







## Enhancing Ecotourism Potential on Misool Island: A Collaborative Approach

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<https://doi.org/10.18280/ijdne.190523>

### ABSTRACT

**Received:** 20 July 2024

**Revised:** 14 September 2024

**Accepted:** 26 September 2024

**Available online:** 29 October 2024

#### Keywords:

*enhancing, ecotourism potential, Misool Island, stakeholder collaboration, sustainable tourism*

Ecotourism is an important mainstay for the Misool people, apart from the very beautiful coral reefs, the community and natural surroundings are still very natural. On the other hand, there are still many potential ecotourism resources that have not been developed to support the quality of ecotourism activities, even though ecotourism in the Raja Ampat Islands is already global. Conversely, without efforts to explore new ecotourism resources, and work with various stakeholders, it will be difficult to develop. On the other hand, ecotourism development must uphold the 7 pillars of ecotourism namely ecology, socio-culture, economy, education, security, memories and satisfaction. This research was conducted using the specific survey methods are based on the experiences of local communities while accompanying tourists and Focus Group Discussion (FGD) to study's focus on potential and collaborative efforts in ecotourism development. The results of the study show that highlight specific findings ecotourism activities can be developed to be more varied starting from views of the sky, forests, hills, villages, beaches and sea and their implications for stakeholders. Related parties such as entrepreneurs, communities, local governments and universities can support for various ecotourism activities, so as to increase tourist satisfaction and sustainable tourism.

## 1. INTRODUCTION

Misool Island is one of the large islands in the Raja Ampat Islands cluster, besides Waigeo Island, Batanta Island, and Salawati Island. Some waters look like a lake because it is surrounded by small islands with distinctive hills. The mainland conditions of the small islands in Misool are generally rocky or limestone. Plants on small islands are generally shrubs and some forest vegetation is dominated by the level of poles, saplings and seedlings. Tree level plant species are rarely found and not very high except in Misool nature preserve and in the middle of the Big Misool Island. Misool nature preserve is inhabited by 200 species of birds [1], one of them become a symbol of Papua, Cendrawasih Bird. There are two types of Cendrawasih birds, red Cendrawasih (*Paradisaea rubra*) and bald Cendrawasih (*Cicinnurus república*).

National electronic media stated that Misool Island is known as a crowd destination, especially during 2018. The main activity that is often done by visitors is swimming with jellyfish on Love Lake, a bay surrounded by a group of coral-like hearts [2]. Coral reefs have become the most interesting objects in the Raja Ampat Islands cluster, including Misool Island, besides the rural atmosphere, beach, sea and the beautiful sky view. According to Khoshtaria and Chachava [3], general concept for planning zoning plans that incorporate nature protection, cultural prospects, education, health tourism and support the interests of local communities.

Ecotourism as a term is accredited to Hector Ceballos

Lascurian who is purported to have coined the term in 1983 [4]. Ecotourism is the practice of traveling to relatively less exploited natural destinations to appreciate the natural settings, acquire knowledge about wildlife, and enjoy local cultures in authentic settings while conserving the environments of the destinations [5]. According to the research by Avenzora in Winarno and Harianto [6], ecotourism development needs to uphold the principles of the 7 pillars of ecotourism (ecology, social culture, economy, education, experience, memories and satisfaction) wherever the destination is. These pillars will guarantee the sustainability of activities and the development of ecotourism. The seven pillars will be supported by 5 components in ecotourism activities including the aspects of ecotourism objects, accommodation, infrastructure, facilities and services as well as management. Overall ecotourism is seen as a principle. Essentially, the idea of ecotourism must: (1) be regarded as a principle or even the spirit and soul of any form of tourism, (2) implementable and not merely rhetorical, and (3) must be accepted as obligatorily task for every tourism stakeholder.

Achieve those things, community involvement in every ecotourism activity on Misool Island is necessary. This participation must be adjusted to the ability of the local community to optimize supporting and developing tourist destinations, especially nature-based tourism on Misool and Raja Ampat Islands. However, the communities' roles in a variety of ecotourism activities are not much developed yet. The community has an important role and participation in ecotourism which is different from other forms of tourism.

There are also many variations of tourist attraction spots and their function that are unknown to visitors, especially in terms of social culture [7].

