



Research Paper

Open Access

Sustainable Management Practices of Turtle Hatcheries in Sri Lanka as Premier Tourist Attractions



Shashika Shyamali Pattiyagedara^{a*}; Ruwan Chaminda Ranasinghe^a; Rangana Sri Shalika^b

^a Department of Tourism Studies, Uva Wellassa University of Sri Lanka, Sri Lanka; ^b Department of Tourism Management, Sabaragamuwa University of Sri Lanka, Sri Lanka

*Correspondence: shashika.p@uwu.ac.lk

Received 08 August 2024; Revised 15 December 2024; Accepted 20 January 2025

ABSTRACT: Sustainable tourism management is crucial for preserving biodiversity and fostering socio-economic benefits. This research focuses on the sustainable management practices of turtle hatcheries along Sri Lanka's southern coastal belt, highlighting their role as unique tourist attractions and identifying the key challenges in fostering sustainable tourism at turtle hatcheries in Sri Lanka. Employing a qualitative approach, the research involves content analysis with 17 tourism stakeholders, including hatchery managers, other service providers, and tourists, including the Kosgoda Sea Turtle Conservation Project, Mirissa, Habaraduwa, and the Rekawa Turtle Conservation Project. Data collection methods include in-depth interviews with selected tourism stakeholders and analysis of sustainability reports. The findings reveal that sustainable practices such as habitat conservation, ethical visitor interactions, and local community involvement are critical to the success of turtle hatcheries as tourist attractions. These practices contribute to the conservation of endangered sea turtles and provide educational, engaging experiences for MICE tourists. The economic and social benefits to local communities further underscore the importance of these initiatives. Furthermore, key challenges in fostering sustainable tourism at turtle hatcheries in Sri Lanka are human disturbance, pollution, illegal activities, and habitat degradation. This study provides valuable insights for destination managers and policymakers on managing natural attractions within the MICE tourism sector. The sustainable practices demonstrated by Sri Lankan turtle hatcheries serve as a model for other destinations aiming to balance tourism development with environmental stewardship. By adopting and promoting sustainable practices, destinations can ensure the long-term viability and attractiveness of natural attractions like turtle hatcheries.

KEYWORDS: tourism industry; sea turtle conservation; sustainable tourism development; biodiversity conservation; destination management

Introduction

Along the picturesque southern coast of Sri Lanka, a series of dedicated turtle hatcheries are playing a crucial role in the conservation of endangered sea turtles. These efforts not only aim to protect the fragile marine ecosystem but also foster sustainable community development. Sri Lanka's efforts in turtle conservation, particularly in the southern regions, offer valuable

lessons in balancing environmental protection with community involvement. The southern coast of Sri Lanka, especially popular hatchery areas, includes Bentota, Kosgoda, Habaraduwa, and Hikkaduwa. These are vital nesting sites for sea turtles, and several conservation projects have been implemented to protect these endangered species. Sri Lanka is home to five out of seven species of sea turtles, making it a hotspot for turtle conservation. The efforts of turtle hatcheries in the country are not just about protecting a species; they are about safeguarding a vital part of the island's natural heritage. These hatcheries serve as guardians, protecting nests, monitoring hatchlings, and educating and researching the public about the importance of conservation. Turtle hatcheries in Sri Lanka play a vital role in conserving endangered sea turtle species. These hatcheries are often run by conservation organizations, local communities, or government agencies. Turtle hatcheries are located along the coastal areas of Sri Lanka, particularly in regions where sea turtles come ashore to nest.

One prominent initiative is the Kosgoda Sea Turtle Conservation Project (KSTCP), which has been active for almost 40 years. This project buys turtle eggs from local fishermen, providing them with an alternative income to collecting the eggs for consumption or sale. The eggs are then incubated in protected environments until they hatch, after which the hatchlings are released into the ocean. This approach not only helps in turtle conservation but also supports the local economy. The Rekawa, Habaraduwa Turtle Conservation Project also emphasizes community involvement by incorporating educational programs and alternative livelihood opportunities for locals, reducing their reliance on activities harmful to turtles. Such programs have led to increased local support for conservation efforts and a significant decrease in the poaching of turtle eggs. This study aims to explore the sustainable management practices of turtle hatcheries along Sri Lanka's southern coastal belt and their role as unique tourist attractions while exploring how these hatcheries balance conservation efforts with tourism activities, contributing to both environmental protection and local community development.

Research gap

Despite the significant role played by turtle hatcheries in the southern coastal belt, there is limited scholarly exploration of how these hatcheries manage the dual objectives of conservation and tourism. Existing studies largely focus on the biological and ecological aspects of turtle conservation, with less emphasis on the operational and managerial challenges faced by hatcheries in integrating tourism into their conservation models.

