

Environmental Conservation-Based Sustainable Tourism at Mount Baung Nature Tourism Park, Indonesia

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Abstract

Mount Baung Natural Tourism Park (MBNTP) is a nature conservation area located in the upstream region of the Pasuruan Regency. MBNTP has interesting biodiversity and natural landscapes that need to be preserved. The aims of this research are: 1) to analyze the function of the MBNTP as a tourism and conservation area, and 2) to analyze the tourist attraction that is by the function of the conservation area. This study uses a quantitative approach and the technique of taking the number of samples by means of quoting. This type of research is observational. The type of data used is primary data collected through observation, discussions, and documentation. Documentation to collect secondary data. The analytical method used is modified indicators ADO-ODTWA (Object Operational Area Analysis of Natural Tourism Parks) and AHP (Analytical Hierarchy Process) which aim to analyze tourism and conservation activities and the influence of area designation in developing the beauty of bird tourism. A study on modifications of ADO-ODTWA and AHP found that MBNTP is consistent in maintaining and controlling the function of the area as a conservation and tourism activity, not as a main activity. The results of the study also show that the attractions that are in accordance with the function of the area are bird watching. However, most bird species in the MBNTP area are not protected and only 4 (four) species have protected status. Because most tourists have an interest in the uniqueness of birds that are classified as rare, birdwatching is more suitable to be combined in one package with outbound tours.

Keywords: sustainable tourism; environmental conservation; and tourist attractions.

INTRODUCTION

Tourism within the scope of geography is related to the physical environment and travel activities [1]. The current tourism trend is in favor of natural and environmental tourism. Natural tourism objects carrying out tourism, conservation, and environmental preservation missions are also increasingly diverse and numerous [2]. Tourism objects that carry out missions like this are a form of sustainable tourism. The aim is to optimize the important role of environmental preservation and minimize negative conditions in the future [3]. One of the conservation-based nature tourism areas is Mount Baung Nature Tourism Park (MBNTP).

MBNTP is a tourist park managed by BBKSDA (Natural Resources Conservation Center) which is located in the upstream area of Pasuruan Regency. MBNTP has a landscape morphology of lowland rainforest and bamboo forest ecosystems. Tourist objects are geosites

and the natural environment in the form of tracking activities, panoramas of Coban Baung Waterfall and Mendung Hill, rafting, fun rafting, riverboats, outbound, etc [4]. Like forests in the tropics, MBNTP has high biodiversity, including *Ficus benyamina*, *Schoutenia ovata*, *Abrus precatorius*, *Sterculia foetida*, *Artocarpus elastica*, *Ficus variegata*, *Ficus hispida*, *Syzigium javanicum*, *Ervatamia divaricata*, and several types of bamboos. There are six types of bamboo in the MBNTP area, namely *Bambusa arundinacea*, *Bambusa blumeana*, *Bambusa vulgaris*, *Dendrocalamus asper*, *Schizostachyum blumei*, and *Schizostachyum zollingeri*.

Animals in the MBNTP also vary, including mammals, reptiles, and birds. This animal has not been developed as a tourist attraction, while as a natural tourist object various attractions are needed that can increase tourist visits within the sustainable threshold. One of the animals that has the potential to be developed as a tourist attraction is birds. The attraction in question is bird watching.

The concept of developing birdwatching tourism as a tourist attraction refers to sustainable tourism. This concept is in line with MBNTP as a sustainable tourism area that prioritizes aspects of environmental

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preservation. The development of nature-based tourism actually requires a carrying capacity that prioritizes a balance of regional elements [5]. The implementation of sustainable tourism requires extensive environmental management efforts, in order to increase the tourism industry and the level of tourist visits [6]. MBNTP tourism management does not only focus on tourism management and marketing but also requires an environmental regulatory strategy to maintain its function as a conservation area.

The MBNTP as a conservation area as well as a tourist attraction has the potential to experience environmental degradation. This is caused by tourist visitor activities that cause environmental impacts such as garbage and waste disposal and visitor behavior. Therefore, the management of the MBNTP requires the cooperation and participation of visitors in implementing environmental preservation that is in harmony with the tourism function. The development of tourist objects does not need to follow the concept of community tourism but must have natural characteristics. Therefore the MBNTP area needs to be maintained and maintained through the application of sustainable tourism and conservation.

MBNTP, which carries a sustainable and natural concept, currently does not provide many public facilities for visitors. There is only Cafe Baung which functions as a means of supporting tourism. But on the other hand, MBNTP requires financing for the maintenance and operation of the area, while the number of tourist visits is still very limited. Tourism activities and environmental preservation are two very important things.

MBNTP has the potential to experience a decline in the function of the conservation area if management ignores the carrying capacity of the area. Research shows that most ecotourism managers in Indonesia have not been able to carry out conservation in tourist areas [7]; [8]; [9]. Preliminary observations at MBNTP show that until now the tourism area has been managed by applying the principles of sustainable tourism. This is evidenced by the development of tourist attractions that are not diverse and are in the form of protected forest areas that are conserved. For future development, MBNTP requires community participation and cooperation with all relevant stakeholders to prevent mass tourism.

Tourism and conservation activities are two opposite things, therefore it is very important to

know the physical condition of the area and the potential that exists to generate suggestions to stakeholders regarding tourist attractions that are feasible to be developed based on sustainable concepts and conservation education for tourists. The determination of new tourist objects in MBNTP requires academic and scientific studies before it can be properly implemented.

This study aims to: 1) analyze the function of the MBNTP as a tourism and conservation area, and 2) analyze tourist attractions that are in accordance with the function of the MBNTP as a conservation area. The research is expected to support efforts to attract tourists by introducing new attractions in the form of birdwatching and outbound. The research results form the basis for consideration in the development of birdwatching and/or outbound tourist attractions that can encourage tourists to visit MBNTP.

MATERIAL AND METHOD

1. Research Design

This study uses a quantitative approach that is systematic, clear, and structured according to the research objectives and this type of research is observational. Data collection methods are surveys and interviews using a questionnaire as an instrument. The instrument contains closed questions for the MBNTP manager. At the time of filling out the questionnaire, the researcher acted as the interviewer. Interviews with managers are very useful in gathering information about conservation and tourism efforts as well as sharpening the analysis outlined in the discussion.

