IJTB VOLUME 2 (1) 2026
Indonesian Journal of Tropical Biology
https://journals.widhatulfaeha.id/index.php/ijtb

Original Research Paper

# Influence of Community Knowledge and Attitudes on Ecotourism Development in Bagek Kembar, Lombok, Indonesia

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**Article Info**

Recived: May 5, 2026
Revised: May 19, 2026
Accepted: May 20, 2026
Published: May 20, 2026

ISSN 3108-9801
ESSN: 3109-0842
DOI: 10.65622/ijtb.v2i1.280



**Abstract**

Bagek Kembar mangrove ecotourism area in Cendi Manik Village, Sekotong, West Lombok, Indonesia, is being developed by the local community as an environmental conservation initiative and a sustainable tourism destination. Community participation plays an important role in supporting the success of ecotourism development, especially through the knowledge and attitudes of local residents toward mangrove conservation. This study aims to identify and analyze the influence of community knowledge and conservation attitudes on the development of the Bagek Kembar mangrove ecotourism area. The research employed a descriptive quantitative survey method. Respondents were selected using purposive sampling based on their involvement in tourism and conservation activities in the study area. Data were collected through structured questionnaires and analyzed descriptively, followed by multiple linear regression analysis to determine the relationship between variables. The results showed that the community's level of conservation knowledge was categorized as low, with a percentage of 7.01%, while conservation attitudes were categorized as high, reaching 75%. The regression analysis indicated a positive relationship between conservation knowledge and conservation attitudes. Furthermore, partial statistical testing (t-test) and simultaneous testing (f-test) demonstrated that community knowledge significantly influenced conservation attitudes. These findings suggest that improving environmental education can strengthen community support for sustainable mangrove ecotourism management.

**Keywords:** Attitude, Bagek Kembar, Conservation, Ecotourism, Knowledge.

## INTRODUCTION

The tourism industry plays a strategic role in Indonesia's national development, particularly as a sector contributing to foreign exchange earnings, regional economic growth, and employment opportunities (Mahadevan et al., 2017). One of the rapidly developing sectors is coastal tourism, which utilizes the natural resources of coastal areas as tourist attractions while also serving as a source of income for local communities (Subarsono et al., 2025). The development of coastal tourism not only provides direct economic benefits through tourism services but also enhances community welfare through various supporting activities (Mawar et al., 2024). In the context of sustainable development, coastal areas represent strategic spaces that can integrate economic, social, and environmental aspects in a balanced manner (Hu et al., 2024).

Coastal regions possess unique ecological characteristics as transitional zones between terrestrial (Wang et al., 2026) and marine environments, thereby holding significant potential for conservation-based ecotourism development (Pina et al., 2026). One form of such development is mangrove ecotourism, which combines environmental conservation with educational tourism activities (Verawati & Idrus, 2023). Mangrove forests play an essential role in maintaining coastal ecosystem balance by protecting against abrasion, mitigating natural disasters (Mugilan et al., 2024), and providing habitats for various marine species (Fraschetti et al., 2008). Therefore, the management of mangrove ecotourism should not merely focus on economic profit but must also prioritize conservation principles to ensure the sustainability of the ecosystem.

Cendi Manik Village, Sekotong, West Lombok, is home to the Bagek Kembar mangrove ecotourism area, which was developed through environmental rehabilitation and is managed by the local community as part of a community-based conservation initiative ((Farista & Virgota, 2021). However, the success of managing this area largely depends on the level of community knowledge and attitudes toward environmental conservation (Ardoin et al., 2020). In reality, there is still a lack of empirical data regarding the extent of local community understanding and conservation attitudes that support the sustainability of this ecotourism area. Insufficient community knowledge may influence environmentally unsustainable utilization practices, which could threaten the preservation of the mangrove ecosystem (Akram et al., 2023). Therefore, measuring community knowledge and conservation attitudes is essential for formulating more participatory and sustainable ecotourism management strategies.