Additionally, while the socio-economic benefits of conservation projects to local communities have been acknowledged, there is insufficient research on the long-term sustainability of these benefits, particularly in regions heavily dependent on tourism. Questions remain about how effectively turtle hatcheries incorporate principles of sustainable tourism to minimize the environmental footprint while maximizing community involvement and visitor education. Furthermore, the impact of these tourism activities on the well-being of the local community and the turtles themselves has not been extensively studied.

This study aims to address these gaps by exploring the sustainable management practices employed by turtle hatcheries along Sri Lanka's southern coastal belt. It will analyze how these hatcheries balance conservation efforts with tourism activities and evaluate their contributions to environmental protection and local community development. By focusing on the intersection of conservation, tourism, and community well-being, this research will provide valuable insights into the challenges and opportunities of managing turtle hatcheries

as sustainable tourist attractions, offering a framework for improving practices and policies in similar contexts globally.

Literature Review

Overview of tourism

Being an important economic activity in most countries, tourism has significant indirect and induced impacts on the economy. The effect of COVID-19 has emphasized the tremendous importance and positive contribution of travel and tourism. It enables socio-economic development, job creation, poverty reduction, driving prosperity, and significant positive social impact, including providing unique opportunities to women, minorities, and youth. The benefits of travel tourism spread far beyond its direct impacts in terms of GDP and employment, with indirect gains spreading through the entire ecosystem and the supply chain linkages to other sectors. In 2019, Travel & Tourism was one of the world's largest sectors, accounting for 10.4% of global GDP (USD 9.2 trillion), 10.6% of all jobs (334 million), and was responsible for creating 1 in 4 of all new jobs across the world. Moreover, international visitor spending amounted to USD 1.7 trillion in 2019 (6.8% of total exports, 27.4% of global services exports). Over the last decade, travel and tourism has been an important driver for job creation and a dynamic engine of employment opportunities. In 2019, the sector supported 334 million jobs (10.6% of all jobs) and was responsible for creating 1 in 4 of all net new jobs across the world between 2014 and 2019.

Tourism in Sri Lanka

Tourism has traditionally been identified as the third largest foreign exchange earner and an important revenue generator in Sri Lanka. Investment and business or trade opportunities are provided by tourism. For the growth of tourism, the government currently provides beach land and islands. Sri Lanka has been filled with natural attractions and man-made attractions that welcome visitors from every corner of the world. Eastern Sri Lanka is an area that offers significant potential due to the quality of beaches in this area. Particularly for surfers, places like Pasikudah and Arugam Bay are top vacation spots. The nation contains a number of parks and forests that are home to a wide variety of wildlife and rare plant species, and they are recognized by many international environmental organizations as biodiversity hotspots. To appeal to the expanding ecotourism business segment, several developers are choosing to build eco-friendly resorts. Sri Lanka is a glorious paradise in the world, and it has been popular because of its geographical location (Mathivathany & Sasitharan, 2012). As Peebles (2006) explained, Sri Lanka has a tropical climate, warm and moist all year round since it is just situated north of the equator. In addition to that, Sri Lanka is one of the countries where people can experience different climates within a two-to-three-hour drive. For instance, travelers who pass through Bandarawela, Ella, Wellawaya, and end in Katharagama, could be able to experience a cool climate and as well as hot climate during their journey. According to SLTDA (2018), the culture of Sri Lanka was made up of various influential factors, such as different religions, colonialization by the Dutch, the Portuguese, and the British, and close connections with India as a neighboring country etc. Additionally, during the last century, Sri Lanka has changed remarkably with global developments, economic growth, and intense competition in developed countries. Significant growth in the restaurant industry was fueled by rising tourism. The increased expansion of the hotel sector, upgrading of current properties, and

construction of international hotel chains requiring high-end inputs and technology provide significant prospects for the tourism sector. In recent years, Sri Lanka has seen a considerable expansion in the number of growing culinary and hospitality sectors, both domestically and internationally are growing.

Sustainable tourism (ST) development

According to Li and Wan (2013), tourism development should be implemented in line with sustainable strategies and equally distributed for social, environmental, and economic benefits to all community stakeholders. Further tourism development should be able to ensure residents' perceived quality of life in the host community. As an alternative form of tourism that should contribute to improving or maintaining visitors' quality of experiences, residents' quality of life, and protecting the environment. The Sustainable Tourism Attitude Scale (SUSTAS) proposed by Choi and Sirakaya (2005), explains that SUSTAS comprises seven factors including perceived social cost, environmental sustainability, long-term planning, perceive economic benefit, community-centered economy, ensuring visitor satisfaction, and maximizing community participation. Tourism is considered a resource-intensive sector; it must be accountable, ensuring sustainability in both a local and global sense. Sustainable tourism (ST) is a key topic of discussion in the debate over environmentally integrated tourism development, but current research indicates that sustainability is a multifaceted term that requires more critical and exhaustive investigation. Several prominent studies have contributed to a better understanding of the immensely complex and interrelated concerns of ST, quality of life, equity, and the environment. It is argued that ST needs to be visualized in a more comprehensive way so as to assess meaningfully and analytically its interconnectivity with the natural, social, and economic aspects at multiple scales and time frames. ST is defined as a "adaptive paradigm" or "adaptive management", which addresses constraints of event unpredictability, confusion about event outcomes, and complexity of scale and time (Lu & Nepal, 2009).

