



## Balancing Tradition and Conservation: The Use of Turtles in Balinese Ceremonies and Its Environmental Implications

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### ABSTRACT

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turtle conservation, environmental sustainability, cultural heritage, illegal wildlife trade, endangered species, community engagement, conservation education, government policies

This study examines the delicate balance between cultural practices and environmental conservation in Bali through the use of turtles in Balinese Hindu rites. Due to cultural value, traditional usage persists notwithstanding Government Regulation Number 7 of 1999 and international accords like CITES. The Turtle Conservation and Education Centre (TCEC) in Serangan Village, known as Turtle Island, educates the community, preserves local traditions, and promotes sustainable tourism to conserve turtles. We assessed turtle conservation programmes and their effects on local traditions through interviews with key community members and village observations. 75% of respondents indicated that they would continue to use turtles in traditional ceremonies. While some argue that the law permits the offering of turtles in traditional ceremonies due to their holy status, others hold a different view. The findings indicate that this society values cultural heritage and biodiversity conservation, yet they frequently clash. The perspectives of the Serangan Islanders on TCEC show that it is possible to effectively conserve turtles while simultaneously fulfilling economic needs and preserving traditional events. This study emphasises the need for socio-culturally adaptive conservation techniques to protect endangered turtle species. It requires increased community engagement and education to link traditional practices with conservation demands to preserve culture and the environment.

## 1. INTRODUCTION

The Bali government protects culture, local traditions, and customs for the development of tourism [1]. The Balinese Hindu community carries out religious ceremonies for various purposes and generally uses offerings, or upakara [2]. Sacred offerings, or "yadjna" turtles, are used in Manusa Yadnya ceremonies, weddings, Mepandes or tooth cutting, Pedududsan Agung, Ngenteg Lingging, Eka Dasa Rudra and Panca Bali Krama [3, 4]. Bali has historically struggled with green turtle meat, shell, and skin sacrifices [5, 6].

In recent decades, turtle populations have declined due to illegal trade and commercial exploitation by wild boar (*Sus barbatus*) and dogs (*Canis lupus*) [7]. Climate change, a lack of managed conservation, the destruction of turtle habitats, and diseases and parasites such as fibropapilloma and coccidiosis have all contributed to this decline [8]. Thus, Indonesian government regulations should help conserve the endangered turtle population in Indonesian waters [9]. Regulation 5 of

1990 on Conservation, along with Regulation P.106 of 2018 by the Minister of Environment and Forestry on the Categories of Plants and Animals Protected by the CITES Convention [10], serve as Government Regulation (PP) Number 7 of 1999. This regulation pertains to the preservation of plant and animal species, while Regulation Number 8/1999, which deals with the utilisation of plant and animal types, provides protection for turtles. The government punishes taking turtles or eggs from natural habitats without permission with an administrative fine of up to Rp. 40 million and/or a ban from carrying out activities. In Ministerial Circular Letter Number 526/MEN-KP.VIII.2015, the government prohibits trade in turtles, living or dead, or in their body parts. Additionally, Bali Province Regional Number 1 of 2023, which pertains to the protection of wild plants and animals, forbids trading in turtles, whether alive or dead, or their body parts.

Government regulations aim to protect these endangered species, with initiatives like the Turtle Conservation and Education Centre (TCEC) in Serangan Traditional Village

playing a crucial role in conservation efforts. TCEC in Serangan Traditional Village as Turtle Island may decrease turtle habitat loss and illegal trade [9]. Tourism, environmental development, and education will be promoted in the conservation centre [11, 12]. TCEC prioritises hawksbill turtles (*Eretmochelys imbricata*), green turtles (*Chelonia mydas*), and olive ridley turtles (*Lepidochelys olivacea*) [9], which are trapped and threatened by illegal trade [13]. The Governor of Bali, Mayor of Denpasar, WWF, BKSDA Bali Province, and the community support TCEC [14]. TCEC collaborates with the Indonesian Hindu Dharma Parish (PHDI), the Natural Resources Conservation Agency (BKSDA), and the Coastal and Marine Resources Management Agency (BPSPL) to educate, support conservation, and maintain [15]. TCEC teaches that turtles must be kept and cannot be bought, sold, or used in ceremonies unless they fit the conditions for them to hold hatchlings for religious offerings. Tri Hita Karana applies to TCEC, a culturally significant tourism location [16], because Balinese people really believe that the Tri Hita Karana concept can guide their lives [16].

