
**Socio-Economic Impact Of Marine Tourism
And Turtle Breeding Conservation
(Case Study Turtle Conservation in Sangalaki Island Natural
Tourism Park, Berau Regency)**

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Abstract

Turtle conservation has significant socio-economic impacts. Socially, turtle conservation can increase public awareness of the importance of environmental conservation and encourage active participation in efforts to conserve endangered species. Economically, turtle conservation can open up new business opportunities, such as conservation-based tourism, which can increase the income of local communities. Many regions in Indonesia have begun to develop ecotourism, one of which is Sangalaki Island in Berau Regency, East Kalimantan Province. This study aims to determine the impact of the turtle conservation program on the environmental, social, and economic conditions of marine sustainable tourism and conservation in the Sangalaki Island Nature Tourism Park (NTP). The results of the study indicate that the conservation area as a tourist attraction has a positive economic impact on the community but is not sustainable because of the lack of basic infrastructure and tourism infrastructure in the Sangalaki Island NTP. This utilization also has several negative impacts, namely environmental damage due to low environmental awareness of visiting tourists and local communities. The results of the study also showed that there was no risk to the social life of the community because the community around the tourist attraction still holds fast to the customary values and traditions that they have had for generations.

Keywords: *Conservation, Social_Economic, Environmental, sustainable tourism*

INTRODUCTION

A strong introduction engages the reader in the problem of interest and Turtles are biota that live migrating in the open sea and lay eggs every season in coastal areas (Rosalina and Prihajatno, 2022). The beaches where turtles lay their eggs are an important component in maintaining their population, because turtles tend to land and lay eggs in locations with certain characteristics. Turtle landings are influenced by several factors, such as community activities around the coast,

sea tides, beach slopes, beach length and width, substrate types and coastal vegetation (Mansula and Romadhon, 2020). If the condition of their natural habitat is greatly damaged, turtles will not land or lay eggs, which can cause extinction in their population (Turnip et al., 2021).

Turtles are a protected species because they are highly endangered. Currently, all types of turtles have been included in Appendix 1 of CITES (Jemarut et al., 2021), so that international trade in turtles and all their products is prohibited (Bara et al., 2013). The threat to turtle populations is caused by natural and anthropogenic factors such as predators, coastal abrasion, illegal fishing, turtle trade, pollution and loss of habitat or nesting beaches (Nurhayati et al., 2018; Rumbay et al., 2022). Conservation is one of the activities that is expected to prevent the extinction of turtles. Its activities include efforts to address climate change, degradation of nesting and migration habitats, turtle egg trade, and turtle capture, as well as deaths due to by-catch in fishing activities (Jemarut et al., 2021).

Conservation is one of the activities that is expected to prevent the extinction of turtle habitats, prevent the exploitation of turtles for commercial purposes such as the sale of eggs, meat, or shells and can be a means of sharing knowledge or education to the wider community about the importance of turtle conservation in order to maintain turtle habitats in Indonesia so that they do not become extinct. The existence of conservation is currently increasingly being developed and has very good prospects and not only for the sake of protecting flora and fauna. Many conservation areas have also become tourist attractions and can be visited by the general public, but still maintain the initial purpose of developing the conservation.

Some experts say that the tourism sector has a negative impact if there are activities that have exceeded the environmental carrying capacity of an area. Building tourism has a negative risk impact, if not done carefully it can damage the environmental resources on which tourism depends. Management of conservation areas by organizing tourist parks in conservation areas can show results that are not in line with conservation itself, which results in the risk of damage to flora and fauna habitats.

Berau Regency located in East Kalimantan province is an area that is developing ecotourism, one of which is turtle conservation. Turtle conservation in Berau Regency is located on the coast of Sangalaki Island, Derawan Islands, making it an area rich in marine resources. Sangalaki Island and its waters were designated as the Sangalaki Island Nature Tourism Park (NTP) based on the Decree of the Minister of Agriculture of the Republic of Indonesia Number 604/Kpts/Um/8/1982 dated August 19, 1982, which is based on the unique natural conditions of both animals and plants and coastal marine ecosystems with unique components with various types of coral and ornamental fish, so that its sustainability needs to be maintained so that it can be used for the interests of science, education and culture.

