

Public Perceptions of Ecotourism in Bagek Kembar Mangrove Essential Ecosystem Area, Sekotong, West Lombok

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Abstract: Bagek Kembar mangrove ecotourism is a new tourist destination. Therefore, further management is needed by involving the public and related parties. In this regard, a study aimed to analyze public perceptions of ecotourism in the mangrove in Bagek Kembar. Public perception data was collected through a questionnaire combined with interviews. Respondents were determined by purposive technique and grouped into the general public, ecotourism managers, and tourists. Research data were analyzed descriptively and inferential statistics. Interpretation of the average value of respondents' perceptions of the Bagek Kembar mangrove ecotourism is grouped into four categories: low, moderately low, moderately high, and high. The results showed that the public perception of the Bagek Kembar mangrove ecotourism is moderately high (average score of 0.60). Meanwhile, the increase in facilities and infrastructure, as well as access to ecotourism, was perceived by respondents as moderately low, with an average score of 0.49 (facilities and infrastructure) and 0.48 (road access to ecotourism). All respondents (100%) stated that the Bagek Kembar mangrove ecotourism must be further managed and developed. Although most respondents (75%) stated that the Bagek Kembar mangrove ecotourism had been well managed.

Keywords: Benefits; Ecotourism; Education; Conservation; Management

Introduction

Mangroves are an among between mangrove vegetation and fauna and microorganisms that grow and develop in transition areas between land and sea, especially in tidal areas (intertidal) with high salinity (Martuti et al., 2018; Sari et al., 2018; Afifah et al. al., 2023). Mangrove ecosystems, besides having the potential of tourism functions, are also coastal ecosystems with the economic and ecological role of life support. One of them is that it plays an important role as a habitat for various fauna and a place for spawning aquatic biotas such as fish, shrimp, and mollusks (Irwansyah et al., 2021; Wiraatmaja et al., 2022). Based on this condition, the West Lombok Regent, as the administrator of this area, determined the mangrove essential ecosystem area (EEA) in West Lombok with an

area of 86,645 ha following the Regent's decision number 637/10/DLH/2018. The area of EEA is located in the Lembar District, with an area of 30,999 ha, and the Sekotong District, with an area of 44,645 ha. One important EEA in Sekotong is Bagek Kembar, specifically in Cendi Manik Village.

The management of the mangrove EEA in Bagek Kembar is carried out with the principle of conservation. It is carried out collaboratively by a mangrove conservationist forum and is the coordination of the West Lombok Regency Environmental Service. The Environmental Service, in collaboration with the Natural Resources Conservation Service, initiated the establishment of a mangrove conservation forum. The existence of this forum has received support from the Ministry of Maritime Affairs and Fisheries as well as the Coastal and Marine Resources Conservation Center for

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the Bali and Nusa Tenggara regions through a coastal area rehabilitation program. This forum continues to grow, and the community has responded positively by forming a Tourism Awareness Group (Pokdarwis). This Pokdarwis has the main task of preserving and utilizing mangrove ecosystems.

The conservation and utilization of mangrove ecosystems carried out by Pokdarwis in Bagek Kembar are seeding and planting mangroves, making salt ponds crabs, and ecotourism activities such as mangrove educational tours, bird watching, culinary, and beach tourism. The principles of ecotourism management developed so far are oriented towards sustainability and environmental preservation, socio-culture, and improving the community economy. Principles like this are in line with the principles of ecotourism development carried out in other places, such as in the Lan National Park conservation area in Iran (Sobhani et al., 2022) and in Sukau, Kinabatangan (Kunjuraman et al., 2022).

As explained by Angessa et al. (2022), ecotourism has become a center of attention globally related to sustainable development and increasing public awareness. In line with this thought, Junus et al. (2020) state that ecotourism is a tourism activity responsible for the ecological environment, biodiversity conservation, community welfare, and increasing public awareness. However, ecotourism activities often positively impact increasing people's income but still harm ecosystem damage and decrease resource quality (Lamsal et al., 2016). Therefore, the involvement of local communities and interested parties must be a concern in realizing sustainable ecotourism. However, conflicts between communities and parties and perceptions of ecotourism often become obstacles to success in carrying out ecotourism management activities (Gan, 2021).