The cultural significance of turtles in Bali has various aspects deeply rooted in tradition and spirituality. People revere turtles as symbols of good luck, believing them to bring prosperity and fortune [4]. Additionally, in religious rituals, turtles play a crucial role in cleansing ceremonies and restoring the balance of nature when released into the sea [17]. Furthermore, due to conservation concerns, Bali's traditional cuisine has historically banned the use of turtle meat in special dishes served at significant events. Types of ceremonies that require the use of turtle meat include Pedudusan Agung, Ngenteg Linggih, Eka Dasa Rudra, and Panca Bali Krama [4]. However, the cultural significance of turtles in Bali has led to challenges in conservation efforts. Illegal hunting and trade, destruction of natural habitats due to tourism, and low public awareness of turtle conservation pose significant threats to the survival of turtles in Bali [18].

Understanding people's views on environmental change and conservation policies is important for developing adaptation strategies that balance human needs with nature conservation. Research into the relationship between turtle management and traditional Balinese rituals will reveal how traditions can combine with conservation efforts, supporting sustainable practices that maintain cultural heritage and biodiversity. Investigating community perceptions of environmental change, conservation policies, and the needs of indigenous communities is important to direct adaptation actions that meet human and economic needs. In addition, communities can maintain regional traditions and reduce exploitation and trade in turtles. This study will describe community views on turtle conservation and traditional ceremonies, as well as explore ways to raise awareness to protect turtles and hold religious ceremonies.

## 2. THEORETICAL FRAMEWORK

Various theories related to human and environmental interactions can analyse the impact of traditional celebrations on the destruction of biological resources. Steward [19] proposed the Cultural Ecology Theory, which underscores the crucial role of cultural adaptation to the physical environment in shaping social and cultural structures, including customary practices that influence the use of natural resources. In this

context, unmanaged traditional celebrations can lead to overexploitation and environmental degradation. Furthermore, Hardin [20] introduced the "Tragedy of the Commons" theory, which asserts that individuals acting in their personal interests and exploiting common resources without limits will lead to their complete degradation. This can occur in the context of traditional celebrations that involve the uncontrolled use of natural resources.

Furthermore, Sustainability Science, developed by Kates et al. [21], highlights the importance of understanding the interactions between natural and social systems to achieve long-term sustainability. We must design traditional celebrations to minimise negative impacts on the ecosystem in this regard. Conklin [22], as a pioneer in ethnoecology, explores the application of local and traditional ecosystem knowledge for sustainable resource management. Traditional knowledge about natural resource management can support traditional celebrations that do not damage the environment but, if ignored, can cause damage to biological resources. In conclusion, the management and integration of traditional celebrations with sustainable environmental knowledge can either conserve or damage biological resources.

Every traditional event as well as religious ritual needs to have an upakara, also known as an offering [23]. There has been a substantial amount of research done in the past on the utilization of turtles in a variety of cultural contexts all around the world [24]. The indigenous people of Fiji, Japan (iTaukei) consume turtles (vonu) during the construction or opening of churches, as well as in some birth, marriage, and funeral ceremonies [25]. The Wayúu, an indigenous people of northern Colombia and Venezuela, consume turtle meat at funerals and ceremonies of adulthood [26]. Turtles play an important role in the mythology, religious ceremonies, and communal identification of the people who live on Rapa Nui, which is part of Easter Island in Chile [27].

In Indonesian society, the Enggano people utilize turtles for wedding rituals, while the Balinese use turtles as offerings in traditional ceremonies [28]. This practice is similar to what is seen in Indonesian society. In the Karya Agung Pengurip Gumi ceremony that takes place in Pura Luhur Batukaru in Tabanan, Bali [2], green turtles, also known as *Chelonia mydas*, are utilized as offerings. Turtles play an important role in the Tawur Kesanga ceremony, which takes place at the Besakih Temple just prior to the Nyepi Day holiday [29]. This event is intended to purify nature at the Besakih Temple. Turtle meat is regularly utilized in the traditional festivities that take place in the areas surrounding Kuta and Tanjung Benoa [4]. On the other hand, illegal turtle trafficking and smuggling are prevalent throughout Bali, which also boasts the largest turtle trading area in the Jembrana region [10]. As a result of all that was mentioned above, Bali is notoriously recognized as a slaughterhouse for turtles [4].

According to the International Union for the Conservation of Nature (2004), the existence of turtles is currently protected by agreements and legislation due to the fact that it is impossible to abolish the usage of turtles in religious ceremonies and that their existence is threatened with extinction, making them endangered. The government and conservation centers have the ability to limit the size and quantity of use (quota) [29, 30]. Beginning in 2005, the Bisama PHDI Center began limiting the usage of turtles to just the most significant events, as jatu (means) of tiny size and in limited quantities [2]. The turtles that are used must have been grown in captivity, must be at least one year old [12], must be

no more than 20 centimeters in length, and must be restricted to a single individual [6]. The Decree of the Governor of Bali No.243/2000 tightens turtle protection in Bali in order to prevent massive smuggling [30].