This research is important because it can provide scientific insights into the knowledge and conservation attitudes of communities surrounding the Bagek Kembar ecotourism area as a basis for developing community-based environmental management policies. In addition, this study offers novelty by specifically focusing on the social

dimensions of local communities, which have not been extensively examined in the context of Bagek Kembar mangrove ecotourism. Therefore, this study aims to analyze the level of knowledge and conservation attitudes of communities surrounding the Bagek Kembar ecotourism area, Sekotong, West Lombok, in order to support the sustainability of mangrove ecotourism management oriented toward conservation and community welfare.

## RESEARCH METHODS

### Time and place

This research was conducted in June 2024 in the Bagek Kembar mangrove ecotourism area, located in Cendi Manik Village, Sekotong District, West Lombok Regency, West Nusa Tenggara. The research site was selected because Bagek Kembar represents a community-based mangrove ecotourism area that emphasizes environmental conservation, making it highly relevant for examining community knowledge and conservation attitudes.

### Research design

This study employed a quantitative descriptive research design using a survey approach (Pamidimukkala & Kermanshachi, 2025). This method aimed to describe the level of community knowledge and conservation attitudes among people living around the Bagek Kembar mangrove ecotourism area, as well as to analyze the relationship between conservation knowledge and community conservation attitudes through multiple linear regression analysis. A quantitative approach was chosen because the study focused on measuring variables through numerical data collected from questionnaires (Fadele & Rocha, 2025).

### Population and research sample

The population of this study consisted of all residents of Cendi Manik Village, totaling 6,447 individuals. The research sample included 100 respondents selected using purposive sampling, which is a sampling technique based on specific criteria (Sugiyono, 2016). The respondent criteria included local community members who directly interact with the Bagek Kembar area, ecotourism managers actively involved in the management of the site, and tourists visiting the ecotourism area. The sample size was determined using the Slovin formula as follows (Arikunto, 2010):

$$n = \frac{N}{1+Ne^2} \quad (1)$$

$$n = \frac{6{,}447}{1+6{,}447\ (10\%)^2}$$

$$n = \frac{6{,}447}{1+6{,}447\ (0.1)^2}$$

$$n = \frac{6{,}447}{64}$$

$$n = 100$$

Description:
n = sample size
N = population size
e = error tolerance

The independent variables in this study included conservation knowledge and demographic factors such as age, education, gender, and social status, while the dependent variable was community conservation attitude. Data collection was conducted through field observation, questionnaires, interviews, and literature studies. The research instruments included stationery, mobile phones, laptops, SPSS software, and Microsoft Excel, while the primary research material was a structured questionnaire.

### Research procedure

The research began with field observations to directly assess the environmental conditions of the Bagek Kembar mangrove ecotourism area. The next stage involved preparing research instruments, including questionnaires and interview guidelines tailored to the study variables. Data collection was then carried out by distributing questionnaires to respondents who met the purposive sampling criteria and conducting direct interviews to obtain supporting information in greater depth. Additional data were gathered through literature studies from various relevant scientific sources. All collected data were subsequently tabulated and processed using Microsoft Excel and SPSS software for further analysis.

### Data Analysis

Questionnaire data were analyzed descriptively to explain the levels of community knowledge and conservation attitudes in the form of tables and narrative descriptions. Knowledge measurement was conducted by comparing the total score obtained with the highest possible score and then multiplying it by 100 percent using the following formula (Fadele & Rocha, 2025)Sugiyono, 2019):

$$Percentage\ Score = \frac{Total\ score\ obtained}{Highest\ possible\ score} \times 100\% \quad (2)$$

Knowledge levels were categorized according to Arikunto (2010). Meanwhile, attitude measurement was conducted using a Likert scale and categorized based on attitude levels according to Arikunto (2013):

**Tabel 1.** Knowledge Measurement

| Score Percentage | Interpretation |
|---|---|
| 76–100% | High |
| 51–75% | Moderate |
| ≤50% | Low |

Attitude measurement was conducted using a Likert scale to assess respondents' opinions and attitudes toward conservation issues. The scoring system is presented below:

