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Turtle Conservation as a Community Empowerment Strategy to Support Coastal Ecosystem Sustainability in Serangan Village, Bali

Ristina Ayu Naswatsabita[1], Putri Kusumawati[2], Eva Yusnita[3], Khoirul Bariyah[4]

[1] Department of Management, Faculty Economy and Business, University PGRI Semarang, Indonesia
[2] Department of Digital Business, Faculty Economy and Business, University PGRI Semarang, Indonesia
* Corresponding Author: Author Email

Abstract.
Serangan Island in Bali has the potential to become a conservation-focused tourist destination. The Turtle Conservation and Education Center (TCEC) helps local residents and tourists learn about the environment and protecting turtles. This study aims to examine how the TCEC supports conservation and sustainable tourism using methods such as observation, interviews, documentation, and descriptive analysis. The results show that the TCEC increases public awareness of turtle conservation, increases community participation, and has a positive impact on local tourism. The TCEC also supports the achievement of the Sustainable Development Goals (SDGs), specifically Goal 14 (Life Below Water), Goal 8 (Decent Work and Economic Growth), and Goal 11 (Sustainable Cities and Communities). This will help develop Serangan Island as a sustainable conservation tourism destination.

I. INTRODUCTION

Serangan Island in Denpasar, Bali, is a coastal area undergoing a transformation from a turtle nesting site to a conservation-based tourist destination. This transformation is supported by ecotourism potential, marine biodiversity, and increasing public awareness of the importance of coastal environmental preservation. Turtles, as protected marine species, play a vital ecological role in maintaining the balance of marine ecosystems. However, their populations continue to face threats from habitat degradation, illegal trade, pollution, and human activity in coastal areas. Therefore, conservation efforts integrated with education and community empowerment are increasingly being implemented to support environmental sustainability.

One form of conservation implementation is the Turtle Conservation and Education Center (TCEC) on Serangan Island. The TCEC was established as a conservation center focused on the rescue, rehabilitation, egg hatching, hatchling rearing, and release of turtles into their natural habitat. In addition to its conservation function, the TCEC also serves as an environmental education center for the community, students, researchers, and tourists. Through various educational activities, visitors gain an understanding of the importance of turtle protection, threats to their habitat, and the role of the community in preserving coastal ecosystems. Previous research has shown that conservation management at the TCEC has positively contributed to increasing the success of turtle conservation while raising public awareness to stop illegal turtle exploitation.

On the other hand, the development of conservation-based tourism is one approach that integrates environmental, social, and economic aspects. Tourism destinations that prioritize conservation not only provide educational experiences for tourists but also create economic opportunities for local communities through tourism services, education, and other supporting activities. Thus, turtle conservation serves not only as an effort to protect endangered species but also as an instrument for sustainable tourism development that can improve community well-being without compromising the area's ecological function.

Several previous studies have discussed the effectiveness of turtle conservation management at TCEC, turtle nest relocation activities, and the role of TCEC in preserving turtle habitat. However, studies that specifically examine how TCEC contributes to the transformation of Serangan Island as a conservation tourism destination through the integration of conservation, education, and sustainable tourism development functions are still relatively limited. Therefore, this study aims to analyze the role of the Turtle Conservation and Education Center as a forum for turtle conservation and as a driver of the transformation of Serangan Island into a conservation tourism destination that supports environmental sustainability, community empowerment, and the achievement of Sustainable Development Goals (SDGs), specifically Goal 14 (Life Below Water), Goal 8 (Decent Work and Economic Growth), and Goal 11 (Sustainable Cities and Communities).

II. METHODS

This research was conducted at the Turtle Conservation and Education Center (TCEC) located on Serangan Island, Denpasar City, Bali Province. The study used a descriptive qualitative approach, aiming to gain a deeper understanding of the TCEC's role in turtle conservation, environmental education, and the transformation of Serangan Island into a conservation-based tourism destination. The qualitative approach was chosen because it comprehensively describes phenomena based on real-world conditions (Creswell & Creswell, 2018).

The initial stage of the research began with field observations to identify conservation facilities, turtle rehabilitation activities, egg hatching, hatchling releases, educational activities, and tourism activities taking place within the TCEC area. Direct observations were conducted, recording field conditions and documenting conservation activities to support the research.

Next, semi-structured interviews were conducted with TCEC managers, conservation staff, local residents, and several visitors. The interviews aimed to obtain information regarding the implementation of conservation programs, forms of community participation, the benefits of TCEC for the environment and tourism, and challenges faced in managing the conservation area. The semi-structured interview technique was chosen because it allowed the interviewees the freedom to share their experiences and perspectives in depth.

In addition to primary data, this study also utilized secondary data obtained through documentation and literature review. These included scientific articles, research reports, official TCEC documents, government publications, and various literature related to turtle conservation, conservation-based tourism, and sustainable tourism development. The use of multiple data sources aimed to strengthen the research findings and provide a more comprehensive context for the phenomena studied.

