

Community Perceptions of the Mangrove Arboretum Development Socialization Activity in Sungsang IV Village, Banyuasin, South Sumatera

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ABSTRACT

Mangrove ecosystems play a strategic role in protecting the coastline. However, the Sungsang IV Village area, Banyuasin, South Sumatra, is experiencing mangrove degradation. This community service activity was implemented to increase community understanding and perception of the importance of developing a mangrove arboretum. The program was implemented in February 2025 through site surveys, coordination, outreach, and pre- and post-socialization questionnaire assessments with 27 respondents. Descriptive analysis showed an increase in community understanding across all parameters, particularly involvement in mangrove conservation training, which increased from 18.52% to 85.19%. Improvements were also seen in understanding the benefits of arboretums (55.56%), conservation steps (59.26%), and mangrove species (40.74%). These results demonstrate that direct education and a participatory approach can build positive perceptions.

INTRODUCTION

Mangrove ecosystems are tropical and subtropical coastal forests that grow in tidal zones. Mangroves act as natural coastal protection against abrasion, storms, and tsunamis and serve as efficient blue carbon sinks (Choudhary et al., 2024). These ecosystems also provide important habitats for various fish species, birds, and other organisms, provide raw materials and food for coastal communities, and provide ecotourism services (Anu et al., 2024). However, over time, these mangrove ecosystems face serious threats, leading to a decline in biodiversity, loss of ecosystem services, and increased coastal vulnerability to disasters. This is also the case in Sungsang IV Village, Banyuasin Regency, South Sumatra, a coastal area with significant mangrove ecosystem potential but vulnerable to degradation (Akram et al., 2023).

Research shows that Sungsang IV Village, South Sumatra, also known as a coastal area, has experienced a decline in area and quality due to land conversion, overexploitation, and infrastructure development. Between 2013 and 2022, mangrove vegetation in the Sungsang area decreased by approximately 23% due to increased built-up area and rising land surface temperatures, which accelerated mangrove degradation (Rendana et al., 2023). Yet, the mangrove ecosystem in Sungsang IV Village is crucial for providing various natural resources that are the community's primary livelihoods, such as shrimp, fish, crabs, shellfish, wood, and nipah palm leaves. Mangroves also play a crucial role in protecting the coast from abrasion, waves, and flooding, and sequestering carbon to mitigate climate change (Sarno et al., 2025)

Beyond economic and environmental benefits, the mangrove arboretum also serves as an ecotourism and educational destination (Risfathoni et al., 2023). Active community involvement in ecotourism management has been shown to increase local income and strengthen awareness of the importance of environmental conservation (P & Falah, 2024). Therefore, the development of an arboretum in Sungsang IV Village, Banyuasin, is expected to support the community's economy, protect the environment, and enhance community well-being. Conservation efforts and sustainable management are essential to ensure these benefits are enjoyed by future generations. However, the success of mangrove conservation activities is greatly influenced by community perceptions of the importance and benefits of the mangrove arboretum (Garsetiasih & Al, 2021)

Community perceptions regarding the importance of the mangrove arboretum program in Sungsang IV Village are a crucial factor in the success of this conservation effort (Nurul et al., 2024). A positive community attitude will encourage active involvement in all program activities, while less supportive attitudes can hinder the program's sustainability (Sattayapanich & Janmaimool, 2022). Therefore, understanding community perceptions is crucial for the participation and sustainability of the mangrove arboretum program in Sungsang IV Village. Therefore, efforts are needed to identify and build positive perceptions across various aspects. Based on this explanation, this community service activity aims to determine community perceptions of the mangrove arboretum development in Sungsang IV Village and to foster community

involvement in the coastal conservation program in the village. The results of this study are expected to be able to serve as guidelines for developing a more effective and sustainable mangrove conservation program in Sungsang IV Village, Banyuasin.

IMPLEMENTATION AND METHODS

Activity Implementation Schedule

This activity was implemented in February 2025. In the first week (February 19, 2025), a survey of the mangrove arboretum location was conducted and coordination with the local community was carried out. Subsequently, in the second week (February 22, 2025), a socialization was conducted to introduce the mangrove species in the mangrove arboretum area, their role, and their management system. Finally, an assessment was conducted, namely data collection through questionnaires and interviews with representatives from Sungsang IV Village, Banyuasin.