**Tabel 2.** Attitude Measurement

| Attitude Response | Score |
|---|---|
| Strongly Agree | 4 |
| Agree | 3 |
| Disagree | 2 |
| Strongly Disagree | 1 |

According to Arikunto (2013), conservation attitude categories were classified as follows:

| Score Percentage | Interpretation |
|---|---|
| 76–100% | Good |
| 56–75% | Fair |
| 40–55% | Poor |
| <40% | Very Poor |

Before hypothesis testing, classical assumption tests were performed as prerequisites for multiple linear regression analysis, including normality, multicollinearity, and

heteroscedasticity tests (Ghozali, 2006; Ghozali, 2011). Normality was tested using the Kolmogorov-Smirnov test, where significance values greater than 0.05 indicated normally distributed data. Multicollinearity was assessed using Tolerance and Variance Inflation Factor (VIF), with Tolerance > 0.10 and VIF < 10 indicating no multicollinearity. Heteroscedasticity was evaluated using scatterplot analysis. Multiple linear regression analysis was used to determine the influence of conservation knowledge and demographic factors on community conservation attitudes, using the following equation:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e \quad (3)$$

Description:
Y = Conservation attitude
a = Constant
b1–b4 = Regression coefficients
X1 = Conservation knowledge
X2–X4 = Demographic factors
e = Residual value

Before conducting regression analysis, the data were tested using classical assumption tests, including normality, multicollinearity, and heteroscedasticity tests (Ghozali, 2006; Ghozali, 2011). Hypothesis testing was performed through partial significance testing (t-test) and simultaneous significance testing (f-test) at a significance level of 0.05 to determine the significant effect of independent variables on the dependent variable. The entire data analysis process was carried out using SPSS software and Microsoft Excel.

## RESULTS

The respondents in this study were members of the community living in Cendi Manik Village. The demographic characteristics observed included gender, age, education level, and occupational status.

### Respondent Demographics

This section presents a general overview of the demographic characteristics of respondents involved in the study conducted in the Bagek Kembar Ecotourism Area, Cendi Manik Village. The total population of Cendi Manik Village was 6,447 people, from which 100 respondents were selected as research samples. The findings indicate that male respondents totaled 53 individuals (53%), while female respondents totaled 47 individuals (47%), demonstrating that male respondents slightly outnumbered female respondents. Age is one of the individual characteristics that influences a person's work capacity and social participation. Based on Table 3, the majority of respondents were between 16–31 years old, totaling 55 individuals (55%). Meanwhile, the smallest age group was respondents aged 65–80 years, totaling only 6 individuals (6%).

Education level is an important factor influencing knowledge formation and human resource quality. The results show that the highest proportion of respondents had a Bachelor's degree (30%), followed by Senior High School graduates (26%), Elementary School graduates (20%), Junior High School graduates (19%), and respondents without formal education (5%). In addition to gender, age, and education, respondent status was also observed in this study. Status reflects respondents' occupational or social background. Among the general community respondents, occupations varied, with 39 respondents unemployed, 7 working as fishermen, and 9 working as traders. Based on Table 3, general community members constituted the largest proportion at 55%, followed by tourists at 31%, and ecotourism managers at 14%. Tourist respondents were predominantly university students or senior high school students.

**Tabel 3.** Respondent Demographics

| Respondent Characteristics | Category | Number of Respondents | Percentage (%) |
|---|---|---|---|
| Gender | Male | 53 | 53% |
| | Female | 47 | 47% |
| | Total | 100 | 100% |
| Age | 16–31 years | 55 | 55% |
| | 32–47 years | 23 | 23% |
| | 48–64 years | 16 | 16% |
| | 65–80 years | 6 | 6% |
| | Total | 100 | 100% |
| Education | No formal education | 5 | 5% |
| | Elementary School | 20 | 20% |
| | Junior High School | 19 | 19% |
| | Senior High School | 26 | 26% |
| | Bachelor's Degree (University) | 30 | 30% |
| | Total | 100 | 100% |
| Status | General community members | 55 | 55% |
| | Ecotourism managers | 14 | 14% |
| | Tourists | 31 | 31% |
| | Total | 100 | 100% |