According to Tegar and Gurning [8], ecotourism practices must involve the community so that economic benefits for the community can be achieved. Based on the report by Zhang and Lei [9], added that for the community to participate in developing ecotourism activities, the community must be motivated and added their understanding of ecotourism management. Area development ecotourism can emerge culinary traders, transportation services, restaurants, lodging services and handicraft shop [10]. Besides that, also opens up opportunities new work like local guide, cooperative. The potential for ecotourism in the coastal area of Kampung Malaumkarta Papua Barat is very diverse, from nature and culture [11]. The economic impact of ecotourism directly, indirectly and further is IDR 5,179,031,667 per year.

Thus, the activity that explores interesting ecotourism objects on Misool Island is needed to be developed by the community to attract tourists and make them stay longer in Misool. If they spend the night in Misool it may also impact

the opportunities on community activities to provide the best service for tourists. For this reason, community service that aims to explore the potential of ecotourism objects and existing community activities and development efforts is essential. The results of this activity are expected to be taken into consideration in the sustainable development of ecotourism in Misool.

## 2. METHOD

This activity was carried out in December 2018. The research location is on Raja Ampat's Misool Island (Figure 1). The FGD activities were carried out in two villages, namely Gamta Village, West Misool District and Harapan Jaya Village, South Misool District, Raja Ampat Regency. The selection of villages was carried out based on a survey that had the characteristics and potential of village ecotourism such as the presence of community crafts, tourist traffic routes, potential for accommodation development.

