coastal and rural communities such as Sekinchan, these knowledge systems are often transmitted informally through daily interactions with the natural environment. However, biodiversity studies are frequently narrow in scope, focusing on individual species or ecosystems rather than adopting a holistic and integrated perspective (Mammola et al., 2023).

Another challenge lies in the lack of interdisciplinary collaboration in conservation. Hutchinson and Lucey (2024) argue that financial mechanisms—such as biodiversity credits and conservation financing—are often neglected in strategic planning, limiting the scalability of conservation initiatives. Zwieten (2021) identifies three dominant issues in biodiversity financing: chronic underfunding, inefficient allocation of resources, and the slow adoption of innovative financial instruments. The study further notes that the estimated global funding gap for biodiversity is substantially larger than previously believed and continues to grow. Innovative financing often requires strategic partnerships among governments, civil society, and the private sector, underscoring the importance of interdisciplinary, multi-stakeholder approaches (Zwieten, 2021).

Protected areas remain a cornerstone of global biodiversity strategies. He and Wei (2023) emphasize that their ecological effectiveness depends not only on legislative and institutional frameworks but also on public understanding and support. In the context of Pantai Redang, Sekinchan, Selangor, examining how local residents and visitors perceive and contribute to biodiversity protection is critical. Promoting individual knowledge should be aligned with environmental education, targeted awareness campaigns, and participatory approaches that encourage community engagement.

In conclusion, the literature demonstrates that effective biodiversity conservation requires the integration of scientific research, TEK, technological innovation, and robust financial mechanisms. These components achieve their greatest impact when reinforced by public awareness and individual understanding of biodiversity challenges. Strengthening biodiversity knowledge at the local level—particularly in areas such as Pantai Redang, Sekinchan, Selangor—can enhance community participation and drive grassroots conservation. Such awareness not only empowers local stakeholders but also establishes a strong foundation for long-term ecological sustainability. Future research should address existing gaps in geographical coverage and species representation, while fostering inclusive, community-driven conservation models that bridge local traditions with global conservation priorities.

METHODOLOGY

This study was conducted at Pantai Redang, Sekinchan, Selangor, a well-known recreational site rich in biodiversity, including diverse marine life and mangrove habitats. The site was selected due to its active environmental initiatives, particularly regular beach-cleaning programs, which align closely with the study's focus on biodiversity conservation efforts. A descriptive quantitative research design was employed to evaluate the level of individual knowledge, awareness, and attitudes toward biodiversity conservation among participants. The target population comprised individuals involved in the environmental programs at the site, with a total of 123 respondents participating in the survey. Data were collected through a structured questionnaire designed to capture respondents' demographic profiles, knowledge of biodiversity, and awareness and attitudes toward conservation practices. A Likert-scale format was used to ensure consistency and accuracy in response measurement. Data analysis was performed using the Statistical Package for the Social Sciences (SPSS), with descriptive statistics applied to summarize frequencies, percentages, and mean scores related to participants' knowledge and awareness levels. Additionally, a reliability analysis using Cronbach's Alpha was conducted to assess the internal consistency of the questionnaire items, ensuring the robustness of the measurement tool for evaluating knowledge, awareness, and attitudes toward biodiversity conservation at Pantai Redang, Sekinchan, Selangor.

RESULT AND DISCUSSION

Profile of Respondents

The profile of the respondents (Table 1.0) in this study provides valuable insights into individual knowledge of biodiversity conservation at Pantai Redang, Sekinchan, Selangor. A total of 123 respondents participated, the majority of whom were Malaysian citizens. Gender distribution indicated a predominance of female respondents (61.8%, n = 76), while male respondents accounted for 38.2% (n = 47). In terms of age, the largest proportion of respondents were between 21 and 30 years old (47.2%, n = 58), followed by those aged 51 years and above (22.0%, n = 27). Respondents under 20 years old and those aged 41–50 each constituted 13.0% (n = 16) of the sample, while the smallest group was aged 31–40 years (4.9%, n = 6). The ethnic composition was predominantly Malay (87.0%, n = 107), followed by Chinese (11.4%, n = 14), and Indian (1.6%, n = 2). This composition closely reflects the broader demographics of Malaysia, suggesting a strong local community presence with relevant knowledge of biodiversity conservation. These findings indicate that biodiversity programs at Pantai Redang, Sekinchan, Selangor attract substantial interest from the local community, with particularly active participation from younger individuals, who may be more receptive to environmental education efforts compared to older age groups.