### Knowledge and Attitudes

Based on the questionnaire analysis, the overall average level of community conservation knowledge in the Bagek Kembar Ecotourism Area was 7.01%, which falls into the very poor category. The distribution of respondents is presented in Table 4. Based on the research findings, the overall conservation attitude of the community in the Bagek Kembar ecotourism area showed an average score of 73%, which falls into the good category. The respondent distribution is shown in Table 5.These results suggest that although community

knowledge regarding conservation remains relatively low, respondents generally demonstrate positive attitudes toward conservation efforts. Before conducting hypothesis testing, all data were analyzed using classical assumption tests, including normality, heteroscedasticity, and multicollinearity tests (Ghozali, 2006; Ghozali, 2011). The results confirmed that the regression model satisfied all statistical assumptions, with normally distributed data, no heteroscedasticity, and no multicollinearity problems (see Appendix 5).

**Tabel 4.** Conservation Knowledge Measurement Results

| Knowledge Level | Number of Respondents | Percentage (%) | Average Score |
|---|---|---|---|
| Good | 29 | 29% | |
| Fair | 14 | 14% | |
| Poor | 57 | 57% | 7.01% |
| Total | 100 | 100% | |

Tables 6 and 7 present the results of hypothesis testing through partial significance testing (t-test) and simultaneous significance testing (f-test), which were used to determine the relationship between conservation knowledge, demographic factors, and community conservation attitudes. Based on the t-test results, the variables that significantly influenced conservation attitudes were knowledge, education, and gender, as indicated by significance values below 0.05 (0.023, 0.033, and 0.000, respectively). In contrast, age and status did not significantly influence conservation attitudes, as their significance values were above 0.05 (0.985 and 0.058, respectively). Since the significance value for knowledge was less than 0.05, $H_0$ was rejected and $H_a$ was accepted. This finding indicates that conservation knowledge has a statistically significant effect on community conservation attitudes in the Bagek Kembar Ecotourism Area, Sekotong, West Lombok.

**Tabel 5.** Conservation Attitude Measurement Results

| Attitude Level | Number of Respondents | Percentage (%) | Average Score |
|---|---|---|---|
| Good | 64 | 64% | |
| Fair | 17 | 17% | |
| Poor | 19 | 19% | 73% |
| Total | 100 | 100% | |

**Tabel 6.** Partial Significance Test (t-test)

| Model | Unstandardized Coefficients (B) | Standard Error | Standardized Coefficients (Beta) | t-value | Significance |
|---|---|---|---|---|---|
| Constant | 19.746 | 2.276 | - | - | .004 |
| Knowledge | .450 | .080 | .380 | 2.936 | .023 |
| Age | .040 | .020 | .002 | .019 | .985 |
| Education | 3.750 | .315 | .135 | 5.166 | .033 |
| Gender | 1.465 | .190 | .727 | 7.704 | .000 |
| Status | .309 | .161 | .130 | 1.919 | .058 |

The simultaneous significance test (f-test) was conducted to determine whether all independent variables collectively influenced the dependent variable. Based on the ANOVA test results, the calculated F-value was 16.248, with a significance value of 0.001, which is less than 0.05. Therefore, $H_0$ was rejected and $H_a$ was accepted. This result demonstrates that conservation knowledge and demographic factors simultaneously have a statistically significant effect on community conservation attitudes

**Tabel 7.** Simultaneous Significance Test (f-test)

| Total | Sum of Squares | df | Mean Square | F-value | Significance |
|---|---|---|---|---|---|
| Regression | 344.653 | 5 | 689.306 | 16.248 | .001 |
| Residual | 420.000 | 94 | 42.424 | | |
| Total | 764.653 | 99 | | | |

## DISCUSSION

### Community Knowledge

The results of this study indicate that the level of conservation knowledge among the community surrounding the Bagek Kembar Ecotourism Area remains very low, with an overall average score of 7.01%. This finding suggests that most respondents have limited understanding of mangrove conservation principles, ecosystem functions, and sustainable environmental management. Table 4.2 demonstrates that only 29% of respondents were categorized as having good knowledge, while the majority (57%) fell into the poor knowledge category.