Sangalaki Island is also known as one of the best turtle habitats in the world because this island is a habitat for endangered turtles such as green turtles and hawksbill turtles. This island is the main location for green turtles in

Southeast Asia to lay their eggs. From the available data, every year there are more than 3,700 turtles that stop by this island just to lay their eggs. In addition to being a turtle breeding area, the beauty of Sangalaki Island with its white and fine sand, blue sea, and the underwater beauty of Sangalaki Island also arouses the interest of tourists who visit for snorkeling and diving.

Tourism development in NTP Sangalaki Island must be planned in an integrated manner by synergizing with tourism development in the Derawan Islands and still paying attention to the sustainability of the island's ecosystem. Bowers (2016) stated that tourism has the potential to damage the environment in the destination area. Ecosystem sustainability must still be maintained because small islands are very vulnerable to change (Nurisyah et al., 2004). NTP Sangalaki Island is part of a conservation area, which means that in developing tourism, it must continue to pay attention to aspects of environmental sustainability as the main parameter. Tourism development that does not pay attention to environmental aspects (area carrying capacity) will have a negative impact on the area itself (Kamperman, 2000; Saveriades, 2000; Clivaz et al., 2004; Suleva, 2007) and on the life of biodiversity (Clivaz et al., 2004), reducing the quality of the tourist experience (Cooper et al., 1998; Pigram & Jenkins, 1999; Williams & Buswell, 2003; Mitrasinovic, 2006).

The development of environmentally conscious tourism is in line with the concept of sustainable tourism. Sustainable tourism is tourism that takes into account current and future economic, social and environmental impacts, meets the needs of visitors, industry, the environment and local communities and can be applied to all forms of tourism activities in all types of tourist destinations, including mass tourism and various other types of tourism activities (Permenpar 9 of 2021). The concept of sustainable tourism can be applied in the development of tourism in the Sangalaki Island NTP.

The development of the Sangalaki Island NTP ecotourism area is one of the solutions implemented by the Berau Regency government to improve the community's economy in addition to turtle conservation. Development brings changes to the environment, such as what happened in the Sangalaki Island NTP. The area that was originally a coastal area that was rarely touched by outsiders has now become one of the tourism icons in the Derawan Islands, Berau Regency, which is crowded with tourists. The development of tourism will have many influences on the people who live in the tourism location itself. Tourism also has the potential to trigger changes in community behavior, fading social values and norms, loss of identity, social conflict, shifts in livelihoods and environmental pollution. These various things are prone to occur in society as a result of tourism development.

After the opening of the turtle conservation area, various dynamics have arisen for the community. They are directly faced with changes, both environmental changes and socio-cultural changes. In dealing with changes, the community adapts according to the knowledge they have. The development of the turtle conservation ecotourism area is hampered by problems with lack of manpower and the need for veterinarians to treat sick turtles in captivity. Officers

are often pressed, on the one hand they have to serve guests who come to visit, on the other hand, turtle care or infrastructure must be carried out immediately.

Judging from the phenomenon of the existing problems regarding the use of conservation areas as tourist attractions, in addition to having a positive impact on the social and economic life of the community, it also has the potential to provide risks that can damage the habitat in a conservation area. In this case, the impact must of course be reviewed in the development of the Sangalaki Island Nature Tourism Park so that it will be known how this educational tourism area will affect and provide risks to the community and the turtle conservation area itself.

METHOD

This type of research is qualitative descriptive research. This study aims to obtain a clearer, more complete picture and information, as well as allowing and making it easier for researchers to conduct observational research. The research location is in the Turtle Conservation Area of Sangalaki Island Nature Tourism Park, in the Derawan Islands, Berau Regency, East Kalimantan Province. This research was conducted in February 2025 with the research subjects being the managers of the Turtle Conservation Area of Sangalaki Island Nature Tourism Park, both the Leaders and field officers, tourists who attended, and the local community around the Conservation Area.

Primary data in this study are the results of interviews and observations conducted on information or data providers, and secondary data from this study were obtained from books, the internet and other supporting data such as archives and other written documents. Data analysis techniques used by researchers: 1) Data Reduction, which is a form of analysis that sharpens, classifies, directs, removes unnecessary, and organizes data in such a way that the final conclusion can be drawn and verified. 2) Triangulation, carried out using different techniques, namely interviews, observations and documents. 3) Drawing Conclusions In this case, detailing conclusions that were initially unclear. The "final" conclusion will emerge depending on the size of the collection of field notes, storage, and the skills of the researcher.