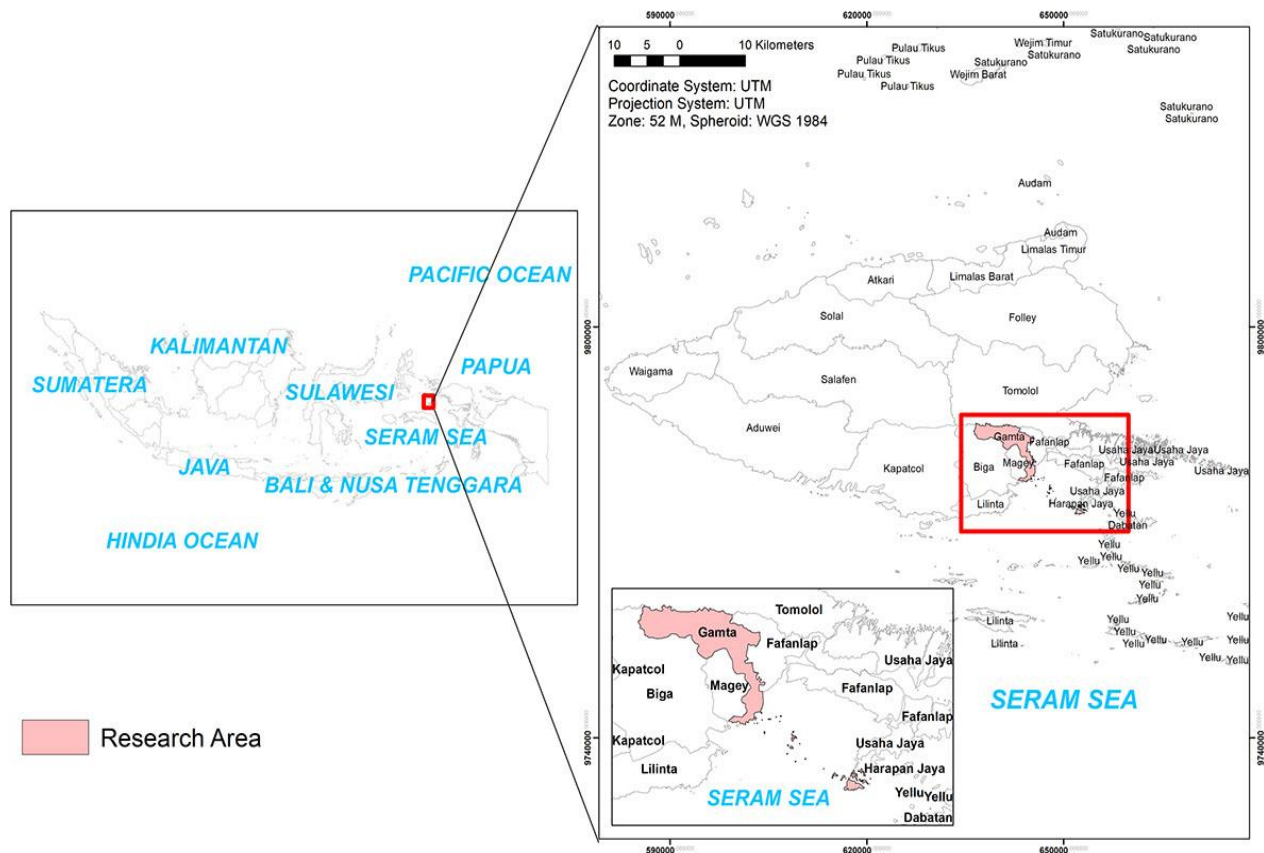


Figure 1. Activities' location

Activities are carried out using field survey methods and Focus Group Discussion (FGD). The survey method is based on the experiences of local people when accompanying tourists. Exploration to tourist attractions by boat with local people. They tell about the beauty and uniqueness of tourist attractions. All photo documentation is done to show the natural beauty and attractions that visitors can enjoy.

Focus Group Discussion participants consisted of men and women. The number of participants was 30 people from each village. Questionnaire data collection was carried out by means of questions and answers during discussions.

## 3. RESULT AND DISCUSSION

### 3.1 Existing conditions and developing ecotourism activities on Misool Island

Exploration results from several locations on Misool Island show that the ecotourism activities are dominated by diving, snorkeling, and selfies in Raja Ampat. The center location to taking photo is on the top of the hill or directly from the object. Overall, ecotourism activities on Misool Island which can be further developed are grouped into 6 locations, that are the pier

of the sky, forests and rivers, hills, beaches, sea and rural areas. Each of these six locations has an attraction that needs to be

optimized for management. The full Misool ecotourism activities are presented in Table 1.

**Table 1.** Existing conditions and developing ecotourism activities on Misool Island

Location/Spot Area	Tourism Site	Existing Activities	Development Activities
Rural	1. Crafts 2. Local culture 3. Environment	-	1. Culinary typically cuisine 2. Culinary typically drinks 3. Honey bees 4. Homestay 5. Cultural and natural interpretation
Skye Pier	1. Sun set, sun rise 2. Sky color 3. Star and moon	1. Taking sun set photo	1. Photo sky color 2. Star and moon binoculars 3. Folklore interpretation
Forests and Rivers	1. Rare birds 2. Mammals 3. Reptiles 4. Fishes 5. Insects 6. Rare plants, medicines, souvenirs 7. Cave	1. Tracking 2. Bird watching	1. Forest trekking 2. Taking flora and fauna photo 3. Fishing 4. Gaharu tea 5. Hats, carvings, incense 6. Taking waterfall photo 7. Making mat mats 8. Culinary from forest 9. interpretation and ethnobotany
Hill	1. Hill and stone	1. Taking scenery photo	1. Sea, hill and stone binoculars
Pantai	1. Sand 2. Beach vegetation	1. Sun set, sun rise 2. Sunbathe 3. Taking photos	1. Drink coconut water 2. Sea food culinary
Laut	1. Coral reef 2. Ornamental fishes 3. Sea and fresh waters	1. Snorkeling 2. Diving 3. Feeding fish	1. Planting coral reefs 2. Foster parents take care of coral reefs 3. Conservation of natural aquariums 4. Natural sea interpretation

The first profitable location if it managed properly is the sky pier. Sky pier is a pier that was built to see the color variations of sky every evening. The color of the sky becomes a very beautiful when sunset and that moment can be used for taking selfies. Besides daytime, night activities which can be done is seeing the stars and talking about the sea experience guided by the presence of constellations. For some tourists, especially couples, they really love this.