In this regard, ecotourism management must be planned and implemented in a participatory manner in a decision-making process oriented towards conservation (sustainable environmental management), increasing community welfare, and increasing public awareness (Makindi, 2016; Dash & Behera, 2018). The public's wrong perception of ecotourism will result in non-optimal management activities and negative impacts related to the existence of ecotourism. The community and parties involved in ecotourism activities often have different perceptions and interests (Egressi et al., 2021). Therefore, it is vital to understand people's perceptions of ecotourism, especially those in Bagek Kembar. It is vital because ecotourism in Bagek Kembar is relatively new and vulnerable to conflicts of interest with community owners of land adjacent to ecotourism areas. Besides that, understanding the community's and stakeholders' perceptions of ecotourism can reduce negative impacts and assist managers and policymakers

in developing appropriate and effective management strategies (Angessa et al., 2022).

Most of the research results show that people's perceptions can lead to different attitudes towards ecotourism (Chen et al., 2020; Harianto et al., 2020; Saikim., 2020; Siahaya et al., 2021; Tebaiy, 2021; Syamsi and Lee., 2021; Stanciu et al., 2022; Gultekin, 2022). In this study, the perceptions that are the focus of attention are public perceptions related to ecotourism management activities, availability of ecotourism facilities and infrastructure, access to and information on ecotourism, and the impact of ecotourism. The results of this study are expected to provide benefits for managers and interested parties as well as policymakers in carrying out mangrove ecotourism management activities in EEA Bagek Kembar to become better and in line with sustainable ecotourism management and have a positive impact on conservation, economic and awareness activities public.

Method

Research sites

The research was conducted in the Bagek Kembar mangrove essential ecotourism area (EEA) in Cendi Manik Village, Sekotong District, West Lombok Regency, West Nusa Tenggara (Figure 1). Cendi Manik Village is bordered by the sea, Eyat Mayang Village (north), Mareje Village (east), Taman Baru Village (south), and Sekotong Tengah Village (west) with an area of 3.2 km² with a population of 5,689 people. Meanwhile, the Bagek Kembar mangrove KEE is located at coordinate point 8045'28.68" LS, 11602'53.73" E. The Bagek Kembar mangrove EEA is used as ecotourism managed by the mangrove conservation forum according to the decision of the West Lombok Regent number 793/14/DLH/2017. This mangrove conservationist forum consists of the Environment Agency, Natural Resources Conservation Service, Maritime Affairs and Fisheries Service, Bappeda, Tourism Office, Public Works and Spatial Planning Office, Education and Culture Office, Village Head, Tourism Awareness Groups, and other related parties. Bagek Kembar mangrove ecotourism is managed according to the 3E principles, namely Ecology, ecotourism development must be able to maintain and restore mangrove ecosystems which are essential in coastal areas, Economy, ecotourism development must be able to provide additional economic income for the community, and education, ecotourism development must make more and more people aware of the importance of mangrove ecosystems and want to be actively involved in efforts to preserve them.

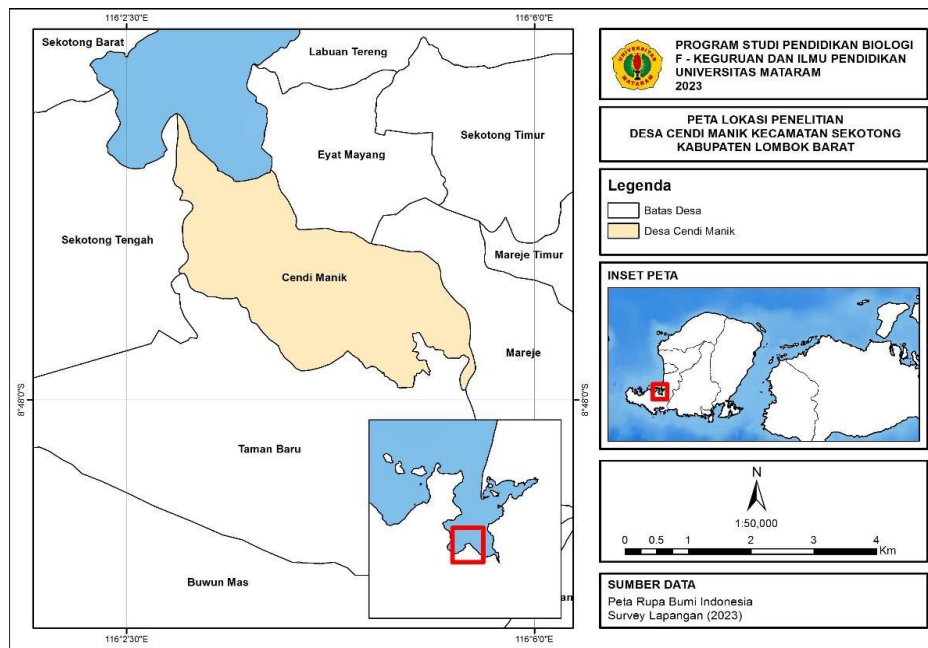


Figure 1. Map of Research Locations (Cendi Manik Village)