The research stages include pre-research, research implementation, and post-research. The pre-research stage includes documentation studies. Documentation studies originate from secondary data which are useful as supporting data in the analysis of research data. The research phase is the implementation of research using observation, interviews, and field documentation. The post-research phase includes data processing, data interpretation, data analysis, and results writing and discussion. The tool used in data processing is ArcGIS 10.4. In detail, the stages of this research are as follows:

- Pre Research. The pre-field stage was carried out to seek initial information regarding the location of the MBNTP. This information is in the form of geographic physical conditions. The information and data needed include a map of Pasuruan Regency via Ina-Geoportal,

the shape file of the MBNTP site design, Decree of the Minister of Forestry No. 1832/Menhut-VII/KUH/2014 concerning the Determination of MBNTP Areas, previous research and Village Government Work Plan Documents (RKP Desa) Kertosari and Cowek 2020.

- Research Implementation. The research was conducted through observation and interviews with respondents. The research was conducted for one month, from August to September 2022.
- Post research. This stage is carried out by processing the interview data using the AHP (Analytical Hierarchy Process) method, then interpreting the data and analyzing the results of the AHP.

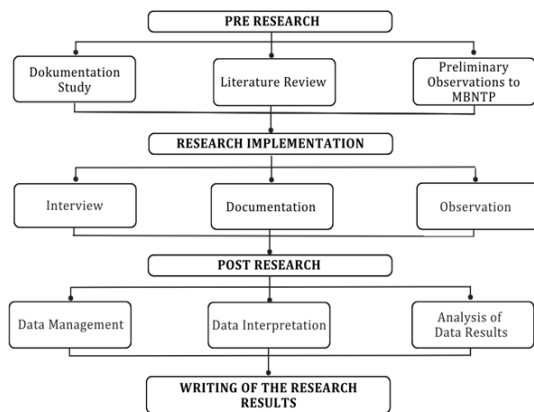


Diagram 1. Diagram of the research Design Stage

1.1 Research Sites

The research was conducted at Regional Conservation Resort (RKW) 20 Pasuruan, Regional Conservation Section (SKW) VI Probolinggo, Center for Natural Resources Conservation (BBKSDA) Region III Jember, Natural Resources Agency (KSDA) East Java to be precise at MBNTP, Cowek Village, Purwodadi District and Kertosari Village, Purwosari District, Pasuruan Regency. MBNTP is bordered by Kertosari Village, Purwosari District to the north, Lebakrejo Village, Purwodadi District to the east, Cowek Village, Purwosari District to the south, and the Purwodadi Botanical Gardens to the west. Astronomical position at $07^{\circ} 46' 09'' - 07^{\circ} 47' 23''$ South Latitude and $112^{\circ} 16' 23'' - 112^{\circ} 17' 17''$ East Longitude. Decree of the Minister of Forestry Number SK.1863/Menhut-VII/KUH/2014 dated 25 March 2014 concerning the Designation of a Natural Tourism Park Forest Area of 197.20 Ha in Pasuruan Regency, East Java Province [4]. MBNTP is divided into 3 (three) blocks, namely: Protection Block, Rehabilitation Block, and

Utilization Block (Intensive and Limited) which are used as research areas. Research activities were carried out from August to September 2022.

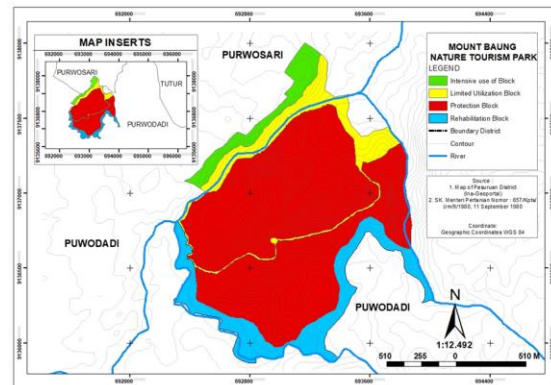


Figure 1. Map of The MBNTP Area

1.2 Types of Research Data

Types of data in the form of secondary data and primary data. Primary data obtained directly in the field include distance traveled, the physical condition of the observation path, amenities, types of vegetation, conservation, and tourism. Secondary data in this study were obtained from documents in the East Java BBKSDA library and the MBNTP Site Design Map. Secondary data includes the distance traveled from the main road to the MBNTP location, types of flora and fauna, type of pavement surface, and level of landslide susceptibility.

2. Participants of the Study

2.1 Population and Sample

The technique for determining the number of samples is quota sampling with a limited population so that a sample of 10 (ten) people. The limited population referred to in this study is the management of the MBNTP. The sample criteria were: 9 (nine) MBNTP managers under the East Java BBKSDA and 1 (one) community forest ranger partner. The samples in the AHP include 3 (three) samples from MBNTP managers who are under the authority of the East Java BBKSDA.

2.2 Methods of Collecting Data

- Interview

The interview technique was carried out in the form of a structured interview with closed questions. Structured interviews require interview guidelines and aim to clarify the truth of the observed data. Structured interviews include indicators of eligibility criteria for tourism objects, environmental preservation, and MBNTP tourism. Interview respondents were determined by quota sampling with certain characteristics

(age, gender, education, occupation/position, location, and telephone number). Structured interviews were conducted with the management of the MBNTP under the East Java BBKSDA and Ranger partners under the auspices of the local community who felt they had understood the ins and outs of the MBNTP conditions as well as birdwatching and outbound attractions.

- Observation and Documentation

Observations were made directly with the aim of gathering information and data sources: potential, accessibility, management, vegetation cover, and infrastructure within the MBNTP. Documentation is carried out to collect field data which will later be matched and integrated with the data (archives) needed in the research. The required documentation is in the form of data collection from previous research: East Java BBKSDA Agency archives regarding the MBNTP Utilization Block, inventory data and library data, policy profiles, and MBNTP Site Design Map. Documentation activities complement observations and interviews with the final results in the form of: photos and information about the MBNTP.