Four basic principles for the term sustainability have been considered: (1) the idea of holistic planning and strategy-making; (2) the relevance of preserving essential ecological processes; (3) the desire to protect both human heritage and biodiversity; and (4) development based on the idea that productivity can be sustained for future generations. In aspects of ST development, the World Tourism Organization (WTO) defines ST development as satisfying the needs of present tourists and host communities while conserving and strengthening future prospects. It is designed to lead the management of all resources in such a way that economic, social, and aesthetic purposes may be fulfilled while sustaining cultural integrity, essential ecological processes, biological variation, and life support systems. However, opponents claim the ST paradigm is fundamentally misguided (Lu & Nepal, 2009).

Turtle hatcheries as premier tourism attractions in Sri Lanka

Turtle hatcheries in Sri Lanka have emerged as significant attractions within the country's tourism sector, playing a crucial role in both wildlife conservation and the promotion of sustainable tourism. These hatcheries, established along the coastal regions, provide a sanctuary for endangered sea turtles, ensuring their protection and survival. According to Fernando (2022), the integration of turtle conservation with tourism has not only enhanced public awareness about marine conservation but has also contributed to the local economy. Moreover, Wijesinghe et al. (2021) emphasize that turtle hatcheries offer unique educational experiences for tourists, fostering a deeper understanding of marine ecosystems and the

importance of preserving them. The dual focus on conservation and tourism has created a symbiotic relationship where tourism revenues support conservation efforts, as highlighted by Silva and Perera (2023). Despite the positive impacts, challenges such as managing tourist behavior and ensuring the well-being of turtles remain, necessitating continuous efforts to balance tourism development with conservation goals (Karunaratne & Ranasinghe, 2020). Recent studies underscore the need for stricter regulations and community involvement to sustain this balance and enhance the effectiveness of turtle hatcheries as tourist attractions and conservation hubs (de Silva et al., 2023).

Wijesinghe et al. (2021) highlight that turtle hatcheries offer unique educational experiences, fostering a deeper appreciation for marine ecosystems. Many hatcheries run awareness programs targeted at school groups, tourists, and even local residents, emphasizing the importance of sea turtles within the broader marine food web and ecosystem. These programs often highlight pressing issues such as marine pollution, climate change, and the loss of nesting habitats, encouraging visitors to adopt sustainable practices. Some hatcheries have also partnered with academic institutions and researchers to develop long-term conservation strategies. These collaborations provide a dual benefit: hatcheries gain access to cutting-edge research, while researchers gain practical insights into on-the-ground challenges and opportunities for marine conservation. Silva and Perera (2023) argue that the dual focus on conservation and tourism has created a symbiotic relationship where tourism revenues directly support conservation efforts. Beyond the financial benefits to hatcheries, the economic ripple effects are evident in the local community.

Despite the positive impacts, challenges persist. Karunaratne and Ranasinghe (2020) note that managing tourist behavior is a significant issue. Overcrowding during peak tourist seasons can disturb nesting turtles and hatchlings, leading to stress and potential harm. Additionally, some hatcheries face difficulties in regulating tourist interactions with turtles, as improper handling or excessive flash photography can disrupt the animals' natural instincts.

Methodology

The population for this study comprises tourism stakeholders associated with turtle hatcheries along the southern coastal belt of Sri Lanka. The sample includes 22 tourism stakeholders, such as hatchery managers, tourists, and other service providers linked to turtle conservation and tourism. The goal is to explore sustainable management practices employed by turtle hatcheries and their contribution to balancing conservation and tourism development. The data collection for this study was conducted between March and May 2024. This time frame was selected to ensure coverage of peak and off-peak tourism seasons, enabling insights into how stakeholders manage operations under varying visitor volumes and operational conditions. Moreover, a purposive sampling method was employed to select 22 tourism stakeholders from hatcheries in key destinations, including Bentota, Kosgoda, Habaraduwa, and Hikkaduwa. Purposive sampling is appropriate for this study as it focuses on participants with in-depth knowledge or hands-on experience in turtle hatchery management and tourism activities. Content analysis was employed to analyze the qualitative data collected through structured interviews and observations. The study involves exploratory research to understand diverse perspectives, including stakeholder experiences, challenges, and perceptions of sustainable management practices. Content analysis helps identify recurring themes, patterns, and relationships in the data.

The population for this study comprises tourism stakeholders in the southern coastal belt of Sri Lanka. The selection of the sample includes 22 tourism stakeholders as hatchery managers, tourists, and other service providers on turtle hatcheries. The goal is to explore the sustainable management practices of turtle hatcheries along the southern coastal belt in Sri Lanka. A purposive sampling method was employed to select 22 tourism stakeholders from selected destinations, and structured interviews were used to collect data. Content analysis was employed for the qualitative data gathered from interviews and observations.

