Public Perceptions of the Prospective Birdwatching Ecotourism in the Bagek Kembar Mangrove Essential Ecosystem Area (EEA), Sekotong District, West Lombok

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Abstract. Birdwatching is one of the conservation education techniques used to increase awareness related to the importance of bird conservation. EEA Bagek Kembar is an area with the potential to be developed as a Birdwatching Ecotourism site. This research aims to understand the public's perception, especially visitors, regarding the potential development of Birdwatching Ecotourism in EEA Mangrove Bagek Kembar. Data on the public's perceptions of EEA Mangrove Bagek Kembar were collected using questionnaires and observations. The data analysis method used in this research is qualitative descriptive analysis. Based on the research findings, the areas with potential for development as Birdwatching Ecotourism in EEA Mangrove Bagek Kembar are the coastal and rehabilitated mangrove areas. This is supported by birdwatching activities previously conducted by visitors to EEA Mangrove Bagek Kembar. Visitors to EEA Mangrove Bagek Kembar, predominantly students, have identified more than 5 bird species in the EEA Bagek Kembar area. Visitors show a high interest in birdwatching activities and support the development of birdwatching ecotourism in EEA Bagek Kembar.

1 Introduction

Lombok Island has become one of the leading tourist destinations that has been gaining global attention, especially after receiving various international awards for its halal tourism concept. With its increasing popularity, there is a growing demand for diverse tourism facilities and services. Various innovations in tourism products continue to be developed, with a focus on creating quality tourism experiences. One alternative among various high-quality tourism options is ecotourism [1].

Ecotourism is a type of travel that heavily relies on the natural environment. In ecotourism, tourism activities are carried out with a focus on environmental sustainability,

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ecosystems, and local knowledge in the area. The Ministry of Culture and Tourism of Indonesia in 2009 explained that the main goal of ecotourism is to enjoy and learn about the natural, historical, and cultural aspects of a region. Additionally, ecotourism aims to provide economic support to the local community and contribute to environmental conservation efforts.

One form of ecotourism is birdwatching, where bird observation becomes a fascinating activity due to the colorful feathers, unique behavior, and special morphological characteristics of birds [2] With the increasing popularity of ecotourism, Birdwatching Ecotourism, or bird observation in natural habitats, has the potential to attract tourists to Indonesia, especially Lombok, which is known for its diverse bird species. Through Birdwatching Ecotourism, it is expected that public awareness will increase, leading to a greater commitment to preserving the environment and appreciating the beauty of nature.

EEA Mangrove Bagek Kembar is a mangrove forest area located in Sekotong, West Lombok, covering an area of 86.46 hectares. The potential of EEA Mangrove Bagek Kembar lies in its 10 mangrove species, including Avicennia marina, Avicennia alba, Aegiceras floridum, Ceriops decandra, Exoecaria agalloca, Lumnitzera racemosa, Rhizophora apiculata, Rhizophora mucronata, Rhizophora mucronata, and Sonneratia alba [3]. The mangrove forest in EEA Mangrove Bagek Kembar serves as a habitat for various marine life, including various shorebird species. EEA Mangrove Bagek Kembar is also a stopover area for migratory birds, with 11 species, four of which are protected by law: Charadrius veredus, Numenius phaeopus, Numenius madagascariensis, and Numenius arquata. In addition to these migratory birds, there is also a diverse community of local birds in EEA Mangrove Bagek Kembar. Based on the potential of EEA Mangrove Bagek Kembar, it has the potential to be developed into Birdwatching Ecotourism.

Planning the development of an ecotourism area requires accurate and relevant data that reflects the current conditions. One crucial type of data to be collected is the perception of the community. Community perception is their viewpoint that will influence their attitudes toward phenomena in their surroundings. Therefore, involving and considering the opinions of the community in environmental management is crucial. This is why collecting perception data is a fundamental step before planning activities that involve the local population.

This research aims to assess the community's perception of the potential development of Birdwatching Ecotourism in EEA Mangrove Bagek Kembar, Sekotong District, West Lombok. The results of this research will likely increase the participation of the local community in the development of the ecotourism sector and encourage the government to support the further development of ecotourism in the region.

2 Methodology

This research used a descriptive research approach. According to [4], descriptive research is a research method used to portray or describe the current condition or object based on observed or existing facts. In this research, there is no attempt to test a specific hypothesis, only to provide a complete description of the variables, phenomena, or conditions under investigation without the need for intensive control or administration of a treatment. The data analysis used in this research is qualitative descriptive analysis, aiming to accurately describe the characteristics of the object, situation, phenomenon, or specific group, with the goal of creating a systematic overview of possible relationships or influences between various phenomena in society [5]. Public perception data are collected using questionnaires and observations.