3. Data Analysis Technique

AHP (Analytical Hierarchy Process)

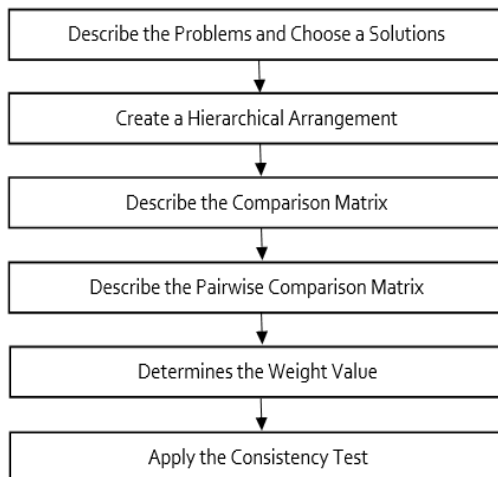


Diagram 2. AHP method step diagram

Source : Munthafa & Mubarak (2017)

The analytical method in the form of AHP aims to make decisions by selecting the best criteria based on decision alternatives [10]. The AHP approach is useful in building evaluation models for decision-making using weighted criteria [11]. According to [12], AHP is able to compare alternatives and measure the impact of the goal of making a final decision that requires the selection of competing alternatives. The

application of the AHP method has several steps used according to [13], namely:

1. Describe the Problem and Determine the Solution

After finding the root of the problem, do the steps in the AHP method so that a solution to the problem can be found starting from:

a. Setting Goals

The purposes of using the AHP method are: 1) To analyze the consistency of the MBNTP as a tourism and conservation area, 2) To analyze the tourist attraction according to the function of the MBNTP as a conservation area.

b. Making Criteria and Alternatives

The selection of criteria and alternatives required field observations and direct interviews with the East Java BBKSDA, the following criteria were obtained: Potency (P), Accessibility (A), Infrastructure (I), Vegetation Cover (VC), and Management (M) can be seen in (Table 1).

Table 1. Code of Eligibility Criteria for Modified Tourism Object ADO-ODTWA in MBNTP

Criteria	Indicator	Code
Potency	P1. Ecosystem Level Diversity	P
Accessibility	A1. Mileage A2. Physical Condition of The Observation Path	A
Infrastructure	I1. Amenities	I
Vegetation	VC1. Vegetation Type	VC
Cover	M1. Conservation	M
Management	M2. Tourism	

Source: Modification from I Ketut. S & Widyatmaja, I. G. N (2017), Sulistiono. S et al (2016)

2. Create a Hierarchy Arrangement

The results of determining the criteria are compiled by creating a hierarchical structure of the AHP method in the feasibility test of bird watching attractions at MBNTP. The structure that supports AHP due diligence can be seen in (Diagram 3).

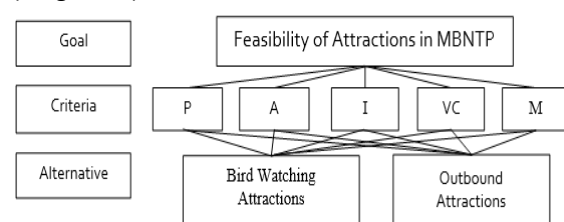


Diagram 3. Hierarchical Structure of Tourism Object Eligibility in MBNTP

Source : Modification from Alfian. D (2021)

3. Create Describe and Create a Pairwise Comparison Matrix

Elements of decision-making from predetermined criteria and alternatives are measured for their intensity of importance with a rating scale of partner comparisons. Comparison values are used to create a pairwise comparison matrix which includes 5 (five) criteria (potency, accessibility, infrastructure, vegetation cover, and management) and 2 (two) alternatives (feasibility of bird watching attractions and feasibility of outbound attractions). The pairwise comparison matrix serves to determine the priority of each element. Pairwise comparison is determined by making a comparison of each element by pairing it with other elements. The AHP method is one of the due diligence methods introduced by Thomas. L. Saaty year (1993) with a scale of 1 (one) - 9 (nine) where 1 (one) (equally important), 3 (three) (slightly more important), 5 (five) (more important), 7 (seven)) (very important), 9 (nine) (very important), and 2 (two), 4 (four), 6 (six), 8 (eight) (average value) [16]. The next step is to add up the values of each criterion column and alternative comparison matrix.

Table 2. Pair Comparison Rating Scale

Intensity of Interest	Description
1	Both elements are equally important
3	One element is slightly more important than the other
5	One element is more important than the other elements
7	One element is more important than the other
9	One element is absolutely important compared to other elements
2,4,6,8	The value between two adjacent assessment values
Opposite	If activity I get one point compared to activity j, then the value of i is opposite to i

Source: Robi Yanto (2018)

4. Determine The Weight Value

After selecting the alternative criteria and comparison elements, a criteria comparison matrix is formed, then the sum of the values for each column of criteria and alternative comparison matrices is carried out. The sum results obtained eigenvalues for the comparison of criteria and alternatives by dividing the

contents of the comparison matrix and the number of columns. The results of the calculation of the truth test by adding up the overall average and producing a value of 1, if not 1 means the calculation is inconsistent.

5. Carry Out a Consistency

Test the Consistency Index (CI) and Consistency Ratio (CR) by knowing the level of consistency of the respondents' answers [15]. The steps for doing CI are calculating λ_{max} and subtracting the n value (the number of criteria and alternatives) and dividing it by the n-1 value. After the CI value is generated, then the CR is calculated by dividing the CI result by the Random Consistency Index (RI). The RI value is determined based on the number of n. CR results later determine consistency with the rules: 1) If CR = 0.1 or 10%, then the hierarchy is consistent, 2) If the CR value < 0.1, then the hierarchy is fairly consistent or correct, and 3) If CR < 0.1, then the assessment needs to be repeated in a very inconsistent sense [13]. The CR and CI calculation formulas are:

$$\text{Consistency Index (CI)} = \frac{(\lambda_{max} - n)}{(n - 1)}$$

$$\text{Consistency Ratio (CR)} = \frac{\text{Consistency Index (C.I.)}}{\text{Random Consistency Index (RI)}}$$

Description:

λ_{max} : Principal eigenvalue

n : Number of factors

Table 3. Random Consistency Index

n	R.I
1	0,00
2	0,00
3	0,58
4	0,90
5	1,12
6	1,24
7	1,32
8	1,41
9	1,45
10	1,49

Source: Purbowo et al (2022)

6. Ranking Criteria and Alternative

The ranking is done by looking at the average value resulting from a combination of criteria and alternative matrices. This ranking results from the highest to the lowest score. This stage determines how important and prioritized alternative criteria and elements are.