### 3. METHODOLOGY

Qualitative narrative field data is collected and analysed in this study [31]. Qualitative research utilizes case studies, experiences, interviews, notes, observations, history, and other problem-related scientific data. The Turtle Conservation and Education Centre conducted January–February 2022 research. In Serangan Village, turtle hunting for illegal trade and traditional ceremonies are popular. Serangan Village is culturally rich and is notable for tourism and conservation. Thus, the study chose this area to investigate the community's views on TCEC and turtles in traditional ceremonies. Researchers study TCEC, Deputy Traditional Leaders, Serangan Islanders, and visitors. Qualitative research requires interviews, observations, literature, websites, and documentation. Informants must provide precise and detailed information as researchers selected the sample purposefully.

#### 3.1 Data Collection

##### 3.1.1 Interview

Eight individuals who were deserving of being resource persons and met certain criteria regarding their role in the community of Serangan Island were selected to be interviewed by the researchers of this study for the purpose of providing a definitive picture regarding the existence of the Turtle Conservation and Education Center (TCEC) and its development over a long period of time. This was done to ensure that the objective of this research could be accomplished. Researchers record and analyze interview results [32]. The following are respondent criteria that considered:

- Experience and knowledge about turtles
- Involvement in indigenous communities
- Knowledge of policies and regulations
- Openness and communication skills
- Economic and social perspective

The respondents used in the research can be seen in Table 1. All respondents participated in the structured interviews, which followed a pre-prepared list of questions (Table 2).

**Table 1.** Respondents of the study

| No. | Name (Initials) | Gender | Status                                      |
|-----|-----------------|--------|---------------------------------------------|
| 1   | IWK             | M      | One of the indigenous peoples               |
| 2   | I               | M      | TCEC officer                                |
| 3   | M               | M      | Souvenir craftsman and former turtle hunter |
| 4   | K               | F      | Serangan society                            |
| 5   | J               | F      | Restaurant owner                            |
| 6   | E               | F      | Innkeeper                                   |
| 7   | K               | F      | Shop owner                                  |
| 8   | A               | F      | Serangan society                            |

Source: Study result, 2022

At every stage of research, from data collection to analysis, respondents' identities must be protected and personal data collected is only used for research purposes and will not be

distributed to third parties without permission. In addition, research results will be presented in aggregate, without identifying individual respondents, to ensure anonymity, thereby ensuring that respondents feel safe and comfortable in providing honest and open information, which in turn will increase the quality and validity of the research.

**Table 2.** List of questions for all respondents

| No. | List of Questions                                                                                                                    |
|-----|--------------------------------------------------------------------------------------------------------------------------------------|
| 1   | In which regions is the use of turtles in traditional ceremonies most common?                                                        |
| 2   | How do Balinese people use turtles in traditional ceremonies?                                                                        |
| 3   | What type of traditional ceremony uses turtles as offerings?                                                                         |
| 4   | What do people think about the use of turtles in traditional ceremonies?                                                             |
| 5   | What is the community's opinion about the impact of TCEC's existence on the lives of the Serangan community?                         |
| 6   | What is the government's role in turtle conservation?                                                                                |
| 7   | What are TCEC's efforts in providing education to the public about the importance of turtles in the ecosystem?                       |
| 8   | What are the solutions from the government and traditional leaders regarding problems regarding turtle use and conservation in Bali? |

Source: Study result, 2022

##### 3.1.2 Observation

We conducted direct observations in Serangan Village and the Turtle Conservation and Education Centre (TCEC) [31]. The objects of this observation include TCEC (focus on education and conservation) and the interaction of the residents of Serangan Village who carry out activities related to turtles, both for traditional ceremonies and conservation. The purpose of this observation is to obtain information regarding cultural practices of using turtles in traditional ceremonies, the effectiveness of TCEC conservation efforts and their impact on local turtle populations and community awareness, and recommendations for adaptive conservation strategies that respect local culture and sustainable turtle conservation.

##### 3.1.3 Documentation

Citing studied documents is one approach to collecting data [33]. Interpretation was done using TCEC letters and transcripts. The documents and transcripts shown in Table 2.