Research Data Collection Procedures

Research data collection was carried out using a semi-structured questionnaire combined with in-depth interviews and observation. Before the data collection, the questionnaire was validated by experts. After the questionnaire was declared valid, the questionnaire was then distributed to the respondents. Respondents were determined purposively to have good knowledge of mangrove ecotourism in Bagek Kembar. Respondents in this study consisted of 120 people who were grouped based on gender, age, level of education, occupation,

and status of the respondents. The status of the respondents referred to the general public, ecotourism managers, and tourists.

The material of the questionnaire consists of people's perceptions about ecotourism management, ecotourism facilities and infrastructure, access to ecotourism areas, information on ecotourism activities, and the impact of ecotourism. In general, these perceptions can be seen in Table 1.

Table 1. Statement of Community Perceptions of the Bagek Kembar Mangrove Ecotourism

Aspect	Statements in the questionnaire	Respondents Answer
Ecotourism management	Bagek Kembar Ecotourism needs to be managed and developed	Necessary or unnecessary
	Bagek Twins ecotourism has been well-managed	Already or not yet
	Bagek Kembar ecotourism management needs to involve other parties	Necessary or unnecessary
Sarana & Prasarana	Bagek Kembar Ecotourism needs to make management rules (awig-awig).	Necessary or unnecessary
	Bagek Kembar Ecotourism already has good facilities and infrastructure	Already or not yet
	Bagek Kembar ecotourism facilities and infrastructure are well cared for and maintained.	Yes or No
Access road to ecotourism	It is necessary to add ecotourism facilities and infrastructure in Bagek Kembar.	Necessary or unnecessary
	Road access to the Bagek Kembar ecotourism location is good	Already or not yet
	It is necessary to increase access to Bagek Kembar ecotourism	Necessary or unnecessary
Information access	Bagek Kembar ecotourism information is sufficient	Already or not yet
	It is necessary to develop Bagek Kembar ecotourism information service facilities.	Necessary or unnecessary
Ecotourism benefits	Bagek Kembar Ecotourism has an impact on improving the community's economy	Yes or No
	Bagek Kembar Ecotourism has an impact on improving environmental quality	Yes or No
	Bagek Kembar Ecotourism impacts improving the socio-cultural quality of the community.	Yes or No

Data analysis

The research data were analyzed descriptively (using frequency, percentage, average perception score, and standard deviation) and inferential statistics (using the Chi-square test) to determine differences in respondents' perceptions of Bagek Kembar mangrove ecotourism by looking at the demographic characteristics of the respondents. Respondents' answers to each statement were given a Likert scale score. Positive statements were given a score of 1 for respondents who answered "Yes" and "Necessary" and a score of 0 for respondents who answered "No". Meanwhile, negative statements were given a score of 1 for respondents who answered "Not yet" and a score of 0 for respondents who answered "Already". The interpretation of the average value of respondents' perceptions of the Bagek Kembar mangrove ecotourism is grouped into four categories, adapting the criteria used by Nahar et al. (2023) as in Table 2.

Table 2. Interpretation of Respondents' Perceptions

Average score	Interpretation
0.00 - 0.25	Low
0.26 - 0.50	Moderately low
0.51 - 0.75	Moderately high
0.76 - 1.00	High

Result and Discussion

Respondent Demographic Profiles

Respondents in this study amounted to 120 people who were grouped based on gender, age, level of Education, type of work, and status of the respondent. The status of the respondents referred to in the research is grouped into (1) the general public, (2) ecotourism managers, and (3) tourists. Research respondent profile data can be seen in Table 3.