RESULT AND DISCUSSION

The research results refer to the research objectives in the form of: 1) analyze the function of the MBNTP as a tourism and conservation area, and 2) analyze tourist attractions that are in accordance with the function of the MBNTP as a conservation area.

1. The Function of The MBNTP as a Tourism and a Conservation Area

MBNTP has the main function as a conservation area and has a supporting function as a tourist attraction. The main function of this very strategic area will be able to turn into a supporting function if there is no consistency in

Table 4. ADO-ODTWA Modification Criteria Comparison Matrix

Criteria	Eigen Value					Amount	Average	Rank
Potency	0,777	0,868	0,365	0,175	0,044	2,231	0,446	1
Accessibility	0,111	0,124	0,609	0,409	0,241	1,495	0,299	2
Infrastructure	0,051	0,004	0,024	0,409	0,614	1,104	0,220	3
Vegetation Cover	0,028	0,001	0	0,006	0,096	0,134	0,026	4
Management	0,031	0	7,107	0	0,001	0,033	0,006	5

Calculating the Consistency Index (CI) is done by adding up each criterion comparison matrix and multiplying it by the average of each matrix to get λ_{max} . The results obtained in the consistency test were $CI = 3.746$ and Consistency Ratio (CR) = 3.344. A CR value of more than 0.1 (zero point one) or 10% (ten percent) means that the consistency ratio is inconsistent and the solution from using AHP is not optimal [16].

$$\begin{aligned}
 \text{Consistency Index (CI)} &= \frac{(\lambda_{max} - n)}{(n-1)} \\
 &= \frac{(19,984 - 5)}{(5 - 1)} \\
 &= 3,746
 \end{aligned}$$

$$\begin{aligned}
 \text{Consistency Ratio (CR)} &= \frac{\text{Consistency Index (C.I.)}}{\text{Random Consistency Index (RI)}} \\
 &= \frac{3,746}{1,12}
 \end{aligned}$$

its management. To determine consistency, AHP is used. The AHP assessment is carried out by modifying the criteria for the Object Operation Area Analysis Guidelines and Nature Tourism Attraction (ADO-ODTWA) method by the Director General of PHKA (Forest Protection and Nature Conservation) in 2003. These criteria include potential, accessibility, infrastructure, vegetation cover, and management. The results of AHP are presented in the following table:

$$= 3,344$$

The suitability of the MBNTP attractions is determined by looking at the AHP criteria for conservation and tourism areas followed by assessing alternative comparison matrices (implementation of birdwatching attractions and applications of outbound attractions). The results (Table 5) are then followed by calculating the weight of the alternative criteria in (Table 5). The results of the assessment resulted in the highest rating for the application of birdwatching attractions and the lowest for the application of outbound attractions. Then proceed with the consistency test with a CI value = 0 and a CR value = 0 meaning that the ratio of consistency is consistent, meaning that the solution using the AHP method is optimal [16].

Table 5. ADO-ODTWA Modification Alternative Comparison Matrix

Criteria	Eigen Values		Amount	Average	Rank
Application of Bird Watching Attractions	0,952	0,952	1,904	0,952	1
Application of Outbound Attraction	0,047	0,047	0,095	0,047	2
1					

$$\begin{aligned}
 \text{Consistency Index (CI)} &= \frac{(\lambda_{\max} - n)}{(n-1)} \\
 &= \frac{0}{0,00} \\
 &= 0
 \end{aligned}$$

$$\text{Consistency Ratio (CR)} = \frac{\text{Consistency Index (C.I.)}}{\text{Random Consistency Index (RI)}}$$

The results of the modified ADO-ODTWA criteria analysis by ranking the average comparison of criteria and alternatives are presented as follows:

Table 6. Results of Ranking Criteria and Alternatives

Criteria	Application of Bird Watching Attractions	Application of Outbound Attraction	Rank
Potency	0,425	0,021	1
Accessibility	0,285	0,014	2
Infrastructure	0,21	0,01	3
Vegetation Cover	0,026	0,001	4
Management	0,006	0	5

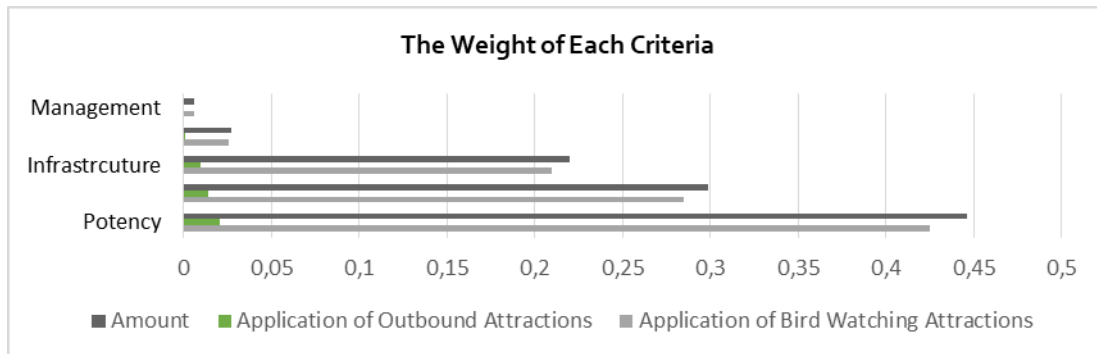


Diagram 4. The Weight of Each Criteria

The reason for the high potential criteria assessment is because MBNTP is a tourist area that is rich in potential such as waterfalls, hills, lowland tropical rain forest, bamboo forests, rivers, cliffs, as well as flora and fauna. This condition is the main attraction and has the potential to be developed into the realm of tourism. The management criteria at MBNTP have not been optimal due to the management of tourism management carried out by PT. MAF has not run optimally and is in the process of

developing tourism support facilities. The restriction on MBNTP visitors has also been a trigger, so far only Baung Café tourists. Tourists are still not allowed to approach the waterfall because it is still in the development stage of a mini hydro project. Conservation management that has been carried out is in accordance with the SOP that has been implemented by BBKSDA.