These three data points are being collected with the following objectives:

1. The TCEC: Draft is to assess how the history and objectives of TCEC influence current activities, identify the roles and responsibilities of each part of the organisational structure, and develop the TCEC operational framework.
  2. PHDI Letter: to obtain evidence and details regarding the cooperation agreement between PHDI and TCEC, including the agreed scope and objectives and the division of rights and obligations.
  3. The purpose of the BKSDA Bali Letter is to comprehend the established conservation cooperation framework, the role of BKSDA, and the support and resources provided by BKSDA in conservation efforts.
- These three documents were collected with the aim of gathering holistic information about TCEC's role as a conservation, educational institution, and provider of turtles in traditional ceremonies (Table 3).

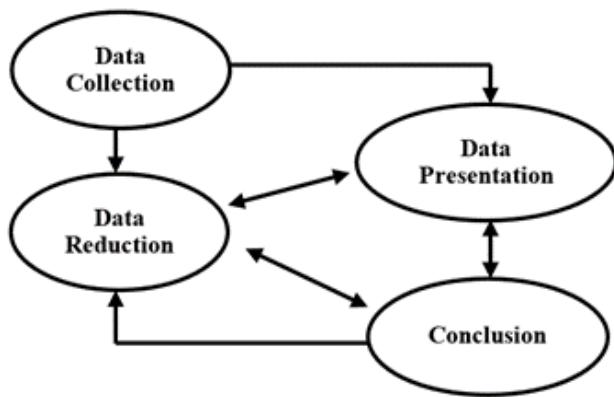
**Table 3.** The documents and transcripts of TCEC

| No. | List of Documentation | Information                                                                                                                     |
|-----|-----------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 1   | Draft TCEC            | Contains various information about TCEC, such as the history of its formation, vision and mission, and organizational structure |
| 2   | PHDI Letter           | Regarding the cooperation agreement between PHDI and TCEC                                                                       |
| 3   | BKSDA Bali Letter     | Regarding the letter of cooperation between BKSDA Bali and TCEC                                                                 |

Source: Study result, 2022

### 3.2 Data analysis

The interactive method of the Miles and Huberman model is used for data analysis, in which the data is continuously and interactively analyzed until conclusion, so that the data is saturated. This method begins with data collection, reduction, presentation, and drawing a conclusion (Figure 1) [31, 34]. Data reduction is the process of compiling presenting the results of data acquisition in an understandable way, with a focus on the most important information. During this stage, data is typically presented in the form of descriptions, flowcharts, and charts [31]. These stages are systematically connected in the production of data analysis.



**Figure 1.** Interactive data analysis model

Source: Personal illustration (2022)

## 4. RESULT

### 4.1 SWOT analysis (Strengths, weaknesses, opportunities, threats)

SWOT analysis is used to determine strategies and action plans for improving ecotourism destinations and turtle conservation initiatives [35]. SWOT analysis is also used to develop economic development strategies for communities. In order to maximize opportunities, overcome threats, exploit strengths, and reduce weaknesses, strategic actions can be formulated (Table 4).

In the realm of turtle conservation and ecotourism, the synergy between strengths and opportunities plays a pivotal role in establishing educational programmes aimed at tourists and locals. This dynamic relationship capitalises on the growing international recognition of sea turtles' significance and the environment, enhancing global awareness, conservation support, and access to resources [36]. Emphasising local community participation in ecotourism

ventures, such as educational tours and hatchling releases, not only fosters community involvement but also supports local economies through sustainable practices. The integration of local knowledge and culture into ecotourism development further attracts tourists, offering authentic experiences that promote conservation awareness and cultural preservation [37].

Addressing weaknesses through strategic engagement with environmental organisations, governmental bodies, and businesses expands the network of support for turtle conservation, enabling infrastructure development and global awareness through technology and social media. The generation of sustainable financial resources via ecotourism products and the empowerment of local communities with conservation skills underscore a proactive approach to conservation sustainability and success.

Moreover, combating the threats of climate change and uncontrolled tourism requires adaptive infrastructure, regulatory measures to control tourism impact, and resolving conflicts with other coastal sectors. These strategic responses to weaknesses and threats underscore the complexity of turtle conservation efforts, highlighting the need for adaptable methods and enduring commitment from all stakeholders. This comprehensive approach to turtle conservation emphasises the importance of collaborative initiatives to overcome challenges and achieve sustainable outcomes.

### 4.2 The people of Serangan Island

Balinese people believe turtles are sacred and vital. During ceremonies, people remove some of the turtles' body organs and then consume them entirely. People outside Bali eat or sell turtles. Serangans consume turtle flesh or eggs. The population of land-nesting turtles has declined, making them hard to discover outside of specific seasons [38]. Authorities established size and number restrictions due to the declining turtle populations and increasing demand. The Deputy Traditional Chair of Serangan Village provided this information during a conversation. Following are the results of the interview:

Traditional ceremonies using turtles cannot be found in any area except in the South Bali area and around the Sanur Beach area.