Table 3. The demographic profile of the research respondents

Characteristics of Respondents	Frequency	Percentage
Gender	Male	42
	Female	58
Age	18 - 31 years	65
	32 - 45 years	21
	46 - 54 years	10
	≥55 years	4
Education	No education	4
	Elementary school	15
	Junior High School	12
	Senior High School	23
	College	46
Occupation	Farmers/Fishermen	13
	Self-employed	19
	Officer	8
	Student	38
	unemployed	23
Respondent status	General public	61
	Ecotourism managers	15
	Tourists	24

Based on the demographic characteristics in Table 3, it is stated that the research respondents totaled 120 people, consisting of 58% female and 52% male. In terms of age category, there were more respondents aged 18-31 years (65%) than the others, followed successively by respondents aged 32-45 years (21%), 46-54 years (10%), and ≥55 years (4%). The number of respondents aged ≥55 is the lowest compared to others.

The results of the study in Table 3 state that there are more respondents with higher Education (46%) compared to the others. Followed successively by respondents with senior high school (23%), elementary school (15%), junior high school (12%), and respondents who had no education as much as 4%. Meanwhile, the

work of the respondents has different occupation. For respondents who work as students, the number is more significant, namely 38%, followed successively by respondents unemployed 23%, entrepreneurs 19%, farmers/fishermen 13%, and officer 8%. Respondents in this study also have different social status. Respondents from the general public constituted the most significant number (61%), followed successively by respondents who visited Bagek Kembar as tourism 24%, and respondents who acted as ecotourism managers 15%.

Community Perceptions of Ecotourism

Community perceptions that are the focus of attention in this study consist of community perceptions

about ecotourism management, ecotourism facilities and infrastructure, access to ecotourism areas, information on ecotourism activities, and ecotourism impacts. The

results of data analysis related to this can be seen in Table 4.

Table 4. Community perceptions of ecotourism

Aspect	Statements in the questionnaire	Respondents Answer	Proportion (%) of respondents' answers	
Ecotourism management	Bagek Kembar Ecotourism needs to be managed and developed	Necessary	100	
		No	0	
	Bagek Kembar ecotourism has been well-managed	Already	75	
		Not yet	25	
		Necessary	84	
facilities and infrastructure	Bagek Kembar ecotourism management needs to involve other parties	No	16	
		Necessary	78	
	Bagek Kembar Ecotourism needs to make management rules (awig-awig).	No	22	
		Bagek Kembar Ecotourism already has good facilities and infrastructure	Already	63
			Not yet	37
Access road to ecotourism	Bagek Kembar ecotourism facilities and infrastructure are well cared for and maintained.	Yes	77	
		No	23	
	It is necessary to add ecotourism facilities and infrastructure in Bagek Kembar.	Necessary	86	
		No	14	
		Road access to the Bagek Kembar ecotourism location is good	Already	72
Not yet	28			
Information access	It is necessary to increase access to Bagek Kembar ecotourism	Necessary	67	
		No	33	
	Bagek Kembar's ecotourism information is adequate	Already	71	
		Not yet	29	
		Necessary	83	
Ecotourism benefits	It is necessary to develop Bagek Kembar ecotourism information service facilities.	No	17	
		Yes	82	
	Bagek Kembar Ecotourism has an impact on improving the community's economy	No	18	
		Yes	80	
		No	20	
Bagek Kembar Ecotourism has an impact on improving the socio-cultural quality of the community.	Yes	62		
	No	38		

Based on Table 4, all respondents (100%) stated that the Bagek Kembar mangrove ecotourism needs to be further managed and developed. The management carried out so far could have been more optimal. However, most of the community (75%) stated that the Bagek Kembar mangrove ecotourism has been well managed. The most important thing in managing the Bagek Kembar mangrove ecotourism is that it still needs the involvement of other parties (84%), and it is necessary to make management rules mutually agreed upon with the community (78%). Nonetheless, in the Decree of the West Lombok Regency number 793/14/DLH/2017, a mangrove conservation forum has been established by involving related agencies, offices, and community groups in carrying out action plan activities. Some of these activities include institutional strengthening of mangrove management, increasing understanding of EEA, mangrove conservation campaigns and Education, seeding, planting, and maintenance of mangroves, and improving the management of mangrove tourism. Activities to

improve mangrove tourism management are focused on preparation of mangrove ecotourism guidelines, ecotourism development training, community assistance in developing business groups and supervision, and development of tourism service products. However, the action plan was not fully implemented. Because of this, most people still expect the involvement of other parties in developing mangrove ecotourism in Bagek Kembar. Parties expected to be involved in this development include is tour guides, youth organizations, and community leaders who are influential in the community, such as Tuan Guru, youth leaders, and other community leaders. As with managing mangrove ecotourism in other places, collaboration with related parties is one of the important that must be addressed (Tiga et al., 2019; Handayani & Suruwaky, 2020). Some examples of successful management of mangrove ecotourism are reported by Dzhandzhugazova et al. (2019), Olearnik & Barwicka (2019), and Loliwu et al. (2021). Besides that, in managing activities, the community needs to make

regulations already rooted in the community, have positive values, and contribute to mangrove conservation. The regulation is expected to be in the form of village regulations, which contain land conversion, mangrove logging, animal hunting, and waste (garbage) management. This regulation effectively manages positive related to ecotourism management, as in Wakatobi, Indonesia (Marlina et al., 2022).