Respondents classified in the good knowledge category were generally students or university students, particularly tourists who visited the Bagek Kembar area for educational purposes. These respondents were more familiar with mangrove species, ecological functions, and conservation practices because the area serves as an environmental learning site. One example is the educational activities conducted by the Independent Student Exchange Program (PMM) of the University of Mataram, which aimed to increase awareness of mangrove conservation and strengthen the capacity of local tourism awareness groups (pokdarwis) and students in preserving mangrove ecosystems. This finding is consistent with (Chedid et al., 2022), who stated that education level is one of the dominant factors influencing the formation of knowledge and attitudes. In addition, respondents in this category were generally between 19–24 years old, which is considered a productive age group with strong cognitive abilities (Song & Cai, 2024).

The fair knowledge category was primarily represented by ecotourism managers. Although many managers had relatively low formal educational backgrounds, mostly elementary or junior high school graduates, they had received socialization and training related to mangrove conservation

management. However, limited confidence and insufficient knowledge remain challenges. According to the head of Pokmaslawisma, Agus Alwi, many managers still lack confidence in acting as ecotourism guides because they do not fully understand their responsibilities or the educational materials they should convey to visitors. This condition highlights the need for targeted capacity-building programs for local managers.

The poor knowledge category was dominated by general community members living around the ecotourism area. Most of these respondents had low educational backgrounds, predominantly elementary school, junior high school, or no formal education at all. Several younger respondents aged 19–25 reported low motivation toward formal education due to limited awareness, economic pressures, and lack of family support. Economic conditions were identified as one of the primary barriers preventing continued education, as many individuals prioritized working to support daily household needs. In addition, older respondents often had limited access to digital information, internet resources, and conservation-related socialization. This finding aligns with (Okoye et al., 2023), who emphasized that low knowledge levels are influenced by education, limited access to information, technological barriers, and insufficient outreach programs.

Therefore, improving community conservation knowledge in Bagek Kembar requires strategic interventions, including conservation education programs, regular socialization, specialized training for ecotourism managers, and collaboration with stakeholders such as the Coastal and Marine Resource Management Center (BPSPL) Denpasar and the Natural Resources Conservation Agency (BKSDA). These efforts are essential to strengthen conservation understanding and ensure sustainable mangrove ecosystem management.

**Community Attitudes**

The results of this study reveal that community conservation attitudes in the Bagek Kembar Ecotourism Area fall into the good category, with an average score of 73%. This indicates that although knowledge levels remain relatively low, most respondents demonstrate positive attitudes toward environmental conservation. Table 5 shows that 64% of respondents were categorized as having good conservation attitudes, reflecting broad community support for mangrove preservation efforts.

According to (Hepler & Albarracín, 2013), attitude is an individual's predisposition to respond positively or negatively toward specific objects or situations. (Suriano et al., 2025), further explains that attitudes involve emotional and cognitive responses, including agreement, disagreement, and personal evaluations. In the context of this study, positive conservation attitudes were influenced not only by education but also by direct experience, self-awareness, and social interaction.

First, direct experience emerged as a dominant factor shaping positive attitudes. Communities living near mangrove ecosystems recognize the practical benefits of mangroves as habitats for marine species such as shrimp, fish, crabs, and shellfish, which contribute directly to their livelihoods. In addition, respondents understand the protective function of mangroves against coastal abrasion and tidal waves. This practical dependence on mangrove ecosystems has encouraged communities to maintain environmental sustainability even when formal conservation knowledge is limited.

Second, social interaction has strengthened community attitudes. Since the development of Bagek Kembar as a community-based ecotourism destination, local residents have become increasingly aware of the economic opportunities associated with maintaining environmental quality. The ecotourism area provides new business opportunities and supports local welfare, thereby motivating the community to preserve mangrove ecosystems. This finding supports (Mantello et al., 2023) theory that attitudes are influenced not only by knowledge but also by experience, social influence, culture, media, and emotional factors.