This turtle-using practice is only found in South Bali, where the population finds many turtles on the shoreline. People enjoy hunting turtles for food.

There were several traditional events that used turtles as offerings in the past, such as tooth cutting, weddings, cremation, and many others. However, for the time being, only large ceremonies use turtles.

Turtles are among the sacred animals whose existence is honored by society. Because turtles are abundant around Serangan Beach, they are frequently used in community ceremonies. Later, the turtle's organs will be removed, and the remainder of the turtle will be cooked and eaten together.

Turtles here are used for more than just ceremonies; turtle hunting has been practiced since long ago to be cooked for sale and sold abroad because Serangan Island has a port, making it easy to buy and sell.

The traditional leader, deputy traditional leader, and the community are usually present at the ceremony. The first step is to prepare all of the ceremony's essentials, such as offerings. The traditional leader will be in charge of the ceremony. Besides the event, the turtles will be prepared for food by those attending the ceremony.

**Table 4.** SWOT analysis of TCEC

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Strengths (S)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Weaknesses (W)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>The presence of three species of turtles—river, hawksbill, and green—contributes to <b>biodiversity</b> and appeals to tourists.</li> <li>Turtle conservation encourages concern among the public and tourists regarding turtles and their habitat.</li> <li>In addition to ecotourism, TCEC serves as an <b>educational resource</b> that promotes awareness of the environment and turtle protection.</li> <li><b>Collaboration with the local community</b> may encourage responsibility and emotional bonds.</li> <li>TCEC can become a <b>research center</b> for students, scientists, and researchers.</li> <li><b>The local wisdom of the community is still strong.</b></li> </ul> | <ul style="list-style-type: none"> <li><b>Limited infrastructure</b>, which includes limited access to transportation and accommodation facilities.</li> <li>Due to <b>financial limitations</b>, managers depend on external sources to finance the management and expansion of current facilities.</li> <li><b>Turtle activities are linked to specific life cycles</b>; dependence on specific seasons can cause fluctuations in income.</li> <li><b>Lack of licensed tour guides</b> with expertise in local knowledge and conservation.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Opportunities (O)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>S-O</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>W-O</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li><b>Promoting international awareness</b> regarding the conservation and safeguarding of turtles can potentially entice tourists to visit turtle ecotourism sites.</li> <li><b>Ecotourism product development</b>, including educational excursions, hatchling releases, and the creation of unique, signature souvenirs, provides novel opportunities for revenue generation and participation in the community.</li> <li><b>By establishing partnerships</b> with environmental organizations and international institutions, ecotourism development can benefit from additional financial resources and expertise.</li> <li><b>The construction and development of an education center</b> presents an opportunity to increase visitors' and local communities' understanding and awareness of the turtle ecosystem.</li> </ul> | <ul style="list-style-type: none"> <li>Design educational initiatives targeting tourists and local communities, with a focus on sea turtles, sustainability, and conservation.</li> <li>Increasing international recognition of the critical nature of safeguarding sea turtles and the environment.</li> <li>Placing local community participation as a top priority, particularly in the formulation of ecotourism services and products, including educational excursions, hatchling releases, and policy formulation.</li> <li>Integrating local knowledge and culture into the development of ecotourism products and services to involve local communities.</li> </ul>                                                       | <ul style="list-style-type: none"> <li>Working in partnerships with environmental organizations to educate and organize local communities. We need to increase our intake of resources and knowledge.</li> <li>Develop partnerships with governmental and private companies to construct infrastructure, including conservation organizations, government assistance programs, financial institutions, non-profit organizations, and local and international investors.</li> <li>Applying advances in technology, including social media, to promote turtle conservation and sustainability initiatives on a global scale. <ul style="list-style-type: none"> <li>The successful commercialization of ecotourism products will generate financial resources that will be allocated to the development and administration of TCEC.</li> </ul> </li> <li>Provide local communities with instruction on how to become licensed and professional tour guides.</li> </ul> |
| <b>Threats (T)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>S-T</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>W-T</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li><b>Climate change and extreme weather</b> will pose a threat to turtles and harm ecotourism activities.</li> <li><b>Tourism growth and increased visitation</b> without proper planning can impact turtle habitats and local culture.</li> <li><b>Theft of turtle eggs</b> by poachers can endanger turtle populations and the sustainability of conservation programs.</li> <li><b>Competition or conflict with other coastal activities</b>, such as fisheries, can be a threat to the sustainability of ecotourism.</li> <li><b>Political and social instability</b> in the area may affect visits and investment in the tourism sector.</li> </ul>                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Implement climate monitoring systems to predict weather changes and take appropriate preventive measures.</li> <li>Involve local communities in turtle monitoring and patrols to prevent turtle egg theft.</li> <li>Education and socialization of the legal consequences and negative impacts of stealing turtle eggs to help maintain sustainability.</li> </ul>                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>Adapting infrastructure to withstand the impacts of climate change, such as sea level rise and extreme weather.</li> <li>Implementation of regulations and visit quotas to limit the negative impacts of uncontrolled tourism growth, which can affect turtle habitats and local culture.</li> <li>Discuss and build commitments with other coastal sectors, such as fisheries or agriculture, to resolve conflicts of interest.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