2.1 Observation

Data collection involves direct observation of the research object to obtain a clear description of the object being studied.

2.2 Questionnaire

In this research, a systematically designed questionnaire is used. The use of the questionnaire aims to understand the public's perception, generally from visitors to EEA Mangrove Bagek Kembar.

3 Results and Discussion

3.1 The Characteristics of Visitors

The characteristics of respondents who visited EEA Mangrove Bagek Kembar when data collection was dominated by women, namely 61.3%. Most of the respondents were residents of Lombok Island, including West Lombok, East Lombok, North Lombok, and Mataram City. Most of the respondents had a high school/equivalent level of education, with the majority working as students. Visitors are predominantly aged 18-23 years, which is the average age of students.

Table 1. The Characteristics of visitors

Characteristics of visitors		Total	Percentage (%)
Gender	Male	12	38.7
	Female	19	61.3
Age	18 - 23	28	90.4
	24 - 28	3	9.6
	29 - 34	0	0
Recent Education	Elementary school	0	0
	Junior high school	0	0
	Senior High School	18	58.9
	Higher education	13	49.1
Home Address	Lombok island	26	81
	Sumbawa Island	4	15
	Java Island	1	4
Profession	Environmental Consultant	1	3.2
	Field Data Collector	1	3.2
	College student	28	90.4
	Conservation Institute	1	3.2

In addition to students, some visitors to EEA Mangrove Bagek Kembar work as environmental consultants, field data collectors, and employees of conservation institutions. This indicates that EEA Mangrove Bagek Kembar attracts a diverse range of visitors from various backgrounds. Based on their educational levels, the visitors to EEA Mangrove Bagek Kembar typically have completed high school and are currently pursuing higher education, while some others are graduates of higher education. This suggests that visitors to EEA Mangrove Bagek Kembar, especially those interested in birdwatching ecotourism, have a higher level of education. This aligns with the findings of [6], stating that the educational level of birdwatching ecotourists is generally higher compared to ecotourists in general. This

might be because eco-birdwatching, as an environmentally friendly birdwatching activity, has a higher threshold compared to general eco-friendly nature tourism. Birdwatchers are required to learn about bird habits, activity patterns, appearances, sounds, and other relevant knowledge, as well as birdwatching skills. This creates higher requirements for individuals in bird observation in terms of cognitive ability, learning skills, economic status, and more.

The number of highly educated visitors generally indicates that they have acquired birdwatching knowledge through their learning experiences, possess high cognitive levels, and could engage in birdwatching. Therefore, the likelihood of visitors participating in birdwatching activities is higher compared to individuals with lower educational backgrounds. This reflects the higher education level of environmentally friendly birdwatchers (eco-birdwatchers) compared to ecotourists in general [6]. Birdwatchers are considered individuals with higher education levels, environmentally non-destructive behavior, and a high level of awareness of nature [7].

3.2 The Purpose and Pattern of Visits

Respondents obtained information related to the existence of EEA Mangrove Bagek Kembar primarily through verbal information, namely 87.7%. The respondents usually visit EEA Mangrove Bagek Kembar in the morning (87.1%), and these visits commonly occur on holidays or weekends, totaling 70%. Respondents often visit EEA Mangrove Bagek Kembar, with frequencies ranging from 3-5 times to more than 5 visits. The most recent visit for the majority occurred between 1 and 3 months ago, with some having visited less than a month ago. The nature of the visits is mostly categorized as primary visits, with the main purpose being research or education.

Table 2. The purpose and pattern of visits

		Total	**Percentage (%)**
Source of information	Print media	2	6.5
	Electronic media	1	3.2
	Oral information	21	67.7
	Tour and travel agencies	1	3.2
	Campus activities	5	16.1
	Direct information	1	3.2
Visiting time	Morning	29	93.6
	Afternoon	1	3.2
	Evening	1	3.2
Visitation day	Weekend	8	25.8
	Weekday	4	12.9
	Holiday	14	45.2
	Conditional	5	16.1
Frequency of visits	First time	0	0
	Second time	5	16.1
	Three to five times	8	25.8
	More than five times	18	58.1
Last visits	Less than a month ago	10	32.3
	One to three months ago	15	48.4
	Three to six months ago	3	9.7