The second location is forest and river area. Generally, forests in Misool are good, including mangrove forests, coastal forests to lowland forests, and forests in the hills. The community agrees (95%) that mangrove forests are managed together with stakeholders for sustainable tourism activities. Mangrove forests are still good with green waters. One of the sustainable management efforts is to utilize mangrove ecosystem for ecotourism activities [12]. Various types of birds, mammals and reptiles become an attraction for tourists. According to Novarino et al. [13], the presence of birds and bird habitat use in mangroves are all interesting ecotourism attractions. Ecotourism activities in mangrove areas can provide a sustainable source of income for local communities and increase awareness of environmental services and the benefits of mangrove ecosystems [14]. Ecotourism can preserve mangrove forests, through mitigating the direct environmental impact of increasing the number of tourists and boat traffic, and indirect impacts that can be generated by the source of tourism revenue [15]. According to Ginantra et al. [16], typical characteristics and patterns of growing mangrove zonation become interesting attractions and reference for mangrove area managers in ecotourism development and efforts to conserve mangrove forests. Geographic research is essential for understanding human-environmental interactions in mangroves ecotourism.

At some spots in the natural forest there are unique caves namely Gadis Termenung cave and Baru cave. In this part of the forest there is also a natural multilevel plunge with a calm and clean flow. According to the local community, the clean waterfall can be drunk directly. Besides the forest, there is also a beautiful green river that divides the forest on the island of Misool. Activities that attract visitors to the river are fishing and bird watching (Figure 2).



**Figure 2.** Potential birds that can be managed as birdwatching objects on Misool Island

Third location is the hill. The rocky hill in Misool is very unique with towering shape. The bottom side looks like a pine tree, some are like a boat. When it viewed from the top of the hill, the expanse of small islands and the turquoise blue color of the waters are very beautiful. The magic of these stones became the main attraction for Misool (Figure 3).



Figure 3. Views of the rocky hill on Misool Island



Figure 4. Various potentials and development of ecotourism objects and activities

Fourth location is the sea with coral reefs and fish on the seabed which is very wide and still abundant. The treasure of ecotourism resources is very important to be preserved. The spot to see coral reefs are so many and easy to found. Therefore, managing the spot to determine the main spots and supporting spots is necessary. According to Nugraha et al. [17], the density of coral reef fish did not correlate with the percentage of coral cover. However, it is significantly correlated with the rugosity of coral reefs. Marine ecotourism management strategies need to be completed, including purchasing the number of tourists that can be supported per day (based on the difficulty of the number of completion/snorkelers each day), applying boat moorings so that the corals are not damaged by anchors [18]. In addition, it is necessary to ensure that the tour operator gives directions to the rescue/snorkelers not to touch, stand on or break the coral. Further guaranteeing the tour operator is the organization responsible for the continuous monitoring of marine ecotourism activities and site rescue protection.

Based on these reviews, the potential of natural forests, waterfalls, and fishing activities in rivers become very potential opportunities to support visitor satisfaction. Figure 4 presented tourist activities that need to be optimized.

Besides those four locations which previously described, there is a new and important. Rural area is important and strategic to developed. The development of ecotourism in rural areas is related to traditional activities and daily culture. Indigenous knowledge (IK) is now recognized as being critical to the development of effective, equitable and meaningful strategies to address socio-ecological crises [19]. Mat making is unique culture from Misool communities (Figure 5). This mat has been made hereditary and has been passed down for 14 generations. One of these interesting cultures can be an attraction for tourists in homestay. The products from these attractions can be a souvenir for tourists. Tourists can also try to make it by themselves, but it requires professional assistance [20]. Rural ecotourism is essential for new rural development, including promoting rural social progress, adjust the structure of the agricultural industry, and increase the income of local people.



Figure 5. Mats produced by Gamta villagers on Misool Island

### 3.2 Development of physical support and management

Efforts to develop ecotourism activities without the support of facilities and infrastructure and the cooperation of various

related parties will not go well. This support includes accommodation, facilities and services, infrastructure, and managers. Every object to be developed must be supported according to its importance to visitors (Table 2).

Based on Table 2, generally visitors will stay in Misool, so accommodation support is important. The accommodation is equipped with a toilet and water which is always available. The type of accommodation is adjusted to its location to provide a natural feel and preserve nature. All the people in the sample villages argued that accommodations specifically for tourists were called homestays, even though they did not live together in a house or cottage. This understanding was later corrected that according to them homestay meant resort. Homestay accommodation still has not been available in Misool. The majority of local people agree (85%) if accommodation is managed jointly between the private sector and the community with mutually beneficial rules of the game. Conditions are very important to understand and implement that home stays are a strategic part of providing good services to tourists in rural areas. Studies reveal that homestays can

create alternative accommodation options [21]. With proper planning, implementation, operational regulations and management, finance allocation in the operation of home stay will ensure sustainable tourism development.