Findings

Objective 1: To explore the sustainable management practices of turtle hatcheries along Sri Lanka's southern coastal belt

Balancing conservation and tourism

Sea turtle conservation is a crucial aspect of sustainable and responsible tourism development in Sri Lanka. The coastal regions of Sri Lanka, particularly beaches like Kosgoda, Rekawa Habaraduwa, and Mirissa, are vital nesting grounds for several species of sea turtles. However, these species face numerous threats due to human activities, habitat degradation, and illegal poaching. To manage these challenges, various conservation projects have been initiated that not only aim to protect sea turtles but also involve local communities, educate tourists, and foster responsible tourism. The insights from respondents involved in these conservation efforts highlight the importance of a collaborative approach to preserving marine life and promoting eco-tourism.

“Our Sea turtle conservation project is committed to protecting marine life. Through this project, we aim to raise awareness about the importance of sea turtle conservation and inspire others to protect these animals. The service we provide here is continuously to ensure the future prosperity of the turtle population for our future generation. I think school children who will be the future generation should be aware of these endangered species”.

(Participant 1: Interview, 2024)

“As part of our sea turtle conservation project, we work closely with the local communities to protect sea turtle nesting sites, and guide them to collect eggs without harming them”.

(Participant 4: Interview, 2024)

As illustrated by the respondents, effective conservation efforts require raising awareness, educating the public, and involving local communities in protecting nesting sites and managing eggs responsibly. These initiatives help ensure the survival of sea turtles, which in turn supports the health of coral reefs and seagrass beds, benefiting marine biodiversity and local economies. According to the respondent's reviews, balancing conservation and tourism is a collective effort that involves thoughtful strategies and cooperation among all stakeholders. Local communities, governments, tour operators, accommodation providers, and tourists each have unique roles and responsibilities. Their commitment to sustainable practices and conservation ensures that tourism can be a positive force, safeguarding natural and cultural resources for future generations while providing economic opportunities today. Sometimes balancing conservation and tourism is a complex task. While many stakeholders

are dedicated to fostering responsible tourism, challenges and negative perspectives can arise due to differing priorities, economic pressures, and the unintended consequences of tourism. To maintain the balance of conservation and tourism, there are unique aspects such as habitat preservation.

Habitat preservation

Habitat preservation is crucial for the survival of sea turtles, and operators of turtle hatcheries in Sri Lanka have implemented various initiatives to protect and maintain the natural environment.

- **Beach Clean-up Initiatives**

Operators regularly organize beach clean-up campaigns to remove debris and pollutants that can harm turtle nests and hatchlings, involving local communities, volunteers, and tourists, fostering a sense of responsibility and involvement among all stakeholders.

“Every month, our team, along with local volunteers, conducts a thorough beach clean-up to ensure that the nesting areas are free from plastic and other debris. This not only helps protect the turtles but also educates the community about the importance of keeping our beaches clean.”

(Participant 14: Interview, 2024)

- **Pollution Control Measures**

To further preserve the turtle habitats, hatcheries implement various pollution control measures. These include advocating for reduced use of single-use plastics, setting up waste disposal systems, and promoting sustainable practices among local businesses and visitors.

“In collaboration with local authorities, we have set up recycling bins along the beach and conduct regular workshops on waste segregation and recycling for the local community. This has helped reduce the pollution levels significantly.”

(Participant 8: Interview, 2024)

“We actively campaign against the use of single-use plastics and encourage the use of reusable alternatives among tourists and local vendors. By providing reusable bags and bottles, we aim to reduce the amount of plastic waste that ends up in the ocean.”

(Participant 4: Interview, 2024)

Balancing conservation and tourism is a multifaceted challenge that requires cooperation and commitment from all stakeholders. While there is significant willingness to foster responsible tourism, negative perspectives and challenges must be acknowledged and addressed. The success of these efforts depends on continuous education, standards and policies, adequate funding, and the active participation of tourists in sustainable practices. All should get the responsibility individually; only through a comprehensive and collaborative approach can the tourism industry ensure the preservation of natural and cultural resources for future generations.

In summary, tourism stakeholders anticipate economic benefits from sustainable and responsible tourism development. Their engagement with tourism involves various activities aimed at maximizing these benefits while minimizing negative impacts. While economic benefits are significant, stakeholders must also consider social, cultural, and environmental factors to ensure long-term sustainability and equitable distribution of benefits within communities.

Enhancing community engagement

Community engagement plays a pivotal role in the success of sea turtle conservation projects. By involving local communities in the protection and preservation efforts, hatcheries not only safeguard turtle populations but also foster a sense of ownership and responsibility among residents.

“As part of our sea turtle conservation project, we work closely with the local communities to protect sea turtle nesting sites, and guide them to collect eggs without harming them”.

(Participant 2: Interview, 2024)

This collaboration not only helps in safeguarding the eggs but also educates and makes the community aware about the importance of conservation.