		Total	Percentage (%)
	More than six months ago	3	9.7
Visit Nature	Main purpose	29	93.5
	The next purpose after visiting other tourist attractions	2	6.5
Visit Purpose	Recreation	2	6.5
	Research/Education	27	87.1
	Mangrove planting	2	6.4

Based on the frequency of visits, most visitors to EEA Mangrove Bagek Kembar (58.1%) have visited more than 5 times. This represents a significant opportunity for the managers of EEA Mangrove Bagek Kembar to introduce conservation activities through Birdwatching Ecotourism, considering both the positive and negative impacts and involving the local community in its management. Additionally, it has the potential to enhance visitors' awareness of bird conservation status. This requires a commitment from all parties to collaboratively develop ecologically, economically, and socially sustainable Birdwatching Ecotourism [8]. Well-organized and successful Birdwatching Ecotourism activities can boost local business income and regional tax revenue, as well as increase the number of visitors to the area [9].

3.3 The Visitors' Knowledge and Interest in Birdwatching

Respondents are familiar with the types of birds in Bagek Kembar, with 38.9% recognizing 1-5 species and 48.9% recognizing more than 10 species. The most encountered bird species by respondents include Arcedo sp., Ardea sp., Lonchura sp., Todirhamphus sp., and Actitis sp. About 64.5% of respondents have participated in Birdwatching activities in EEA Mangrove Bagek Kembar. Most respondents engage in Birdwatching activities in pond areas, coastal areas, and rehabilitated mangrove areas.

Table 3. The Visitor's Knowledge and Interest in Birdwatching

		Number	Percentage (%)
The level of knowledge of respondents regarding bird species in EEA Bagek Kembar	No idea	3	9.7
	Knowing 1 - 5 species	13	41.9
	Knowing 6 - 10 species	3	9.7
	Knowing more than 10 species	12	38.7
Birdwatching activities at EEA Bagek Kembar	Ever	20	64.5
	Never	11	35.5
Birdwatching Locations	Natural mangrove area	2	6.5
	Mangrove rehabilitation area	6	19.4
	Coastal area	5	16.1
	The pond area	6	19.4
	All areas	6	19.4
	Never	6	19.4
The types of birds that respondents encountered at EEA Bagek Kembar	Alcedo sp.	16	51.1
	Ardea sp.	16	
	Lonchura sp.	15	
	Todirhamphus sp.	12	

		Number	Percentage (%)
	Actitis sp.	13	
	Butorides sp.	9	
	Numenius sp.	8	
	Pluvialis sp.	6	
	Ardeola sp.	13	
	Other	6	

Table 3 shows that birdwatching is a recreational activity that has been recognized by the Indonesian people [10]. The ease of encountering birds and the interesting sounds they produce make birds have the potential to be tourist attractions [11]. According to [12], birds are genetic resources that have ecological, scientific, cultural, and tourism uniqueness and value. The diversity of bird species spread across different habitats can enhance the attraction for tourists because each habitat has its own unique bird species [11].

3.4 The Birdwatching Ecotourism Potential at EEA Mangrove Bagek Kembar

According to 32.3% of respondents, EEA Mangrove Bagek Kembar has a high potential for development as a birdwatching ecotourism area, while 51.6% of respondents state it has potential, and 16.1% consider it to have moderate potential. About 38.7% indicate that the coastal area has the most potential for Birdwatching activities. Additionally, 25.8% and 16.1% mention that the most potential areas are rehabilitated mangrove and natural mangrove areas, respectively. Respondents strongly support the development of EEA Mangrove Bagek Kembar as a Birdwatching Ecotourism site, and they express a high interest in engaging in Birdwatching activities at EEA Mangrove Bagek Kembar.

Table 4. The Birdwatching Ecotourism Potential at EEA Mangrove Bagek Kembar

	Respondent's Answers	Percentage (%)
The potential of EEA Bagek Kembar as birdwatching ecotourism, according to respondents	Moderately potential	15.1
	Potential	51.6
	Highly potential	32.3
Areas that have potential as Birdwatching Ecotourism, according to respondents	Natural mangrove area	16.1
	Rehabilitated mangrove area	25.5
	Coastal area	38.7
	Pond area	9.7
	All areas	3.2
	River estuary	3.2
	Don't know	3.2
Respondents' opinions regarding the development of Birdwatching Ecotourism potential in the Bagek Kembar EEA	Not supportive	0
	Moderately supportive	9.7
	Supportive	35.5
	Highly supportive	54.8
The interest of respondents in engaging in Birdwatching Ecotourism activities in EEA Bagek Kembar	Not interested	0
	Moderately interested	16.1
	Interested	45.2
	Highly interested	38.7