Figure 1. Interview process

RESULTS AND DISCUSSION

1. Tourist Attractions in the Turtle Conservation Area in Sangalaki Island NTP

1) Beach Tourism

Beach tourism is one of the tourism activities that utilizes coastal resources, both land and water (Fandeli & Mukhlison, 2000). Sangalaki Island has a very beautiful beach with white sand. Like beaches in general, the sunrise and sunset on Sangalaki Island are quite interesting views. The combination of natural elements in the form of stretches of beach sand, ocean, and coastal forest ecosystems creates a very beautiful natural view.



Figure 2.

Sangalaki Island

Source: visitberau.com

2) Underwater Nature Tourism

The waters of NTP Pulau Sangalaki have the potential for very beautiful underwater nature tourism. This area has coral reefs that are still in good condition, various types of interesting marine flora and fauna such as napoleon fish, sharks, clownfish, and various types of mollusks, and there is one typical animal that is the attraction of NTP Sangalaki island, namely the existence of manta rays (manta ray, *Manta birostris*) which are not found on other islands in the Derawan Islands. The beauty and uniqueness of the tourist attractions of Sangalaki Island NTP have attracted visits from foreign and domestic tourists, especially marine tourists with activities such as snorkeling and diving.



Figure 3. Diving in Sangalaki Island

Source: visitberau.com

3) Tracking

NTP Sangalaki is a conservation area with a tropical wet forest ecosystem type. The tracking program is currently in the planning process to be developed and offered to tourists. The main attraction offered by this tracking activity is the presence of the canary crab (*Birgus latro*) which is a rare animal and is categorized as vulnerable by the IUCN.

4) Green Turtle Observation

Turtles are one of the main attractions of the Sangalaki Island NTP area. In this archipelago, almost every day there are turtles that come up to lay eggs. Of course, this can be an attraction for tourists who come to Derawan. Turtle observations can be done at night until morning by visiting several points which are favorite locations for turtles to lay eggs with an observation area of 0.5 ha.



Figure 4. Green Turtle Conservation in NTP Sangalaki Island

2. Identification of Risks in Turtle Conservation Areas in Sangalaki Island Nature Reserve

1) Environment

Based on the interview, it was concluded that the use of conservation as a tourist attraction does not have significant risks to the environment. However, based on the author's direct observation, some of the risks were identified. The following are:

Table 1

Environmental Risks in Tourist Areas

1	Garbage and waste pollution	Tourists who come to Sangalaki Island often bring plastic waste, food waste, and other items that can pollute the environment. This waste can pollute the beach, the sea, and even threaten marine life.
2	Mangrove forest damage	Mangrove forests, which function as abrasion barriers and shelter for various types of marine biota, can be damaged by excessive logging. This can cause more severe coastal abrasion and threaten the population of

		turtles that lay their eggs on the beach.
3	Vulnerable turtles	Sangalaki Island is known as one of the green turtle (<i>Chelonia mydas</i>) nesting sites with the highest density in Berau Regency. Environmental damage can threaten the population of turtles that lay eggs on the beach, such as their damaged habitat or disturbances from human activities.
4	Disturbance of marine ecosystems	Pollution and habitat destruction can disrupt the marine ecosystem as a whole, such as the food chain and the balance of fish populations and other marine biota.

2) Social and Cultural

Based on the interview, it can be concluded that the use of this area as a tourist attraction does not pose a risk to the social and cultural life of the people on Sangalaki Island or the Derawan Islands community in general. And based on the author's direct observation, no risk was found from the use of this area as a tourist attraction. The community around the tourist attraction still holds fast to the customary values and traditions that they have had for generations.

3) Economy

Based on the interview results, it can be concluded that the Sangalaki Island NTP Area as a tourist attraction has a positive impact on the surrounding community. Based on observations that the author made directly at the Sangalaki Island NTP turtle conservation tourist attraction, there was a risk of economic sustainability in the Sangalaki Island NTP Area. The remote location of the island, and the still limited energy infrastructure such as electricity and fuel, clean water infrastructure that is not yet available, and limited communication infrastructure such as telephone and internet networks have become major obstacles to efforts to develop the local economy of the community in the Sangalaki Island NTP area.