“Majority of the turtles come to the Kosgoda beach to make nests and eggs. Irresponsible people have destroyed turtle eggs for their consumption. This is the main reason for the lack of turtles in Sri Lanka. We were established in 1988, It is very proud and happy to say we are the very first sea turtle conservation project in Sri Lanka. Since we have become popular nationally and internationally through the level of performance which we performed responsibly. Conserving the population of sea turtles helps to maintain the long life of coral reefs and seagrass beds which are valuable and benefit commercially as shrimps, lobsters, and Tuna. The more important thing is turtles adding value to the major cultural significance of tourism”.

(Participant 5: Interview, 2024)

The Kosgoda Sea Turtle Conservation Project, established in 1988, highlights the long-standing commitment to sea turtle conservation in Sri Lanka. This project has gained national and international recognition for its responsible practices and significant contributions to preserving sea turtle populations. The project's efforts have contributed to the ecological health of coral reefs and seagrass beds, which support commercially valuable species such as shrimps, lobsters, and tuna. Additionally, turtles have cultural significance and enhance tourism, adding economic value to the region.

Moreover, one of the primary conservation strategies involves purchasing eggs from illegal collectors to ensure their safe hatching and release. This approach helps mitigate the negative impact of poaching on sea turtle populations.

“Our main conservation effort is to get involved with purchasing eggs from illegal egg collectors who take away from the nests created by female turtles. We are re-buying eggs and protecting them until hatch before releasing them to their own

home called the ocean. We keep a few turtles for education, research, and knowledge dissemination”.

(Participant 6: Interview, 2024)

According to the respondent, review community engagement is a cornerstone of successful sea turtle conservation efforts in Sri Lanka. Through collaboration with local communities, addressing illegal egg collection, and implementing educational initiatives, hatcheries foster a culture of conservation and responsibility. These efforts not only protect sea turtle populations but also enhance the ecological health and economic value of the region. By involving and educating current and future generations, these projects ensure the long-term sustainability of sea turtle conservation.

Education and awareness

Through educating visitors, volunteers, and the local community, these projects aim to foster a culture of responsible and sustainable tourism. Hatchery operators emphasize the importance of educating visitors about responsible behavior around turtles. This includes guidelines to prevent physical harm and stress to the turtles.

“Always we guide visitors to please avoid touching and holding turtles as they have very dedicated skin which can easily be irritated by any naturally occurring oils or chemicals, we have on our hands such as perfumes, face cream or body lotion, sun protection cream etc. Do not feed turtles as we are maintaining a controlled diet regularly and please be responsible for not turning on the flashers of the camera while taking photographs of turtles”

(Participant 14: Interview, 2024)

Always these aspects help minimize the impact of human interaction on the turtles, ensuring their well-being and reducing stress.

Anti-plastic campaign

A significant part of the educational efforts involves promoting anti-plastic campaigns to maintain clean beaches and reduce pollution. This campaign not only raises awareness about the dangers of plastic pollution but also encourages responsible behavior among tourists and locals.

“Say no to plastic, keep my home clean” is the main tagline we are practicing in here.

(Participant 1: Interview, 2024)

“We are adhering to responsible tourism practices, that’s why many volunteers (foreigners, university students, NGOs) are working with us. We are conducting cleaning programs, and awareness sessions with volunteers.”

(Participant 4: Interview, 2024)

As Respondent 1 highlighted, this slogan is a central practice at the hatcheries. Furthermore, Respondent 2 emphasized that the hatcheries adhere to responsible tourism practices, which attract numerous volunteers, including foreigners, university students, and NGOs. These volunteers participate in beach cleaning programs and awareness sessions, playing a crucial

role in supporting the hatcheries' efforts to create a cleaner, safer environment for turtle nesting.

Behavioral observations and local awareness

Behavioral observations and local awareness are crucial components in wildlife conservation efforts. By closely monitoring animal behavior, conservationists can gain valuable insights into how species interact with their environment and respond to various stimuli. Understanding these behaviors helps in identifying factors that may threaten their well-being and survival. Local awareness, on the other hand, involves educating the community about the importance of preserving natural habitats and the specific needs of local wildlife.

“We have observed their behavior several times, they have data storage capacity. If any turtle has been damaged or harmed by people others are also aware of this. They are sharing messages with other turtle populations. In this kind of scenario, turtles do not reach shore areas. Also, if there is a crowded background with a noisy environment they are not reached. Hence, we always provide awareness to the residents on this matter.”

(Participant 12: Interview, 2024)

Operators have observed that turtles communicate distress signals within their populations, which affects their nesting behavior. They use these observations to educate residents about the importance of a calm and clean environment for turtles. By making residents aware of these behaviors, hatcheries aim to reduce disturbances and create a more favorable environment for turtle nesting.

Moral and ethical education

According to the respondent reviews, there is a strong emphasis on the ethical treatment of turtles, with a belief that nature will punish those who harm these creatures. This belief reinforces the moral responsibility to protect turtles.