EEA Mangrove Bagek Kembar is an ecotourism site with a high diversity of mangrove species. Mangrove forests serve as habitats for birds, forming the basis for visitors' consideration that EEA Mangrove Bagek Kembar has the potential for development as a Birdwatching Ecotourism. Ecotourism thrives in areas with spectacular beauty and rich natural resources. This is directly related to sustainability, as the preservation of the environment, culture, and local communities in each region is a cornerstone of ecotourism development [13]. Birdwatching is one of the most sustainable forms of nature tourism and is also a dynamically evolving recreational activity. Birdwatching attracts an increasing number of people, not only professionals but also amateurs from various countries [9].

The Visitors' wishes.

The following are the respondents' wishes regarding the potential for developing EEA Mangrove Bagek Kembar as a birdwatching ecotourism.

Table 5. Respondents' wishes for developing Birdwatching Ecotourism in EEA Bagek Kembar

No.	Category	Respondent's wishes
1	Facilities and infrastructure	1) Build a bird observation tower. 2) Built bird observation trails. 3) Provide proper toilets. 4) Maximize the use of existing facilities, for example, several stalls prepared for vending but not maximized according to its functions. 5) Provide proper places of worship. 6) Provide a ground camp, parking area, and waste disposal facilities
2	Equipment and others	1) Provide binoculars for bird observation. 2) Create birdwatching tour packages. 3) Provide cameras for photographing birds. 4) Provide bird identification guidebooks. 5) Supply booties for visitors. 6) Competent tour guides. 7) Competent management of EEA Bagek Kembar.
3	Information Center	1) Open an information center such as Bird Information Center (BIC). 2) Create a map of the EEA Bagek Kembar area. 3) Provide a guide to the potential of Bagek Kembar, including biota, flora, and fauna. 4) Information boards on do's and don'ts at EEA Bagek Kembar. 5) Information boards on the distribution of birds at EEA Bagek Kembar. 6) Information boards on the types of birds that can be found at EEA Bagek Kembar.

The results in Table 5 align with the study conducted by [14], where facilities that need immediate improvement include the enhancement of facilities and infrastructure, as well as improved access to information. According to [15], supporting facilities and infrastructure for ecotourism are crucial factors in the success of ecotourism development. Birdwatching observation trails are essential facilities that need urgent development because accessibility is a crucial factor in facilitating birdwatching activities for visitors [16].

According to [17], managers can develop economic and ecological benefits from sustainable birdwatching tourism through the following:

1. Constructing birdwatching observation trails and facilities that should be planned rationally to avoid excessive development and reduce environmental damage. Managers need to understand birds and their surrounding environment. Building birdwatching observation towers so that birds can be observed up close without disturbing them.
2. Increasing investment in scientific research. Birdwatching is carried out at specific points to enhance the monitoring of bird behavior, reproduction, and the ecological environment of birds. Identifying bird nesting sites. Avoiding damage to the surrounding habitat just for good documentation.
3. Creating birdwatching observer SOPs. Birdwatchers, for example, should not litter or bait birds (such as feeding or playing bird calls) to attract their attention.

Birdwatching Ecotourism is a form of tourism that relies on the natural environment, which is a distinctive feature of regular tourism, and it contributes to promoting sustainable development. Birdwatching Ecotourism must consider environmental sustainability in its management and development. This presents both opportunities and challenges that policymakers need to consider by balancing the potential positive and negative impacts of Birdwatching Ecotourism. On the one hand, Birdwatching Ecotourism managers need to focus on environmental sustainability and leverage superior natural conditions to attract more birds while minimizing potential disturbances, especially during mating seasons and other vulnerable conditions. Managers also need to concentrate on creating a comfortable environment for birdwatching tourists, such as improving facilities and infrastructure and providing birdwatching equipment, guidebooks, and information boards to enhance the tourists' experience in birdwatching activities [18].

4 Conclusion

Visitors to EEA Mangrove Bagek Kembar come from various backgrounds, including students, conservation enthusiasts, and researchers. Some visitors express that EEA Mangrove Bagek Kembar has the potential to be developed into Birdwatching Ecotourism. Visitors have a high interest in birdwatching activities and support the development of Birdwatching Ecotourism in EEA Mangrove Bagek Kembar. Visitors provide feedback on the improvement and completeness of facilities and infrastructure, the development of information centers, and the completeness of equipment used in birdwatching activities to enhance the overall experience. The development of Birdwatching Ecotourism requires the involvement of various stakeholders.

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