TABLE 1.0
PROFILE OF RESPONDENTS (N=123)

Profile	Category	Frequency	Percentage (%)
Gender	Male	47	38.2
	Female	76	61.8
Age	< 20 years old	16	13.0
	21 – 30 years old	58	47.2
	31 – 40 years old	6	4.9
	41 – 50 years old	16	13.0
	> 51 years old	27	22.0
Etnic	Malay	107	87.0
	Chinese	14	11.4
	Indian	2	1.6

Cronbach's alpha is a widely used measure for assessing the reliability of a scale, ensuring the precision, internal consistency, and stability of its items. According to Pallant (2016), a Cronbach's alpha value of 0.60 or higher denotes acceptable reliability, whereas values below 0.60 indicate poor reliability. Specifically, values between 0.60 and 0.80 are considered moderately acceptable, while those between 0.80 and 1.00 are classified as excellent. As presented in Table 1.2, the Cronbach's alpha coefficient for biodiversity awareness in this study is 0.938. This score demonstrates excellent reliability, indicating that the items used are both consistent and dependable, as it substantially exceeds the 0.60 threshold. The findings are based on responses collected from 123 participants at Pantai Redang, Sekinchan, Selangor.

Table 1.2
RELIABILITY TEST

Variable	Number of Items	Cronbach's Alpha	Reliability Assumed
Visitors' Biodiversity Knowledge at Pantai Redang, Sekinchan, Selangor	10	0.938	Excellent

Mean and Standard Deviation

The analysis of the mean and standard deviation offers deeper insights into the level of individual knowledge regarding biodiversity conservation at Pantai Redang, Sekinchan, Selangor. Using a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = moderate, 4 = agree, and 5 = strongly agree), respondents were asked to rate their understanding and knowledge of biodiversity conservation. The mean score of 3.55, which falls within the acceptable range, and the standard deviation of 1.10 indicate a moderate level of responsibility among respondents. This suggests that while there is general awareness of biodiversity, a more in-depth or comprehensive understanding remains limited. Specifically, although most respondents are familiar with the concept of biodiversity, many are unable to clearly define its three fundamental levels: species, genetic, and ecosystem biodiversity. These findings underscore the need for environmental programs to go beyond mere information dissemination. Such programs should actively engage individuals in participatory activities that foster behavioural change, thereby enhancing their commitment to nature conservation.

Table 1.3
LEVEL OF MEAN SCORE RANGE

Mean Score Range	Level
1.00 – 2.33	Low
2.34 – 3.57	Medium
3.58 – 5.00	High

Table 1.4
MEAN AND STANDARD DEVIATION

Variable	Mean	Standard Deviation	N
Public Environmental Awareness among Tourists at Banda Hilir, Melaka	3.35	1.100	123

CONCLUSION

This study provides valuable insights into the level of individual knowledge and awareness of biodiversity conservation among visitors to Pantai Redang, Sekinchan, Selangor. The reliability of the research instrument was high, as indicated by Cronbach's alpha coefficient of 0.938, lending strong confidence to the accuracy and consistency of the results. The mean score of 3.55 and a standard deviation of 1.10 further suggest that respondents hold a moderate level of biodiversity knowledge and awareness. To enhance conservation outcomes, future programs should prioritize active, hands-on approaches such as community clean-up initiatives, guided nature walks, and locally driven conservation projects. Such activities can deepen public understanding of biodiversity while fostering behavioural changes that promote environmental stewardship. From a policy perspective, collaboration between local authorities, non-governmental organizations, and educational institutions is essential to disseminate environmental messages that are contextually relevant and accessible to local communities. Integrating biodiversity education into school curricula and community campaigns can help cultivate environmental consciousness from an early age. Future research could expand to other regions of Malaysia to facilitate comparative analyses of biodiversity knowledge across diverse communities. Longitudinal studies would also be beneficial in evaluating whether sustained community-based programs effectively enhance both understanding and engagement in biodiversity conservation. Additionally, examining the influence of local cultural values and beliefs may provide deeper insights into how communities perceive and respond to conservation efforts.

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