In the past, when using turtles for traditional ceremonies, you had to use large turtles, around 60 cm in size and two per ceremony, but now there are regulations that prevent you from doing so carelessly. People used to hunt turtles to sell them, but that is no longer permitted because turtles are protected. Other research found that the Serangan Traditional Village

utilizes turtles for trade, tourism, rituals, and Hindu rites. Uncontrolled turtle poaching on Serangan Island is reducing turtle numbers daily [5]. The establishment of the TCEC actively protects sea turtles. Education, plantations, forestry, livestock, fisheries, trade, services, and other sectors improve the Serangan community. Fishermen in Serangan have

transitioned to business, service, and trade since TCEC established [39].

#### 4.3 Turtle Conservation and Education Center (TCEC)

TCEC protects various protected turtle species. TCEC collaborates with the WWF, BKSDA, Indonesian Hindu Dharma Council, and Udayana University to educate local residents and tourists about turtles and efforts to protect them [3, 12]. This education can change their perspective and increase their understanding of ecosystems and species [40]. TCEC aims to (1) prevent illegal trade; (2) disseminate information to prevent the use of turtle products (meat, shell, and eggs); (3) encourage turtle conservation, including monitoring the use of turtles in traditional ceremonies; and (4) create local jobs [30]. TCEC prevents illegal trade by purchasing turtle eggs from local communities, protecting turtle eggs on its beaches, and rehabilitating sick turtles in the wild. TCEC teaches people how to make souvenirs from simple and environmentally friendly materials [30].

TCEC's vision and objectives to inspire coastal communities to protect sea turtles are as follows [41]:

Vision: Making Serangan Island a Turtle Island

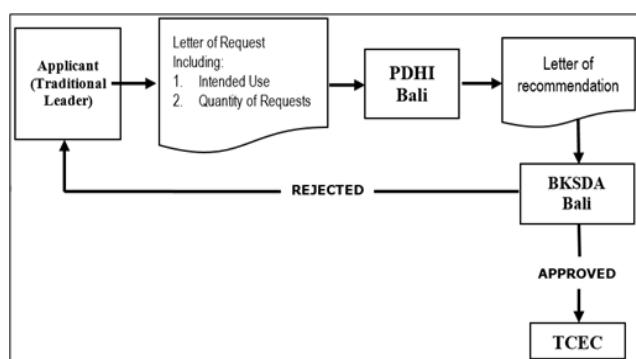
Mission: Conservation, Education, Socio-Culture and Economics

1. Conservation mission by preserving and managing turtles properly and correctly.

2. Educational mission by conducting outreach and implementing educational programs so that people care more about turtle conservation.

3. Socio-cultural mission by protecting turtles used as a means of traditional ceremonies must be in accordance with applicable laws.

4. Economic mission by increasing community income through opening places to eat and stay around TCEC.



**Figure 2.** Visualization of TCEC's position as a provider of turtles in traditional ceremonies

Source: Personal illustration (2022)

Figure 2 illustrates the request for the use of turtles in traditional ceremonies. Licenses for the use of turtles must follow the PHDI Bali guidelines [42]. The flow begins with the traditional leader writing a letter of request stating the purpose and quantity required. Then, send this letter to BKSDA for approval. Take the letter to TCEC to obtain a turtle that meets the requirements if it is approved; otherwise, adjust the letter [43, 44].

Note: PDHI = Parisadha Hindu Dharma Indonesia (PHDI), BKSDA = Balai Konservasi Sumber Daya Alam or Natural Resources Conservation Center, TCEC = Turtle Conservation and Education Center.