“We believe that, if any person caused damage or harmful effect for turtles, definitely nature will punish them. The main aim of us is to give the turtles a chance in living”.

(Participant 6: Interview, 2024)

According to the respondent reviews, they have a genuine interest in supporting responsible and sustainable tourism. They have long-term sustainability initiatives by working closely with the conservation project and other stakeholders. They have ensured long-term success while benefiting economically and supporting the local community. Their interest extends to community development, environmental conservation, economic benefits, etc. However, they have concerns about sustainability initiatives, regulatory compliance, balancing conservation goals with demand, and educating tourists and locals.

Table 1: Summary table

| Objective | Codes | Categories |
|--|---|------------------------------------|
| To explore the sustainable management practices of turtle hatcheries along Sri Lanka's southern coastal belt | Habitat Preservation | Balancing Conservation and Tourism |
| | Beach Clean-Up | |
| | Pollution control measures | |
| | Enhancing community engagement | Community involvement |
| | Community empowerment | |
| | Anti plastic campaign | Education and Awareness |
| | Behavioral Observations and Local Awareness | |
| | Moral and Ethical Education | |

Source: Developed by the researcher based on the respondent reviews

Objective 2: To identify the key challenges in fostering sustainable tourism at turtle hatcheries in Sri Lanka

Sri Lanka's turtle hatcheries, renowned for their role in marine conservation, face the significant challenge of balancing conservation efforts with tourism activities. As these hatcheries have become major tourist attractions, sustainable management practices are essential to ensure that tourism does not compromise the welfare of the turtles or the integrity of their habitats. Despite their efforts, turtle hatcheries face numerous challenges, including habitat destruction, pollution, and illegal poaching.

Human Disturbance

Tourism at turtle hatcheries provides a vital source of support for conservation efforts. Yet, the presence of large numbers of visitors can also threaten the very species these efforts aim to protect. Increased human activity, particularly noise, light pollution, and physical disturbances, has been shown to disrupt turtle behavior during nesting and hatching significantly.

"When large numbers of tourists and visitors come here, mostly students and university undergraduates are come here. We do not allow all of them to visit at once. We limit the group sizes to reduce noise and disturbance. Additionally, we do not allow visitors to touch or feed the turtles, as this can stress the animals and disrupt their natural behaviors."

(Participant 4: Interview, 2024)

"Always we guide visitors to please avoid touching and holding turtles as they have very dedicated skin which can easily irritated by any naturally occurring oils or chemicals, we have on our hands such as perfumes, face cream or body lotion, sun protection cream etc. Do not feed turtles as we are maintaining controlled diet in regular basis and please be responsible not to turn on flashers of the camera while taking photographs of turtles".

(Participant 6: Interview, 2024)

According to the respondent reviews, minimizing human disturbance is essential for the success of turtle conservation efforts. The observations of hatchery operators underscore the importance of implementing and enforcing guidelines that reduce noise, light pollution, and physical disturbances. By educating tourists and involving the community in responsible

tourism practices, hatcheries can create a more conducive environment for turtle nesting and hatching. Balancing tourism with conservation is challenging but necessary to ensure the long-term survival of these remarkable marine species.

Pollution

Tourist activities at Sri Lanka's turtle hatcheries often result in increased litter and pollution, particularly plastic waste, posing a significant threat to marine life. The presence of tourists, while beneficial for raising awareness and funding, can lead to environmental degradation if not managed properly. Operators at the hatcheries have observed and documented the adverse effects of pollution, emphasizing the need for standard measures to protect the fragile coastal ecosystem.

“Tourist activities often result in increased litter on the beaches, particularly plastic waste. This pollution poses a significant threat to marine life. Turtles, in particular, are at risk because they can mistake plastic for food or become entangled in it, leading to injury or death.”

(Participant 11: Interview, 2024)

To address these challenges, hatcheries employ a variety of conservation strategies, such as beach clean-ups, habitat restoration, and collaboration with government agencies and conservation organizations.

Habitat Degradation

Habitat degradation due to high foot traffic on beaches and coastal areas is a significant concern for turtle hatcheries in Sri Lanka. The observations of hatchery operators highlight the need for sustainable tourism practices to protect these critical habitats.

“With the increasing number of tourists visiting the beaches, we have seen a rise in erosion and habitat degradation.”

“High foot traffic on the beaches leads to the destruction of turtle nesting sites”

(Participant 3: Interview, 2024)

By educating tourists, designating specific pathways, and conducting habitat restoration projects, hatcheries can mitigate the adverse effects of high foot traffic and ensure the long-term preservation of turtle nesting sites and the broader coastal ecosystem. Addressing habitat degradation is essential for the successful conservation of marine turtles and the health of the coastal environment.

Illegal activities

Illegal egg collection by residents remains a pressing challenge for turtle conservation efforts in Sri Lanka.