The selection of bird observation alternatives is based on the diversity of bird species with protected and non-protected status. The physical

condition of the area is dominated by bamboo forests and lowland tropical forests which are important points for bird watching attractions. Bird watching is considered safe if carried out in the middle of a mini hydro project because the observation site is planned to be far from the project area. The results of the outbound

alternative ranking resulted in a low score because the MBNTP area was not ready to implement it. The main obstacle is that the mini-hydro project is still ongoing and if the outbound attractions are implemented it is quite risky for tourists and outbound participants in the future.

Table 7. Results of Ranking Criteria and Alternatives

Criteria Table	Tourism	Conservation	Evaluation Result
Potency	Natural beauty in the form of mountain panoramas, waterfalls, rivers, bamboo forests, lowland tropical rain forests, and cliffs.	Bamboo forests, lowland tropical rain forests, protected and non-protected flora and fauna habitats, and water sources.	Consistent
Accesibilitas	Easy to reach from the main highway, tourists cruising range is around \pm 500 m - 1 Km, and the condition of the area's track is easy to pass. The path to Coban Baung Waterfall is still constrained by project work.	The condition of the paved road is damaged at several points) and the ground is rocky.	Inconsistent
Infrastructure	The facilities provided are not suitable for tourists, namely maintenance, addition and rebuilding of several facilities such as trash cans, bathrooms, shelters, benches, area boundary fences, camping ground, information boards, support poles and welcome gates are not optimal.	Building construction is built semi-permanently based on KDB (Basic Building Coefficient) such as: shelters, viewing towers, and cafes.	Inconsistent
Vegetation Cover	There is no drought disturbance and other land damage to the land cover and it is classified as safe for tourists. The types of plants in the MBNTP are: bamboo, rattan, mahogany, kesambi, kesambi, shaved, bayur, and acacia	No land cover was found that experienced drought or other environmental damage. The former elephant grass encroached land is still in the PE process.	Consistent
Management	Implementation of tourism management in the form of prohibition of entering certain areas (areas near waterfalls, Protection Blocks, and Rehabilitation Blocks), mandatory standards for visitors to comply with applicable SOPs, granting of third-party permits in managing tourism infrastructure and utilization of water energy such as IUPSWA, IPPA, IUPEA which is already running.	Management in the Nature Tourism Park conservation area by stakeholders in the form of forest area/patrol monitoring, cooperation and counseling with the surrounding community, and inventory of flora and fauna.	Consistent

The results of the consistency ratio assessment analysis are carried out by (Table 7) reviewing the 5 (five) AHP assessment criteria based on the results of observation and analysis in terms of conservation and tourism of the MBNTP. Based on PP No. 108 of 2015 concerning Management of Nature Reserve Areas and Nature Conservation Areas article 1 states that Nature Tourism Park is a KPA (Natural Conservation Area) designated for natural tourism and recreation purposes. The evaluation results produced by the conservation and tourism columns must be equally consistent to achieve consistent status and vice versa for inconsistent status, if they are opposite then the evaluation results will be inconsistent. This condition is caused by the function of Nature Tourism Park as a tourist area that prioritizes conservation aspects and must be balanced so that its implementation is more optimal. The analysis carried out resulted in 3 (three) consistent criteria in the form of potential, vegetation cover, and management and 2 (two) inconsistent criteria in the form of accessibility and infrastructure. This means that the implementation of conservation and tourism in the MBNTP is said to be consistent in carrying out its role as a Nature Tourism Park area. Going forward, MBNTP stakeholders can optimize and improve accessibility conditions and infrastructure to provide comfort for tourists.

2. Analyzing tourist attractions that are in accordance with the function of MBNTP as a conservation area

Bird diversity in MBNTP is divided into 2 (two) protected statuses, namely protected and not protected, but they are still classified as common species and are not interesting for bird observation. Birdwatching activities can be developed at MBNTP but more into special interest or educational tour packages such as outbound rather than priority tours. [17], visitors are not fully related to conservation status and endemism, this activity can be included in tourism activities such as bird watching with an educational element that aims to save rare or protected bird species at PKT (Plant Conservation Center) Bogor Botanical Gardens. The distribution of MBNTP bird species as a result of the 2019 BBKSDA inventory is listed in (Table 8) as many as 39 (thirty-nine) bird species with 4 (four) protected bird species and 35 (thirty-five) non-protected bird species. MBNTP has various species of birds with 4 protected species, but the species themselves are not interesting for bird observation. The results of field observations of bird watching activities require a collection of birds that are attractive to tourists, while the MBNTP does not support this condition even though it has many species of birds.

Table 8. Bird Species in MBNTP

Number	Famili	Scientific Name	Protection Status
1	Ardeidae	<i>Bubulcus ibis</i>	Not Protected
2	Accipitridae	<i>Spilornis cheela</i>	Protected
3		<i>Pernis ptilorhynchus</i>	Protected
4	Falconidae	<i>Falco peregrinus</i>	Protected
5	Turnicidae	<i>Turnix suscitator</i>	Not Protected
6	Rallidae	<i>Amaurornis phoenicurus</i>	Not Protected
7	Scolopacidae	<i>Actitis hypoleucos</i>	Not Protected
8	Columbidae	<i>Treron vernans</i>	Not Protected
9		<i>Streptopelia chinensis</i>	Not Protected
10		<i>Cacomantis merulinus</i>	Not Protected
11	Cuculidae	<i>Cacomantis sepulcralis</i>	Not Protected
12		<i>Rhamphococcyx curvirostris</i>	Not Protected
13		<i>Centropus sinensis</i>	Not Protected
14	Apodidae	<i>Collocalia linchi</i>	Not Protected
15	Alcedinidae	<i>Alcedo meninting</i>	Not Protected