The results of the study in Table 4 related to the Bagek Kembar mangrove ecotourism facilities and infrastructure provide information that 86% of respondents want additional facilities and infrastructure, even though the existing facilities and infrastructure are based on the perception that 77% of respondents have been well maintained. The addition of facilities and infrastructure expected by the respondents included a prayer room, trash cans, toilets, parking, homestays, bird-watching towers, tracking the mangroves, and photo spots. Apart from that, it is also necessary to add comfortable facilities for culinary activities such as crabs, cultivated fish, and processed mangrove products. This culinary is expected to be an additional tourist attraction that can support mangrove ecotourism activities. The results of research in other places, such as in Phong Nha-Kebang and Halong Bay, Vietnam (Chi, 2021), show that culinary tourism can be a tourist attraction that can directly impact people's economic lives.

The study results in Table 4 provide other information related to access to ecotourism and access to information that makes it easier for people to visit the Bagek Kembar mangrove ecotourism. The road access to the Bagek Kembar mangrove ecotourism is generally categorized as good. However, 67% of respondents stated that increased access to ecotourism is needed. The intended road access is the access road to the entrance of the ecotourism area. The condition of the road is still dirt road, uneven, muddy during the rainy season, and less

comfortable for tourists. All of this reason, it is recommended that the road be asphalted or paved so it is comfortable to pass during the rainy and dry seasons. In addition, the development of Bagek Kembar mangrove ecotourism information service facilities, based on the perception of 83% of respondents, is still needed. The existence of Bagek Kembar mangrove ecotourism must be widely disseminated to the public by adding information boards conducting ecotourism promotions and campaigns through websites, leaflets, flyers, and social media (Facebook, Whatsapp, and YouTube). Websites and social media are the most widely used information carriers so far. Some research results show that websites and social media accounts play a positive role in the development of ecotourism (Asnawi, 2021; Ulfi et al., 2021; Firman et al., 2022; Hoang et al., 2022; Khan et al., 2022).

The research results in Table 4 provide important information that the existence of the Bagek Kembar mangrove ecotourism benefits the community from an economic aspect and improves the quality of the environment and socio-cultural community. Most of the respondents (82%) stated that ecotourism had an impact on improving the economy, followed successively by improving the quality of the environment (80%), and increasing the quality of socio-culture (62%). These results align with the orientation of ecotourism development related to conservation (environmental quality), economy, and community empowerment (Kia, 2021).

Further analysis of public perceptions of the Bagek Kembar mangrove ecotourism provides information that ecotourism management is the first priority for development. It was followed successively by adding facilities and infrastructure, involving other parties in management activities, developing information service facilities, and making management rules. Detailed information regarding this can be seen in Table 5.

Table 5. The results of the analysis of public perceptions of the management of the Bagek Kembar mangrove ecotourism

Statements in the questionnaire	Percentage (%)
Bagek Kembar Ecotourism needs to be managed and developed	100
It is necessary to add ecotourism facilities and infrastructure in Bagek Kembar	86
Bagek Kembar ecotourism management needs to involve other parties	84
It is necessary to develop Bagek Kembar ecotourism information service facilities	83
Bagek Kembar Ecotourism needs to make management rules (awig-awig).	78
It is necessary to increase access to Bagek Kembar ecotourism	67

Based on Table 4 and Table 5, further analysis is carried out in interpreting public perceptions. The results of this interpretation can be seen in Table 6. In general, Figure 2 states that the community's perception of the Bagek Kembar mangrove ecotourism is

categorized as quite good (average perception score 0.60). Meanwhile, the increase in facilities and infrastructure, as well as access to ecotourism, was perceived by respondents as quite unfavorable, with an average perception score of 0.49 (facilities and

infrastructure) and 0.48 (road access to ecotourism). Thus, the addition of facilities and infrastructure, as well as road access, is a part that needs to get the attention of managers and other interested parties in developing mangrove ecotourism in Bagek Kembar. The need for additional facilities and infrastructure for mangrove

ecotourism in Bagek Kembar is a challenge for managers. Because of this, other parties and government agencies' involvement is necessary, as has happened elsewhere (Kurniawati et al., 2022).