Examples of tangible attitude changes include increased awareness regarding plastic waste disposal and reduced exploitation of mangrove wood. Previously, some community members used mangrove wood for fuel and charcoal, contributing to ecosystem degradation. However, current practices indicate greater environmental awareness, with communities utilizing only dead wood resources when necessary. This finding is consistent with (Appau et al., 2026), who reported that communities may demonstrate strong conservation behavior despite moderate or low formal conservation knowledge due to direct environmental dependence.

Overall, the positive conservation attitudes of the Bagek Kembar community indicate strong potential for sustainable ecotourism development. The area's biodiversity, including nine mangrove species, migratory bird pathways, and traditional salt-making activities, provides significant opportunities for future ecotourism expansion, including specialized tourism such as birdwatching and environmental education.

**Relationship Between Knowledge and Attitudes**

The statistical analysis revealed a significant relationship between conservation knowledge and community conservation attitudes. The t-test results showed that knowledge had a significant positive effect on conservation attitudes (B = 0.450; p-value = 0.023). Additionally, education (B = 3.750; p-value = 0.033) and gender (B = 1.465; p-value = 0.000) were also significant predictors of conservation attitudes. These findings indicate that respondents with better conservation knowledge and educational backgrounds were more likely to demonstrate positive conservation attitudes.

The significant effect of education suggests that even limited formal education can provide an important foundation for understanding environmental issues. Meanwhile, gender differences may be explained by social roles and environmental interaction patterns. Male respondents, many of whom worked as fishermen, had more direct interaction with coastal and mangrove ecosystems, which likely strengthened their environmental awareness. This finding is supported by Soliku, (2021), who argued that men often play significant roles in conservation activities due to broader physical and occupational engagement with natural resources.

In contrast, age and occupational status did not significantly influence conservation attitudes. This result differs from some theoretical assumptions suggesting that older age leads to improved understanding due to accumulated experience. In this case, limited formal education and restricted access to modern information sources appeared to

have a stronger influence than age itself. Similarly, occupational status may not have shown significance due to the diverse nature of respondents' professional backgrounds.

The f-test results further confirmed that conservation knowledge and demographic factors simultaneously had a significant influence on conservation attitudes. This finding indicates that the regression model as a whole significantly explains variations in community conservation attitudes. However, despite the statistical significance of knowledge, descriptive findings reveal that positive conservation attitudes can still develop even when formal conservation knowledge remains low. This suggests that direct experience, social interaction, and economic dependence on mangrove ecosystems may play equally important roles in shaping conservation attitudes.

The Bagek Kembar Ecotourism Area possesses both strengths and challenges for sustainable development. Positively, the area has formal institutional support through an established foundation, government backing, tourism facilities, lodging accommodations, and literacy spaces. These resources strengthen the area's role not only as a tourism destination but also as a center for education and community empowerment. However, challenges such as private land ownership within the ecotourism zone may create potential conflicts between economic interests and conservation objectives. Therefore, inclusive institutional governance is essential to balance tourism development, environmental conservation, and community welfare sustainably

## CONCLUSION

Based on the results of this study, the level of community conservation knowledge in the Bagek Kembar Ecotourism Area, Sekotong, West Lombok, remains very low, with an average score of 7.01%, which is influenced by factors such as educational background and age. However, despite limited conservation knowledge, the community demonstrated generally positive conservation attitudes, with an average score of 73%, shaped primarily by direct environmental experience, self-awareness, and social interactions within the ecotourism setting. Furthermore, statistical analysis through t-test and f-test confirmed that conservation knowledge has a significant relationship with community conservation attitudes, indicating that improving conservation knowledge through education, training, and stakeholder collaboration is essential for strengthening sustainable environmental management in the Bagek Kembar mangrove ecotourism area.

## ACKNOWLEDGMENTS

The author team would like to thank all parties who have contributed to this research and all sources who have provided important information for this research.

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