16		<i>Halcyon cyanoventris</i>	Not Protected
17		<i>Halcyon chloris</i>	Not Protected
18	Meropidae	<i>Merops leschenaulti</i>	Not Protected
19	Capitonidae	<i>Megalaima haemacephala</i>	Not Protected
20	Picidae	<i>Dendrocopos macei</i>	Not Protected
21	Hirundinidae	<i>Hirundo tahitica</i>	Not Protected
22		<i>Sepah kecil</i>	Not Protected
23	Campephagidae	<i>Pericrocotus cinnamomeus</i>	Not Protected
24	Aegithinidae	<i>Aegithina tiphia</i>	Not Protected
25		<i>Pycnonotus melanicterus</i>	Not Protected
26	Pycnonotidae	<i>Pycnonotus aurigaster</i>	Not Protected
27		<i>Pycnonotus goiavier</i>	Not Protected
28		<i>Prinia familiaris</i>	Not Protected
29	Sylviidae	<i>Orthotomus sutorius</i>	Not Protected
30		<i>Orthotomus ruficeps</i>	Not Protected
31		<i>Orthotomus sepium</i>	Not Protected
32	Rhipiduridae	<i>Rhipidura javanica</i>	Protected
33	Dicaeidae	<i>Dicaeum trochileum</i>	Not Protected
34	Nectariniidae	<i>Cinnyris jugularis</i>	Not Protected
35		<i>Anthreptes malacensis</i>	Not Protected
36		<i>Lonchura leucogastroides</i>	Not Protected
37	Estrildidae	<i>Lonchura punctulata</i>	Not Protected
38		<i>Lonchura maja</i>	Not Protected
39	Artamidae	<i>Artamus leucorhynchus</i>	Not Protected

Source: BBKSDA East Java Province (2020)

3. The Function of The MBNTP as a Tourism and a Conservation Area Potency

The MBNTP has the potential to offer views of the Coban Baung Waterfall resulting from the Welang and Beji River faults, cliffs, mountain panoramas (Krikil Hill, Baung Hill, and Mendung Hill), bamboo forests, lowland tropical forest, and 7 (seven) water sources. Biodiversity in MBNTP does not only act as a conservation area but also has the potential to be developed towards sustainable-based tourism. The physical development of MBNTP biodiversity leads to a demonstration plot that does not only focus on animal diversity but the plant and genetic diversity. The biodiversity of MBNTP is developed by adding and developing plants with native species of the area. [18] in his research explained the potential for the diversity of flora and fauna in Nature Tourism Park Kerandangan to become an opportunity for tourists as learning material and introduction to find out information related to types of butterflies, birds, black monkeys, gray monkeys, etc.

The process of developing the tourism potential of MBNTP is constrained by a lack of East Java BBKSDA personnel. A third party is needed to develop and explore sales potential by obtaining a permit from the East Java BBKSDA for the development of the IUPJWA (Business Permit for Providing Nature Tourism) mechanism or IUPSWA (Business Permit for Providing Natural Tourism Facilities) and IUPEA (Business Permit for Providing Natural Tourism Facilities) Utilization Permit Water Energy. Tourism development has been carried out in the Utilization Block with 2 (two) managers namely: PT. Multi Agro Forestindo and PT. Kanz Kapital, the hope is to be able to manage natural resources and tourism at MBNTP. Licensing is also beneficial for the state in PNPM (Community Empowerment National Program) and helps improve the people's economy directly and indirectly. [3] the government in the role of stakeholder must be able to manage ecotourism potential even better so that it becomes weighty and valuable.

Accessability

The condition of accessability to MBNTP is easy to reach with proper road conditions

because it is close to the Malang-Gempol toll road and the entrance to the Purwodadi Toll Road. Accessibility in the MBNTP area needs physical improvement at several points with moderate area routes, except for the direction towards the top of the hill. Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number P.13/MENLHK/SETJEN/KUM.1/5/2020 concerning the Development of Nature Tourism Facilities and Infrastructure in Forest Areas explains, hiking trails (tracking) use conditions and do not need cement and concrete hardening only arrangement and arrangement of stepping stones. The physical condition of paved roads is still not suitable for tourists and many are damaged because of PT. Kanz Capital. Asphalt roads and rocky soil are suitable for development in the MBNTP area with the aim of maintaining drainage conditions. Paving blocks (concrete bricks) are one way to overcome drainage on roads and reduce the occurrence of floods and puddles [19]. The development of MBNTP accessibility must prioritize the function of conservation and not threaten or damage the sustainability of the ecosystem. The MBNTP route is usually used as a patrol route in the form of rocky soil at the end of the Utilization Block, but can also enter through access from the Purwodadi Botanical Garden and the Perhutani forest.

The topographical conditions are quite steep and the paths for tourists have not been repaired, making current tourism activities impossible. The path to Coban Baung Waterfall is still in the process of being repaired and is not suitable for tourists to pass, before the project started there were rocky steps. The MBNTP road has not been equipped with an adequate lighting system for the entire area, only available in a few lanes, such as the route to the Baung Cafe; prayer room; and bathroom. Mini hydro project work and less than optimal tourism management from PT. Multi Agro Forestindo is a factor that has not maximized tourism activities.

The distance traveled by tourists for planned tracking area activities is ± 1 Km with a normal travel time of ± 1 hour and for bird watching activities it requires a longer observation time of $\pm 5 - 6$ hours with paths in the form of footpaths. Tracking this birdwatching tourist attraction can be reached from Mendung Mountain by approaching the Cowek Village spring block. Planned tourism support activities in the form of outbound packages with a distance of ± 500 m-1

Km. The MBNTP route to the north can be reached by walking for ± 20 minutes and by riding for $\pm 40-45$ minutes.

Infrastructure

The construction of the MBNTP infrastructure building is made semi-permanent with as small a KDB (Basic Building Coefficient) as possible. Based on the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number P.13/MENLHK/SETJEN/KUM.1/5/2020 concerning the Development of Natural Tourism Facilities and Infrastructure in Forest Areas, the application of semi-permanent - buildings in forest areas, the KDB value of forest areas is recommended 10% of the site area determined and adjusted to the conditions of the area around the infrastructure building according to the instructions in the RT (Site Plan). This condition is carried out to balance security, safety, service, maintenance, and environmental sustainability in the MBNTP area. Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number P.13/MENLHK/SETJEN/KUM.1/5/2020 concerning the Development of Nature Tourism Facilities and Infrastructure in Forest Areas states that the designation of nature conservation tourist areas for infrastructure facilities is based on service and management functions; maintenance and development fund; and guidelines for nature conservation.