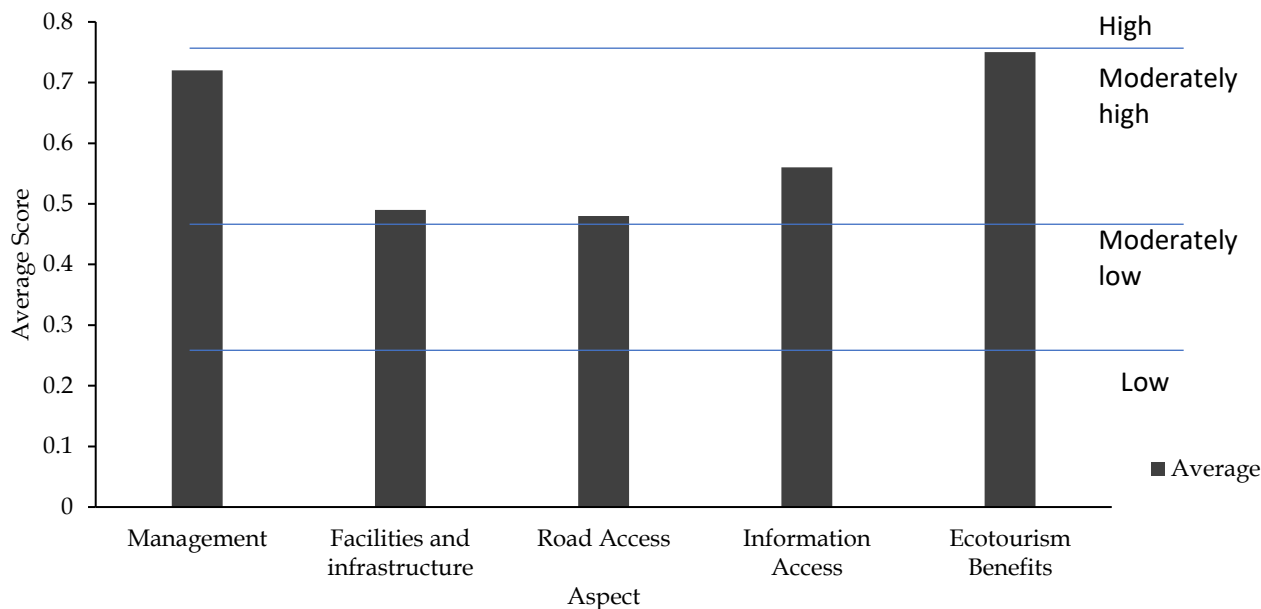


Figure 2. Interpretation of People's perceptions of the Bagek Kembar mangrove ecotourism

The results of the research in Table 6 provide information that the priority for developing mangrove ecotourism in Bagek Kembar must be to improve the quality of road access. Then followed successively by improving facilities and infrastructure, increasing access to information, increasing management activities, and increasing the benefits of ecotourism. The results of research conducted in other places show that ecotourism positively impacts environmental aspects (conservation), the economy, and increasing public awareness (Rizky et al., 2016; Hidayat, 2017; Setiawan et al., 2017). Therefore, the improvement of several important aspects presented in Table 6 must be a part that must be addressed in preparing an action plan for the development of mangrove ecotourism in Bagek Kembar.

Conclusion

The results of data analysis and discussion of the study concluded the public's perception of mangrove ecotourism in Bagek Kembar was categorized as moderately high with an average perception score of 0.60, all respondents (100%) stated that the management of the Bagek Kembar mangrove ecotourism needs to be developed, and development priorities in carrying out mangrove ecotourism management activities in Bagek

Kembar are successively adding ecotourism facilities and infrastructure, improving road access to ecotourism, and developing information service facilities.

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Authors Contributions

Gito Hadiprayitno conceptualized the research idea; I Wayan Suana designed of methodology; M. Syazali analyzed data; Lalu Japa & Didik Santoso data validation, distribution of questionnaire; Eni Suyantri conducted literature review.

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Conflicts of Interests

The authors declare no conflict of interest

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