The community-based turtle conservation program or Turtle Conservation and Education Center (TCEC) aims to preserve the existence of turtles that are experiencing extinction in the Serangan Subdistrict by focusing on turtle health checks, monitoring and rescuing turtles on the beaches of the South Bali area. Some of the activities carried out at TCEC [14] including:

1. Turtle rescue and nest relocation
2. Turtle medical procedures
3. Turtle rehabilitation
4. Release of Hatchlings
5. Turtle education and outreach for the public and visitors
6. Selling unique souvenirs imitating turtles

One interesting program is the baby turtle adoption program. Interested tourists will pay an administration fee of IDR 150,000.00/hatchling, then fill out a form containing the name of the adopter and the name of the hatchling, as well as receive a certificate as a sign of having participated in the wild release of hatchlings on Serangan beach and receive a necklace or bracelet in the shape of a sea turtle. Not only participants in this program, but general tourists also have the opportunity to release hatchlings en masse on the coast of Bali. Another educational activity is that tourists will be guided to the breeding pond and egg hatching area and given an explanation about the importance of turtle conservation. Another creative program is an activity to color a wooden turtle-shaped statue using paint.

#### 4.4 The opinion of the Serangan community regarding the use of turtles in ceremonies and TCEC

Based on interviews with eight people, their perspectives on the existence of TCEC and the use of turtles in traditional ceremonies differed. The following is a summary of prevalent opinions:

##### 4.4.1 The use of turtles in traditional ceremonies

The use of turtle meat in certain Balinese ceremonies such as Pedudusan Agung, Ngenteg Linggih, Eka Dasa Rudra, and Panca Bali Krama is a practice rooted in the traditional customs of the region. While Balinese Hinduism incorporates local animistic traditions and offerings in religious ceremonies known as the “five holy ceremonies” or Panca yadnya [44], not all of the 1479 traditional villages in Bali consider turtle meat an absolute requirement for ritual ceremonies due to variations in customary rules across regions [45]. Many villages in Bali, including Serangan Village, document their implementation of awig-awig and turtle conservation in a book titled Adi Parwa, drawing from community experience. According to Pawos 29, “Turtles and other sea creatures are found throughout the ocean” [46]. Since the turtle population has decreased, there have been many perspectives regarding the use of turtles or other animals for traditional ceremonies.

Six of the eight people interviewed emphasized the importance of maintaining traditional rituals due to their sacred nature and longstanding presence since their ancestors. They claim that turtles in traditional ceremonies are safe because the government has restrictions. Turtles used in traditional ceremonies must comply with this law.

This ceremony has existed since the time of our ancestors; even before I was born, we must continue to preserve the traditions handed down by our ancestors. The ceremony using turtles is a sacred ceremony; even though turtles are now

protected animals, the use of turtles for ceremonies has been approved, and there are regulations regulating it.

Two people also spoke out against traditional rituals using turtles. Sea turtle populations are decreasing and facing the threat of extinction despite their crucial role in maintaining environmental balance. Therefore, turtles must be preserved and cared for, and they can be replaced with other animals.

I disagree with the practice of using turtles as offerings in ceremonies. When I saw turtles used as offerings, I felt bad because they had to be murdered, and the number of turtles is decreasing.

#### 4.4.2 The existence of TCEC

As a conservation centre and a tourist destination, TCEC will impact local [47]. Alternatives to turtle conservation include tourism, which benefits local people and encourages conservation [27, 48]. Laksmidewi [49] discovered that tourism benefits conservation if it improves conservation capability and local communities. Examining how sustainable living practices affect the local economy can help assess tourism and conservation. TCEC also provides education to the public on how to protect and preserve turtles. TCEC educates students, local communities, and the public [15]. The TCEC teaches students about sea turtles through narrative and animation. The public will report turtles, eggs, and illegal activities. TCEC's coastal observation points that protect turtle embryos from predators and public education about turtle conservation have transformed the community's attitude towards turtle conservation [12]. TCEC is also a method for obtaining turtles that fulfil the requirements for use in ceremonial facilities. The TCEC, a tourism destination, thesis research site, and internship site, will support local economies. Figure 3 demonstrates that the presence of TCEC has a positive effect on the local economy, as people rent out homestays and sell food and souvenirs. The souvenir shop sells food and handmade turtle-themed wooden dolls and T-shirts from communities surrounding TCEC [38]. TCEC benefits the local economy by supplying non-turtle trading jobs [50].

The existence of TCEC has had a significant impact on the lives of the Serangan people, as we are able to fulfill our economic needs by selling food, providing homestays for volunteers and tourists, and selling a variety of Serangan Island-themed souvenirs.

According to the study [27], responsible turtle-based tourism, supported by cultural identity, can provide an economic alternative, social autonomy, and an opportunity to develop more knowledge and protect the environment.