Facilities and services in each spot area are inadequate, especially in rural areas. The entrance gate, information centers and stalls are needed as a means for visitor services. Various community crafts and village information will certainly emerge the moment and satisfaction of the end.

Infrastructure such as footpaths can be built based on to the distribution of the attraction points. The location of this archipelago certainly requires a dock that is strategically placed and does not damage the environment. The circular footpath needs to be made as a path for ecotourism interpretation. Establishment of the interpretation pathway needs to involve the tertiary institution to develop its interpretation program. The community agrees (90%) if they are trained as interpreters to accompany tourists while enjoying their trip.

**Table 2.** Support for the development of ecotourism spot areas on Misool Island

Location/Spot Area	Accommodation	Facilities and Services	Infrastructure	Management
Sky per	Resort	Canteen	Pier	Businessman Pokdarwis, universities, entrepreneurs, local governments, environmental NGOs
Forests and rivers	Ecolodge, camping area	Interpretation boards and maps, toilets, shelters	Pier, footpath	Pokdarwis, Universities, entrepreneurs, local governments, environmental NGOs
Hill and stone	-	Interpretation boards and maps, toilets, shelters	Pier, footpath	Pokdarwis, Universities, entrepreneurs, local governments, environmental NGOs
Rural	Home stay, camping area	Gates, information centers and souvenir stalls, toilets, food and drink shops	Pier, footpath	Pokdarwis, Universities, entrepreneurs, local governments, environmental NGOs
Beach	Resort	Gazebo	Pier	Pokdarwis
Sea	Not built	Not built	Not built	Pokdarwis, universities, entrepreneurs, local governments, environmental NGOs

Ecotourism management will involve various parties such as tourism awareness groups (pokdarwis), universities, tour operator entrepreneurs, accommodation entrepreneurs, regional governments and, credible and professional non-government organizations (volunteers). Radić et al. [22] proposed that specialized tourism products, volunteer tourism projects, under the prism of social entrepreneurship, can be a strategy towards product diversification and long-term environmental, social and economic sustainability. Pokdarwis is a local community group that forms an organization to serve ecotourism activities both on land and at sea. They will serve tourists to amazing spots also with knowledge control ecotourism activities to avoid the environment damage. In order for the Tourism Awareness Group to be more active, there needs to be motivational encouragement from relevant stakeholders [23]. The results of the FGDs show that they have not formed an ecotourism organization yet, but they wish to

form it as a forum for ecotourism management.

Impact and Carrying Capacity of Ecotourism Activities Development on Misool Island Ecotourism development in a destination will certainly have both positive and negative impacts. Positive impacts will be encouraged to improve the welfare of local communities and environmental sustainability. The negative impacts will be minimized so that Misool ecotourism resources are can be maintained. According to Baiquni [24], to minimize the impact of damage to coastal resources, one of the prevention efforts is through the use of marine ecotourism-based environmental services. This is supported by the potential diversity of natural resources in small islands which are abundant and ideal for development as ecotourism destinations. Thus, there is harmony between people's welfare, tourist satisfaction and the sustainability of the ecotourism ecosystem process.

One of the ways to reduce the negative impact of ecotourism

development is through the calculation on the carrying capacity of ecotourism. Carrying capacity of natural recreation is the ability of resources to maintain their function and quality in order to provide the desired recreational experience. Carrying capacity of tourist areas is the number of visitors to a tourist area that can be accommodated with a high level of visitor satisfaction and it would be reduced the impact on resources. Reported the results of research by Sagala et al. [25] on East Kutai Miang Island that the area that can be used for snorkeling tours is 24.39 ha with a carrying capacity of 976 tourist visits/day. While the area that can be utilized for diving tourism is 13.40 ha with the ability to receive as many as 536 tourist visits/day.