The condition of supporting facilities for the MBNTP is not yet suitable, it is necessary to develop and improve infrastructure to achieve proper status. Mini hydro project activities have an impact on the condition of infrastructure facilities and there is no maintenance because they have not been used for tourism. Facilities and infrastructure in the form of 2 (two) shelters, 4 (four) bathrooms, benches (damaged condition), trash can, fence area, prayer room, counters, viewing post, cafe, parking area, nameplates, pillars, and gate receptionist. Going forward, relevant stakeholders will carry out renovations and additions to infrastructure, for now, it is still in the process of planning the development of outbound tourism objects.

The condition of the shelter is classified as unfit because it has not been used for 2 (two) years and is rotten, while the bathrooms are adequate and need additional cubicles in the future. Bench conditions that are badly damaged need to be repaired and increased in number. It is necessary to reconstruct the road leading to

the waterfall and in the future, it is necessary to add additional trash cans at several points and repair the fence between the MBNTP area and the Purwodadi Botanical Garden area which is starting to break down. The condition of the prayer room and counters is classified as proper with semi-permanent and permanent building structures. The viewing tower leads to Coban Baung Waterfall, a semi-permanent structure dominated by wood and iron, which is considered suitable for tourists. The condition of Baung Cafe is quite decent with a semi-permanent building structure dominated by bamboo and wood. The parking lot is decent and quite wide with paved road conditions. Signboards in good condition contain area names, instructions, and warnings or prohibitions. The welcoming pillar and gate need to be repaired and rebuilt as they were damaged due to the opening of the project's heavy equipment route. In the future, native MBNTP plants will be replanted through PE (Ecosystem Recovery) activities on the paths opened during the mini-hydro project.



Figure 3. Baung Café

Vegetation Cover

Vegetation cover experienced drought and other environmental damage in MBNTP when viewed from the parameters of critical land with open land conditions where elephant grass was not found. There was an encroachment on elephant grass by the surrounding community in 1999 from east to south, it has decreased since there was education; labor intensive, and Ecosystem Recovery (PE). The MBNTP area which is adjacent to the buffer village is one of the factors that threaten the security of this area and disrupts conservation areas such as encroachment and illegal planting [20]. PE activities carried out in 2018 – 2019 have not been fully maximized, due to the physical

condition of elephant grass which is difficult to remove and it takes a long time for trees (bamboo, lo, and kedawung) to grow from seedlings to large and cover the land cover. This condition is explained in the research of [20], community empowerment around MBNTP (Coweik Village, Purwodadi District, Pasuruan Regency) is carried out with an empowerment program in the form of goat assistance which aims to reduce dependence on the use of elephants grass. The last area fire occurred 2 (two) years ago due to a long drought. So far the drought and environmental damage have not disrupted the course of tourism activities and are safe for tourists. The types of plants that can be found in the MBNTP are bamboo, rattan mahogany, shaved, kesambu, acacia, and bayur [4].

Management

The application of MBNTP plays an important role in terms of conservation and tourism because the main function of Nature Tourism Park is as a nature-based tourism area with adjustments and application of tourism in accordance with existing laws and regulations [21], managing ecotourism with an environmental theme is an important aspect of a sustainable tourism area and demands management to prepare a strategy for developing a conservation area. However, not all Nature Tourism Park areas can be used for tourism because their designations are different. MBNTP has a role in tourism, but the development of the tourism aspect must be semi-permanent and still maintain its natural side. The implementation of tourism management so far has been in the form of visiting limits and mandatory standards for visitors to comply with regulations according to SOPs. This condition is equivalent to [23] research, the organization is carried out according to their function as officials who play a role in the management of the Bung Hatta Grand Forest Park area which so far is general in nature and has not been detailed. Management of the MBNTP conservation area opens intensive tourism opportunities for the general public with permits such as IUPSWA, where a third party provides nature tourism infrastructure under the auspices of PT. Multi Agro Forestindo and IUPEA related to the mini-hydro project under the auspices of PT. Kanz capital.

The efforts of MBNTP stakeholders related to the role of conservation of tourist areas, namely monitoring the area and collaboration

with the surrounding community in the context of empowerment have continued to this day. Good conservation area management means that people do not disturb the area and automatically meet their economic needs. [4], the role of the East Java KSDA Center in empowering communities with a system for establishing the Conservation Village Model was established in 2009 with the assistance of forestry extension officers. Area management includes conservation efforts, activities in the form of visitor management, supervision of IPPA (Nature Tourism Concession) activities, inventory of flora and fauna, forest patrols, etc. There are several blocks that tourists cannot enter because these areas are dangerous and protected, so stakeholder direct tourists not to enter restricted areas (Protection Block, Rehabilitation Block, and bathing and approaching the Coban Baung Waterfall area).

Forest patrols and physical security of the area are carried out by PEH (Forest Ecosystem Controller) in territorial areas (outside the area) and throughout the MBNTP area. Area patrols are carried out in the afternoon with village officials and the local community by way of socialization, interaction, counseling, and empowerment of the importance of the MBNTP area. Patrols within the area were carried out in the Bukit Kerikil area of Cowek Village in the morning by exploring the MBNTP block assisted by MMP (Community Partner Ranger). Implementation of forest patrols leads to the integrity of the area, monitoring of areas prone to encroachment and fire, distribution and breeding of TSL (Wildlife Plants), etc. which can later provide ecological functions according to their designation. Patrols were also carried out after the fire incident with the aim of ensuring the safety of the area.

4. Analyzing tourist attractions that are in accordance with the function of MBNTP as a conservation area

Outbound Attractions

The third party that manages and develops natural tourism at MBNTP, namely PT. Multi Agro Forestindo. Future plans PT. Multi Agro Forestindo will return educational tours that used to exist, such as outbound, while still paying attention to the role of conservation. The camping ground for outbound purposes is currently still in the development planning stage with a special path in the form of rocky ground and shrubs. The outbound implementation in the Intensive Utilization Block is still not effective

because there are still many project workers. Future outbound development can be carried out by paying attention to tourism and conservation management by stakeholders so that the Nature Tourism Park function runs in harmony with the outbound implementation. Currently, the Baung Cafe is still running, with a direct panorama towards Mendung Hill and Coban Baung Waterfall. The concept of outbound with the theme of conservation is also taught at P-WEC (Petungsewu Animal Education Center), where nature is a learning medium in education with learning tools about nature conservation packaged in recreation, games, and adventure [24].