(a) Souvenirs



(b) Homestay

**Figure 3.** TCEC facilities

Source: Personal documentation (2022)

According to the study [51], tourism management must be planned methodically and comprehensively with stakeholder participation to maximise benefits. This management must enable a variety of high-quality tourism goods and services, integrated promotions, tourism facilities, and infrastructure that match their natural surroundings, networks, and sustainable tourism regulations. Local tourist management, financial support, infrastructure development, and training for tourism-related communities are crucial.

#### 4.5 Community welfare enhancement strategies

The SWOT analysis yielded several necessary strategic actions. Table 5 presents the strategic actions based on the SWOT elements.

**Table 5.** Strategic action

| Element | Strategic Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| S       | <ul style="list-style-type: none"> <li>• Providing certification to local residents as competent tour guides in the fields of local culture, ecology, and conservation [52].           <ul style="list-style-type: none"> <li>• Develop training modules and training schedules that align with comprehensive curricula and professional development programs [53].</li> </ul> </li> <li>• Establish certification procedures and regulatory frameworks, ensuring the maintenance of high standards and compliance with regional rules and regulations [54].</li> <li>• The establishment of turtle conservation education centers is necessary to increase awareness of the importance of conservation [14].           <ul style="list-style-type: none"> <li>• Designing multifunctional facilities for turtle conservation education centers               <ul style="list-style-type: none"> <li>• Develop engaging, interactive educational programs for all ages.</li> <li>• Building a strong partnership network with various organizations.</li> </ul> </li> </ul> </li> <li>• Increase collaboration with various institutions to improve the quality of training [53] and use of resources for turtle conservation [54, 55].           <ul style="list-style-type: none"> <li>• Identify and seek alternative funding sources to expand the program.</li> </ul> </li> </ul> |
| W       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

- Building sustainable business models to support training and conservation programs.
  - Simplify certification procedures while maintaining high standards.
  - Optimize the use of existing resources for the construction and maintenance of facilities.
  - Increase public awareness and involvement through information campaigns and incentive programs.
  - Diversify partnerships to reduce dependence on a single source.
  - Developing TCEC-branded products and souvenirs (clothing, accessories, home decor items, and stationery) presents a valuable opportunity to increase the income of local communities [51].
  - Marketing and selling these products through various channels, including online stores and local markets, can attract tourists and visitors [56].
- O**
- The goal is to expand collaboration networks to facilitate the exchange of educational, human, and financial resources to support conservation and community welfare initiatives [57].
  - Maintaining open communication and coordination with partners is critical to successful collaboration [58].
  - Create unique ecotourism products that attract tourists and generate income.
  - Develop educational programmes that are relevant and interesting for various age groups.
  - Monitor policy changes and adapt as needed.
  - Build emergency fund reserves to maintain programme sustainability.
  - Develop environmental risk mitigation strategies.
- T**
- Implement adaptation measures for climate change in conservation projects.
  - Set tourism regulations to protect local habitats and cultures.
  - Develop programmes that integrate the interests of various coastal activities.
  - Maintain communication and coordination with the authorities to anticipate instability.

## 5. CONCLUSIONS

There are agreements and rules in place right now that say how turtles can be used as sacred and honorable offerings in traditional ceremonies in the South Bali area. However, turtles are still less protected because of criminal trade and smuggling. The Turtle Conservation and Education Center (TCEC) was created to protect turtles and make sure that their needs are met in traditional rituals. Different opinions easily arise from the fact that TCEC exists in society. The poll results showed that 75% of people agreed that turtles would still be used in traditional events. While some people believe that turtles should be used as offerings in traditional ceremonies because they are holy and the law allows them to, others are not so sure. This is because turtle populations are declining and other animals could be used instead. Turtles need to be protected so that traditional events can go well, and TCEC plays a big part in making that happen. Local people benefit from TCEC's presence because it helps their economies by fulfilling the needs of tourists who visit Serangan Island and learning about history and turtle conservation. The way people on Serangan Island feel about TCEC shows that turtle conservation can be done in the best way possible, while simultaneously satisfying the community's economic needs and holding cultural ceremonies. This is possible if it is done correctly. The development and management of TCEC must continue to be carried out with an approach that maintains the environment, which includes increasing the human resources surrounding TCEC through various tourism-related training programs. Due to the restricted data collection from interviews and observations in select places, this research may not fully represent the Balinese population. Future research should scrutinize community perceptions and the effectiveness of conservation programmes over time, investigate alternatives to animal use in traditional ceremonies that do not jeopardize species populations, and investigate the integration of these approaches into local culture while upholding traditional values.

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