Activity Methods

This activity was implemented through several methods, namely preparation, outreach, and evaluation. The stages of activity implementation are as follows: Preparation Observation of the area to be designated as an arboretum. Coordination with the village government, community, and relevant institutions. Provision of facilities and infrastructure, such as mangrove seedlings, planting tools, and education. Education/Socialization Providing information to the community about the importance of mangrove ecosystems in preventing erosion, increasing biodiversity, and supporting ecotourism. Providing information about the benefits of the arboretum as an educational and conservation area.

Data Collection Techniques

A community survey was conducted using a questionnaire with "Yes" and "No" response options to measure community understanding of the socialization, acceptance, and attitudes toward the mangrove arboretum program in Sungsang IV Village, Banyuasin. The relevance and benefits of the activities were based on community perspectives and local expectations for the mangrove arboretum (Nuraeni & Kusuma, 2023). The following formula was used:

$$\% \text{ Responses} = ((\text{Number of Yes Responses})/(\text{Total Respondents})) \times 100\%$$

Data Analysis

Managing survey data using descriptive statistics (percentages) is a common method used to assess community understanding, acceptance, and attitudes toward the mangrove program. In this study, questionnaires with "Yes" answers were scored 1 point and "No" scores 0 points, so the mean reflects the proportion of people who agreed with or understood an aspect. Percentages were used to show the distribution of responses, for example, the percentage of people who answered "Yes" to a question. Meanwhile, narrative analysis was conducted for interviews through categorizing questions, interpreting answers, and drawing conclusions. This process aimed to deeply understand community

perceptions, motivations, and evaluations of the mangrove arboretum program (Rauf & Amir, 2022).

RESULTS AND DISCUSSION

Banyuasin Sungsang IV Village is located on the coast of Banyuasin Regency, South Sumatra, and is known as a fishing village with a high dependence on the mangrove ecosystem and marine products such as fish, shrimp, crab, and shellfish. The community's primary source of income comes from capture fisheries and the use of mangrove forest products, including building materials and nipah palm products (Ahmad Panandi, Andy Mulyana, 2019). The economic value of mangrove ecosystem services in Sungsang IV reaches approximately IDR 1.7 billion per year, dominated by marine catches. In addition to fisheries, the community has also begun developing a mangrove-based creative economy, such as training in making beauty soap from mangrove extracts and processing organic waste into eco-enzymes and fertilizer. These training programs improve the community's skills and knowledge in sustainably utilizing local resources (Meidalima et al., 2023). The following is the location of the mangrove arboretum in Sungsang IV Village, Banyuasin (Figure 1).



Figure 1. Location of the Mangrove Arboretum in Sungsang IV Village, Banyuasin

The outreach activity, entitled "Sustainable Environmental Conservation through the Establishment of a Mangrove Arboretum in Sungsang IV Village, Banyuasin Regency, South Sumatra," was held for one day in Sungsang IV Village on February 22, 2025. The outreach included a presentation by Dr. Sarno, M.Si., on an introduction to mangrove arboretums and mangrove species. Furthermore, the presenters invited participants to observe examples of mangrove arboretums established in various locations in Indonesia, highlighting the importance of preserving mangrove ecosystems for a sustainable environment and impacting various aspects, such as tourism, research, and education, as well as improving the quality of life through the growth of the village's economic system. Research shows that community-based mangrove

ecotourism management in Karangsang is highly suitable for educational and research tourism, with an ecotourism suitability index of 83.7%. Proper management can accommodate up to 803 visitors per day (Prihadi et al., 2024).



Figure 2. Community-Based Mangrove Ecotourism Outreach Activity Mangrove Arboretum in Sungsang Village IV

Community Perception of Community Service Activities (PPM) Activity Questionnaire Summary Table

Table 1. Community Perception Results

Parameter	Number of Respondents (Pra Sosialization)	(Number of Respondents) Pasca Sosialization
Understanding of Arboretum	1	12
Understanding of the Benefits of Arboretum	1	16
Understanding of Mangrove Types	8	19
Benefit of Mangrove Plants	19	26
Agreement on Mangrove in the Village	24	27
Mangrove Conservation Steps	7	23
Ever Attended in Mangrove Conservation Training	5	23

Based on the table above (Table 1), it can be concluded that community understanding of the arboretum and mangroves has increased in every parameter after the socialization activity delivered by Dr. Sarno, M.Si. Community understanding was measured by administering pre-socialization and post-socialization questionnaires, each comprising seven questions, to 27 respondents.