Outbound attractions are classified as development plans, which have the potential to be developed in the form of tour packages if you look at the physical conditions and potential of the MBNTP. Planned activities that are suitable for outbound at MBNTP are rock climbing, jungle tracking, hiking, canoeing, rafting, bird watching, and camping ground. The application of rock climbing has the potential to be carried out because of the cliffs in the Utilization Block, but further studies are needed regarding the physical condition and structure of the constituent rocks. The rocks that makeup MBNTP are hard and dense metamorphic rocks. MBNTP jungle tracking has the potential to be developed in the Utilization Block area to be precise in lowland tropical rain forests, bamboo forests, and patrol routes near the Protected Block with tracks in the form of footpaths and paving. The climbing development plan has the potential to be developed in the Utilization Block to be precise on the patrol route, it needs further assessment of the safety and feasibility of the area. Canoeing and rafting activities were previously carried out on the Beji River and Welang River in the Utilization Block and need to be reviewed and meet SOP (Standard Operating Procedure) standards before being reactivated. Bird watching activities have the potential to be developed in the form of outbound tour packages because these birds are classified as common species and some are protected and the physical conditions of the area support this activity. [25], the Bogor Matahari Tourism Park provides outbound recreational attractions for all ages and special farming tours for children. Planning for the development of outbound attractions does not only focus on tourism activities but also instills the value and role of conservation in the MBNTP area.

Bird Watching Attractions

Current conditions do not allow the development of birdwatching in the Intensive Utilization Block because there are still projects and it is more suitable to be developed in the Limited Utilization Block due to the rare diversity of vegetation and human activities. The higher the forest area, the more intact the habitat and the more food reserves for birds to settle there. The ideal habitat for birds has a variety of food sources so there are quite a lot of bird species [26]. [4] explained that the location of the Utilization Block in Kertosari Village and the southern part of the MBNTP in Cowek Village as well as the cross-peak route has the opportunity for birdwatching and tracking tours. If bird watching is carried out then it is suitable to be done on the boundaries of the Nature Tourism Park area, because it is easier to observe birds. It's different if it's done in the middle of the area because the crown stands are high so it's a bit difficult to observe.

Estimated time for observing small birds at 8-9 am and raptors at 11-12 noon. Bird watching is somewhat limited during raptor out hours. The *Spilornis cheela* likes to perch and stay on a towering tree structure to observe its prey [27]. Several types of trees that are often used as perches for the *Spilornis cheela* are tall tree species, such as: *Ceiba pentandra*, *Albiza saman*, and *Gluta renghas* [27]. MBNTP itself has tall tree species such as *Bombax ceiba* L.

Pernis ptilorhynchus is a migratory bird with a migratory period based on the ecology of migratory birds [28]. Food supply is a priority for *Pernis ptilorhynchus* by selecting habitats that provide larvae and bees. Based on [4], MBNTP has the potential to use *Bombax ceiba* L for beehives. *Apis dorsata* likes to occupy areas with various types of land cover with a supply of alternative food-hunting areas except for *Apis dorsata* [28].

Falco peregrinus or peregrine falcon is the fastest bird of prey among other bird species when hunting and can reach speeds of 150 Km and more than 320 Km when level flying. This behavior is classified as innate behavior because hunting skills that are created from birth have never been learned by other birds [29]. Eagle craters have been observed when catching prey using the soaring technique (flying technique by hovering and rotating without flapping wings and only using air) and flying down Mount Segar, Karangasem Bali [30].

Rhipidura javanica is a type of bird that eats insects by catching (flycatching) [31]. Striped fans forage around tree crowns and wait for prey while perching on tree branches [16]. *Rhipidura javanica* are often found in areas near waters, MBNTP has a landscape of rivers and waterfalls which are the habitat of this bird. According to [32], striped fans have long legs and are like muddy wetlands.

The required route is ± 1 Km with tracking activities and the provision of several towers of view to make it easier for tourists to observe birds from afar. Further feasibility tests need to be carried out regarding the physical condition of the area and bird species before bird watching. It is likely that it will be implemented because there used to be bird watching activities during a third-party IPPA (Nature Tourism Concession Permit).

Bird watching attractions play an important role in aspects of conservation and tourism education according to the tourism concept in Nature Tourism Park. Bird watching activities not only invite tourists to see and observe birds but teach conservation values about the important role birds play in nature. Interesting bird characteristics have the potential to be packaged in tour packages in the form of bird observations which can increase the economy and invite efforts to take a role in in-situ wildlife conservation [33]. Bird watching activities are included in planning the development of tourist attractions. It is hoped that the MBNTP management can consider bird watching attractions as a support for new attractions so that they have a new atmosphere and attraction that will attract tourist visits.

CONCLUSION

Analysis of conservation and tourism in the MBNTP consistently performs its function as a conservation area in Nature Tourism Park, but the role of tourism is not dominant. This condition is evidenced by the high potential value and low management value. The high value of biological conservation potential does not only act as a conservation area but has the potential to be developed towards sustainable tourism. The management value has 2 (two) indicators, namely: tourism management and conservation management, because the resulting tourism management value is low, the management value is also low. Coral reef management indicators have been running according to the SOP set by BBKSDA and the MBNTP area is still being maintained.

So far, MBNTP has not prioritized tourism and has focused more on conservation. MBNTP is located in the upstream area with the highest peak, namely Bukit Baung ± 512 masl with an area of 122.51 Ha [4]. This condition makes the MBNTP area regionally function as a conservation area that needs to be preserved. The results of the AHP analysis show that MBNTP is feasible for the development of bird watching attractions. Judging from the condition of the birds and the condition of the bird watching attraction park, it is very suitable to be developed in an outbound tour package. The need for recovery from BBKSDA East Java and PT. MAF is good in terms of security, comfort, and feasibility of tourists; bird condition; and management of conservation and tourism.

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