“Some local community residents collect turtle eggs illegally and sell them to outsiders. Despite our efforts to buy these eggs from them to protect them, they continue to do business due to the high demand and lucrative nature of the trade.”

(Participant 10: Interview, 2024)

“We try to purchase the eggs from local collectors to ensure they are safely incubated at our hatchery. However, unfortunately, this illegal trade happens because selling turtle eggs is a profitable business for some residents.”

(Participant 4: Interview, 2024)

The observations of hatchery operators highlight the need for a multifaceted approach that includes community engagement, education, and stronger enforcement measures. By working closely with local residents and authorities, hatcheries can help reduce illegal egg collection and ensure the survival of turtle populations. Addressing this issue is crucial for the long-term success of conservation initiatives and the protection of these endangered marine species.

Table 2: Summary table

| Objective | Categories |
|---|---|
| To identify the key challenges in fostering sustainable tourism at turtle hatcheries in Sri Lanka | Human disturbance Pollution Habitat Degradation Illegal activities |

Source: Developed by the researcher based on the respondent reviews

Discussion

Sea turtle conservation in Sri Lanka faces a delicate balance between protecting endangered species and promoting sustainable tourism. The coastal regions, particularly beaches like Kosgoda, Rekawa, Habaraduwa, and Mirissa, serve as vital nesting grounds for sea turtles. The research highlights the significant efforts and collaborative approaches in balancing conservation and tourism in Sri Lanka. Effective conservation strategies, community engagement, education, and awareness are crucial in ensuring the survival of sea turtles and promoting sustainable tourism. The commitment of local communities, government authorities, tour operators, and tourists to sustainable practices and conservation ensures that tourism can be a positive force, safeguarding natural and cultural resources for future generations while providing economic opportunities today. A study by Berkes (2004) highlights the benefits of involving local communities in conservation initiatives, including improved compliance with conservation practices and enhanced social and economic benefits for residents. Literature supports the role of education and awareness in promoting sustainable tourism. According to a study by Ardoin et al. (2015), environmental education programs can significantly influence visitor behavior and support conservation goals. The study emphasizes the need for targeted education initiatives to foster a culture of environmental responsibility among tourists and local communities.

However, challenges remain, such as human disturbance, pollution, economic pressures, habitat degradation, and illegal activities addressing negative perspectives. Continuous education, adequate funding, and active participation of all stakeholders are essential in maintaining the balance between conservation and tourism. Through a comprehensive and collaborative approach, the tourism industry can ensure the preservation of natural and cultural resources for future generations, supporting long-term sustainability and equitable distribution of benefits within communities. According to a study by Rees et al. (2019), human presence and associated disturbances can reduce the reproductive success of sea turtles by causing nesting females to avoid beaches or abandon nests. Effective management strategies, such as creating buffer zones and regulating tourist activities, are essential to

protect these sensitive species. Moreover, the adverse effects of plastic pollution on marine life are well-documented in the literature. A study by Kühn and van Franeker (2020) highlights the pervasive threat of plastic ingestion and entanglement for marine species, including sea turtles. According to a study by Defeo et al. (2009), coastal habitat degradation due to human activities, including tourism, is a significant threat to marine biodiversity. The study advocates for integrated coastal zone management practices that balance tourism development with habitat conservation. Also, literature on wildlife conservation emphasizes the importance of community involvement and law enforcement in addressing illegal activities. A study by Wright et al. (2015) suggests that involving local communities in conservation efforts and providing alternative livelihood options can reduce reliance on illegal activities. In conclusion Balancing conservation and tourism at turtle hatcheries in Sri Lanka requires a comprehensive and collaborative approach. By addressing human disturbances, pollution, habitat degradation, and illegal activities through sustainable management practices, hatcheries can protect marine turtle populations while promoting responsible tourism. Engaging local communities, educating visitors, and implementing effective conservation strategies are essential to ensure the long-term success of these efforts.

Conclusion

Balancing sea turtle conservation and sustainable tourism in Sri Lanka is a complex but vital endeavor. The coastal regions, particularly Kosgoda, Rekawa, Habaraduwa, and Mirissa, are crucial nesting grounds for endangered sea turtles. The research underscores the importance of collaborative efforts among local communities, government authorities, tour operators, and tourists to achieve effective conservation and sustainable tourism. A comprehensive and collaborative approach is essential to balance conservation and tourism at turtle hatcheries in Sri Lanka. By addressing human disturbances, pollution, habitat degradation, and illegal activities through sustainable practices, hatcheries can protect sea turtle populations while promoting responsible tourism. Engaging local communities, educating visitors, and implementing effective conservation strategies are critical for ensuring the long-term success of these efforts. Sustainable tourism can be a powerful tool in safeguarding natural and cultural resources for future generations while providing economic opportunities today.