Carrying capacity of ecotourism includes the carrying capacity of ecology, socio-culture and economy. Implementation to uphold ecological carrying capacity in the field is through setting and adjusting the ability of the destination to accommodate tourists. This program can be established through interpretation education for the surrounding community to become interpreters. The number of interpreters will determine the number of tourists to be served. If the number of tourists exceeds the ability of interpreter support, it will lead to mass tourism and it will damage to ecotourism resources. This condition can be seen by the number of garbage, vandalism and natural damage. According to Sawitri et al. [26], if infrastructure conditions are inadequate, cleanliness is not maintained, vandalism will give an impression which is not good for visitors. It would be easily happened in waters with the potential of coral reefs and beautiful birds.

### 3.3 Development and strategic needs

Strategic and urgent needs which obtained from field surveys and FGDs are home stay, culinary, honey bee keeping and ecotourism interpretation. These needs can be described as follows:

1. Homestay: Homestay is an accommodation as housing which located in the countryside, where tourists will spend the night together with residents in their homes. The need for this homestay is very important but it has not existed in Misool. During January 2019, one accommodation entrepreneur on Misool Island has turned down requests for overnight 100 tourists at his resort. Meanwhile, if distributed to the public, there is no home stay and services provided. The opportunity homestay will certainly elevate, but if it is left unchecked it will lead disappear continuously. According to Dahal and Anup [27], socio-economic benefits received from homestay business in The Nawalpur District of Nepal in the form of increasing income and cultural preservation.

2. Culinary: all food and drinks served by local people or resort entrepreneurs will give special value to visitors. Traditional cuisine is the main attraction for tourists and it has to be kept. But other foods and drinks also can be developed with good taste with an attractive presentation. It requires special skills training.

3. Honey bee keeping: all medicinal products and health foods that original from Papua have a high selling value at the market. For instance, Papua ant nest, leech oil, leaf wrap red Papua fruit. Other product which has not been known to Misool community is honey bees. The chance of developing the honey bees product is such a great opportunity. First step to give to local communities is honey beekeeping training.

4. Interpretation of ecotourism: Ecotourism interpreter is

the main actors in the development of ecotourism. It also can be as a control for the entire series of activities in the field. Without local interpreters, there will be damage and vandalism (Figure 6) to ecotourism resources. Interpreters function is not only to provide education about the conservation of ecotourism resources, but they also often have local wisdom in preserving the environment. The research results stated that ecotourism guides play many roles in ecotourism, making it as important part of the industry [28]. However, ecotourism guides often do not have all the skills necessary to fulfill their role. Training programs can help ecotour guides improve their skills. Ecotourism has a strategic role in regional development [29]. There are many remote communities where ecotourism is a major factor contributing to their economic growth. According to Adom [30], if local communities are not actively involved in ecotourism planning and development, interest in ecotourism will decrease, thus impacting the income generated from these activities.

The necessity for policies that integrate environmental, social, and economic considerations, advocating for inclusive and sustainable development strategies. These strategies are pivotal for fostering economic opportunities that enhance community welfare while ensuring environmental sustainability [31].



**Figure 6.** Vandalism on the cliffs of Mount Harfat

## 4. CONCLUSION

The potential of ecotourism resources in Misool is very varied, unique, and has global appeal. Unfortunately, not all of them have been well developed. The activities which can be improved the Ecotourism development in Misool are ecotourism objects, attractions, physical support, management, and community resources. Those are requiring collaboration with various parties. Priority and strategic steps in the development of ecotourism in Misool are home stay training, culinary delights, honey beekeeping and ecotourism interpretation. Empowerment of local communities is important in the preservation of ecotourism resources. It is to avoid the use of ecotourism resources by the foreign.

Carrying capacity calculations is needed for each attraction spot or ecotourism attraction to keep ecotourism resources sustainable. Also carrying capacity for rural areas to increase the quality of visitor's services. Improving community skills is very important, especially interpreters and expertise services

to ensure the satisfaction. Other skill which no less important is the breeding of honey bees. This can support the health and welfare of the community.

## ACKNOWLEDGMENT

This work was supported by Edhi Yansah and Abu (Ecologue Misool Papua Administrator), local community and Head of Gamta Village, West Misool District and Harapan Jaya Village, South Misool District, Raja Ampat Regency.

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