Data were analyzed using the interactive analysis model proposed by Miles, Huberman, and Saldaña (2014), which includes three stages: data reduction, data presentation, and conclusion

drawing. To ensure data validity, this study employed source and method triangulation, comparing the results of observations, interviews, documentation, and literature studies to obtain valid, consistent, and scientifically accountable data.

III. RESULT AND DISCUSSION

Community service activities conducted at the Turtle Conservation and Education Center (TCEC) on Serangan Island demonstrate that the institution serves not only as a sea turtle conservation facility but also as an educational platform that integrates environmental conservation with community empowerment. Field observations indicate that conservation activities at TCEC include turtle rescue and rehabilitation.

Prior to the implementation of the project, the turtle conservation situation on Serangan Island demonstrated that its existence still faced various challenges due to human activities and changes in the coastal environment. The local community previously had limited understanding of the importance of turtle conservation as part of a balanced marine ecosystem. Turtles were not yet fully recognized as animals with high ecological value, but were better known through traditional and cultural uses.

Initial observations at the Turtle Conservation and Education Center (TCEC) indicate that turtle protection efforts have been implemented through rescue, rehabilitation, egg hatching, hatchling care, and turtle release. However, increased education and community involvement are still needed to strengthen the sustainability of conservation programs. Some residents and visitors still have limited knowledge about the turtle life cycle, threats to turtle populations, and the importance of protecting coastal habitats as turtle breeding grounds.

This situation demonstrates that although Serangan Island has significant potential as a conservation and educational tourism area, strengthening environmental awareness and community participation remain crucial aspects of turtle conservation management. Therefore, the TCEC serves as a strategy to integrate turtle conservation activities with environmental education and sustainable tourism development. Through conservation and education programs, it is hoped that the community and tourists will understand the importance of turtle protection and play an active role in maintaining the sustainability of the marine ecosystem.



Figure 1. Sea turtles under rehabilitation at TCEC, Serangan Village, Bali.

Following the implementation of conservation activities at the Turtle Conservation and Education Center (TCEC), several key activities were identified, including:

1. Turtle rehabilitation and care activities
2. Semi-natural management of turtle egg hatcheries

3. Hatchling care and monitoring
4. Turtle release activities into natural habitats
5. Environmental education programs for visitors and the community
6. Awareness-raising activities regarding marine ecosystem protection

During the observation activities, the community and visitors were introduced to the various stages of conservation carried out by TCEC. The activity began with information about turtle characteristics, the turtle life cycle, various threats to their existence, and the importance of maintaining marine ecosystems. Next, participants were introduced directly to conservation facilities, such as the turtle rearing area, hatchling care pool, and egg hatching location.

Through direct observation activities, participants gained an understanding of the turtle conservation process, from egg protection and hatchling care to release back into their natural habitats. This hands-on learning approach helped increase public and tourist awareness about the importance of maintaining the sustainability of turtle populations.



Figure 2. Participants during the educational visit at TCEC, Serangan Village, Bali.

Participants demonstrated high enthusiasm during the turtle conservation activity and actively contributed ideas and contributions to efforts to protect sea turtle habitats. This activity increased community understanding of the importance of maintaining the sustainability of coastal ecosystems and their role in supporting sea turtle conservation. Prior to the activity, some residents had limited knowledge about threats to sea turtles, such as habitat destruction, marine pollution, and human activities that can disrupt their survival. After participating in the activity, the community began to understand the importance of protecting coastal areas, protecting nesting areas, reducing marine debris, and creating a safe environment for sea turtles.

This change in understanding led to increased community awareness and involvement in long-term conservation activities. The program also introduced various simple conservation efforts, such as turtle monitoring, environmental education, coastal cleanups, and conservation campaigns through social media and tourism activities. Furthermore, participants were taught the importance of documenting activities and disseminating conservation information to raise public awareness. Through a community-based conservation approach, Serangan Village residents are expected to play an active role in preserving sea turtle habitats and supporting sustainable coastal management in Bali.

IV. CONCLUSION

A community empowerment program in Serangan Village successfully demonstrated that turtle conservation activities can increase public awareness and participation in protecting coastal ecosystems. Participants gained knowledge and practical skills related to turtle conservation, habitat protection, environmental education, and sustainable coastal area management.

This activity contributes to environmental conservation by encouraging the community to protect turtle habitats, reduce marine pollution, and support the protection of coastal biodiversity. The high level of community participation demonstrates the program's potential for sustainable development as a form of community-based conservation.

This community service program not only provides an understanding of turtle protection efforts but also strengthens public awareness of the importance of environmental sustainability and maintaining marine ecosystems. Through a combination of environmental education and hands-on conservation activities, participants gain a better understanding of their role in protecting turtles and preserving coastal resources. This program demonstrates that community empowerment can be an effective strategy for addressing environmental issues while encouraging more sustainable behaviors in coastal areas.

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The author hopes that the results of this activity can provide sustainable benefits for the people of Serangan Island and become a model of education and community empowerment that can be replicated in other coastal areas in an effort to strengthen turtle conservation and environmental preservation.

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