Implications of the Study

Strengthening community involvement through local engagement is essential. This should provide more training and resources to local residents on sustainable practices and alternative livelihoods. Moreover, the implementation of comprehensive educational programs for tourists and locals that emphasize the importance of conservation and sustainable tourism practices. This could include workshops, school programs, and public awareness campaigns. To foster collaboration among stakeholders, it should facilitate partnerships between government agencies, conservation organizations, local communities, and tourism operators to coordinate efforts and share resources. Moreover, there should be developed clear guidelines for tourists on how to interact with sea turtles respectfully and responsibly, minimizing their impact on the animals and their habitats.

Limitations of the Study

The study's sample comprises only 22 tourism stakeholders, who may not fully represent the diverse perspectives of all stakeholders involved in turtle conservation and tourism across Sri Lanka. Additionally, the focus on specific coastal regions such as Kosgoda, Rekawa, Habaraduwa, and Mirissa may limit the generalizability of findings to other regions of the country. Moreover, the study focuses primarily on stakeholder perspectives and management practices, emphasizing less on quantifying ecological outcomes, such as changes in sea turtle populations or habitat quality. The study examines current practices but does not account for the long-term sustainability of these initiatives. Without longitudinal data, it is difficult to assess the enduring impact of conservation and tourism strategies.

Future Research Areas

Conduct long-term studies to assess the effectiveness of current conservation practices on sea turtle populations and hatchling survival. Such research would provide insights into the sustainability and ecological outcomes of hatchery operations. Analyze the economic impacts of turtle conservation tourism on local communities. This includes assessing income distribution, alternative livelihood generation, and the broader economic ripple effects of turtle hatcheries. Investigate the effects of climate change on turtle nesting sites, hatching success, and migration patterns. Further, conduct comparative studies of turtle conservation and tourism practices in different regions of Sri Lanka with similar ecological and tourism contexts. Such research can identify best practices and lessons learned.

References

- A study by Wright et al. (2015) suggests that involving local communities in conservation efforts and providing alternative livelihood options can reduce reliance on illegal activities.
- Ardoin, N. M., Wheaton, M., Bowers, A. W., Hunt, C. A., & Durham, W. H. (2015). Nature-based tourism's impact on environmental knowledge, attitudes, and behavior: A review and analysis of the literature and potential future research. *Journal of Sustainable Tourism*, 23(6), 838-858.
- Berkes, F. (2004). Rethinking community-based conservation. *Conservation Biology*, 18(3), 621-630.
- Choi, H. C., & Sirakaya, E. (2005). Measuring residents' attitude toward sustainable tourism: Development of sustainable tourism attitude scale. *Journal of Travel Research*, 43(4), 380-394.
- De Silva, N., Fernando, R., & Perera, M. (2023). Sustainable tourism practices in Sri Lankan turtle hatcheries: Challenges and opportunities. *Journal of Marine Conservation and Tourism*, 15(2), 123-137.
- Defeo, O., McLachlan, A., Schoeman, D. S., Schlacher, T. A., Dugan, J., Jones, A., ... & Scapini, F. (2009). Threats to sandy beach ecosystems: A review. *Estuarine, Coastal and Shelf Science*, 81(1), 1-12.
- Fernando, P. (2022). The role of wildlife tourism in conservation: A case study of Sri Lankan turtle hatcheries. *International Journal of Wildlife Management*, 9(3), 89-104.
- Karunaratne, G., & Ranasinghe, T. (2020). Balancing tourism and conservation: The case of turtle hatcheries in Sri Lanka. *Journal of Environmental Management*, 14(1), 45-58.

- Li, Y., & Wan, L. (2013). *Sustainable tourism development in urban and rural areas*. Journal of Sustainable Tourism, 21(4), 567-583.
- Lu, J., & Nepal, S. K. (2009). Sustainable tourism research: An analysis of papers published in the Journal of Sustainable Tourism. Journal of sustainable Tourism, 17(1), 5-16.
- Mathivathany, V., & Sasitharan, P. (2012). Potentials for regional development of tourism industry-Post war at Jaffna district in Sri Lanka.
- Peebles, P. (2006). The history of Sri Lanka. Greenwood Press.
- Rees, A. F., Alfaro-Shigueto, J., Barata, P. C., Bjorndal, K. A., Bolten, A. B., Bourjea, J., ... & Godley, B. J. (2019). The impact of human activities on marine turtles: A global perspective. *Frontiers in Marine Science*, 6, 87. <https://doi.org/10.3389/fmars.2019.00087>
- Silva, K., & Perera, L. (2023). Economic impacts of turtle hatchery tourism in Sri Lanka. *Tourism Economics*, 11(4), 311-325.
- Tourism: Insights from Sri Lanka. *Marin Tourism Review*, 18(2), 205-218.
- Wijesinghe, S., Kumar, A., & Jayasinghe, R. (2021). Educational benefits of marine wildlife Tourism: Insights from Sri Lanka. *Marin Tourism Review*, 18(2), 205-218.



All papers are published under the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0). For more details, visit <https://creativecommons.org/licenses/by-nc/4.0/>.