In addition to the problem of basic infrastructure that is not good, the lack of tourism infrastructure is also an obstacle in the sustainability of the development of the Sangalaki Island NTP area. Tourism infrastructure is all infrastructure and facilities that support tourism activities. This includes transportation facilities, accommodation, tourist attractions, entertainment facilities, and other supporting facilities that make an area an attractive and comfortable tourist destination for tourists.

Table 2

Negative Impact on the Economy Due to Lack of Tourism Infrastructure

1	Transportation Infrastructure	The remote location of the island and the need to travel for 3 hours from Tanjung Batu port, or 1 hour from Derawan Islands by speedboat is an obstacle for tourists to visit NTP Sangalaki Island for safety reasons. This has affected the number of tourist visits.
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2	Accommodation	To get the experience of seeing turtles laying eggs at night, tourists must stay on the island. There is only 1 inn on Sangalaki Island which has also now stopped operating due to the lack of tourist visits.
3	Supporting Facilities	The lack of restaurants, no souvenir shops or shopping centers, minimal health facilities, and other supporting facilities have reduced the comfort of tourists during their visit to Sangalaki Island NTP.

Good tourism infrastructure plays an important role in improving the quality of tourism experiences, encouraging tourist visits, and increasing regional income. Sangalaki Island NTP is one of the islands included in the list of Derawan Island tour package islands. Tourism activities that can be done on Sangalaki Island include beach tourism, snorkeling, diving, tacking, and animal observation (turtles). The number of tourists in the Derawan Island area which continues to increase is expected to indirectly improve the community's economy. For this reason, the East Kalimantan Natural Resources Conservation Agency as the manager of the Sangalaki Island Area needs to conduct socialization to stakeholders involved in tourism in the Derawan Islands, especially to tour & travel. This is because Sangalaki Island is a mandatory location that will be offered to tourists who come to Derawan Island.

Turtles are the main tourist attraction in this area, of course, unknowingly in the tourism activities carried out have risks to the turtles themselves. Based on the results of the interview, it can be concluded that the use of the Turtle Conservation Area as a Tourist Object has risks to the lives of Turtles such as a decrease in the number of turtle arrivals. This is caused by the turtles feeling disturbed by tourism activities. Based on observations made from the use of the conservation area as a tourist attraction whose attraction is seeing turtles, there are risks to turtles, including turtles can experience stress and can result in death of the turtles due to visitors who do not comply with the standards for visiting and seeing turtles.

The management is committed to maintaining and preserving the Turtle Conservation Area by carrying out efforts to guard and manage the impact of risks that can damage the Turtle Conservation Area in the Sangalaki Island NTP. The management also appeals to the community to play a direct role in maintaining and managing the Sangalaki Island NTP area so that its use can be enjoyed by future generations.

CONCLUSION

The results of the study show that the conservation area as a tourist attraction has a positive economic impact on the community but is not sustainable because of the lack of basic infrastructure and tourism infrastructure in the Sangalaki Island TMA. This utilization also has several risks of negative impacts, namely environmental damage. Based on the results of the study, the impact of

environmental damage is caused by human behavior that is not aware of the importance of maintaining and preserving nature and the small budget for maintenance and development of ecotourism in the Sangalaki Island TMA conservation area.

Based on the description above, recommendations are prepared to support the improvement of ecotourism management for turtle resource conservation as follows:

- 1) Providing good basic infrastructure and tourism infrastructure in the NTP area of Sangalaki Island to increase interest in tourist visits.
- 2) Strengthening cooperation between institutions related to funding, management and monitoring of turtle conservation.
- 3) Establish and initiate a sustainable conservation funding system for turtle research and management.
- 4) Increasing the capacity of local communities and providing inclusive economic growth through tourism, fisheries and aquaculture sectors as alternative livelihoods to reduce illegal trade in turtles and turtle eggs.
- 5) Implementation of local wisdom regulations that require regular monitoring & involvement.
- 6) Area managers continue to strive to increase their commitment to protecting natural resources by conducting outreach and supervision of visiting tourists and the surrounding community to make them environmentally aware.
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