The increase can be clearly observed in Figure 3, a graph of community understanding before and after the socialization activity. The highest increase occurred in the questionnaire parameter regarding community involvement in participating in mangrove conservation training, increasing from 18.52% to 85.19%. The smallest increase occurred in questionnaire parameter 5, which saw an increase of 11.11%. This indicates that both pre-socialization and post-socialization communities agreed to plant more mangroves in Sungsang IV Village. A 40.74% increase occurred in the parameter understanding of the arboretum and mangrove species. More than half of the respondents increased significantly in the parameter understanding of the benefits of the arboretum, increasing by 55.56%, while the parameter regarding mangrove conservation measures increased by 59.26%. The parameter benefiting mangrove plants increased by 25.93%. This increase indicates that the community is very enthusiastic about participating in outreach activities on mangrove conservation, which has significantly increased public understanding. This is reinforced by a statement from the Head of Sungsang IV Village, Mr. Romi Adi Candra, who said, "We believe this outreach is very beneficial for the community, and we hope it can be continued and directly implemented in the field to engage the local community."

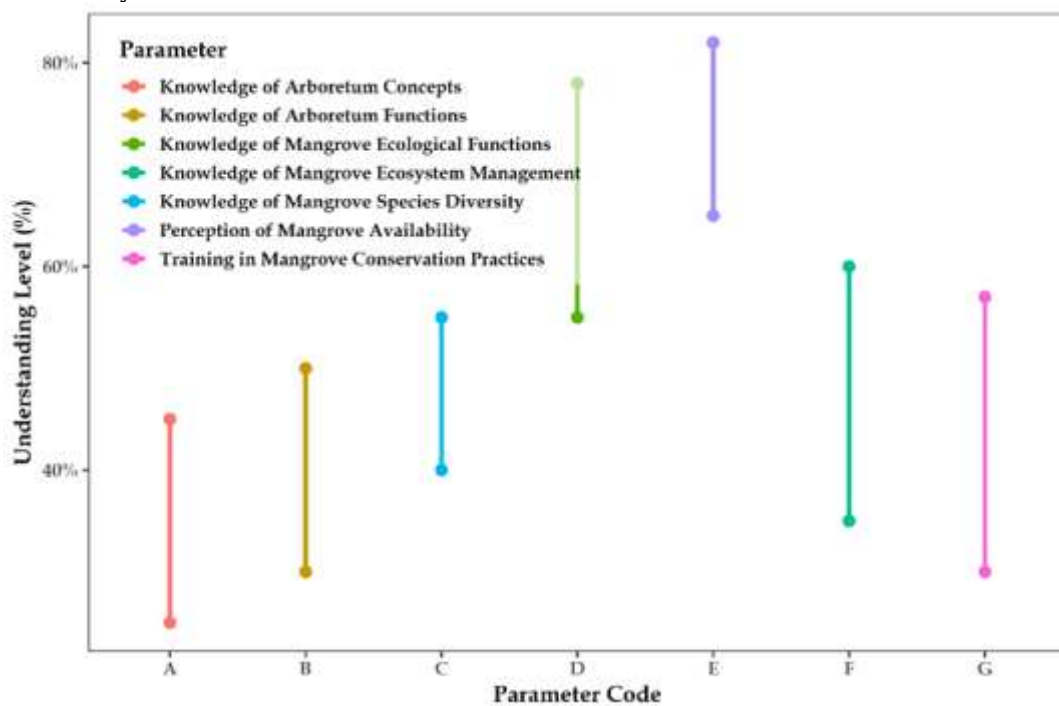


Figure 3. Graph of Community Perceptions regarding Understanding of Mangrove Conservation and Arboretum Construction

CONCLUSIONS AND RECOMMENDATIONS

Community service activities through outreach for the construction of a mangrove arboretum in Sungsang IV Village, Banyuasin, have proven effective in increasing community understanding and perception regarding the importance of mangrove conservation. Pre- and post-socialization questionnaires with 27 respondents showed an increase in all measured parameters. The largest increase occurred in community involvement in mangrove conservation training, from 18.52% to 85.19% (a 66.67% increase). Understanding of mangrove conservation steps increased by 59.26%, while understanding of the benefits of an arboretum increased by 55.56%. Furthermore, public understanding of the arboretum and mangrove species increased by 40.74%, respectively. The benefits of mangroves also increased by 25.93%, and community support for planting mangroves in the village increased by 11.11%. Overall, the percentage increases across all these indicators demonstrate that outreach activities have been effective in shaping positive public perceptions and encouraging their readiness to actively participate in environmental conservation. With such high community enthusiasm, the development of the mangrove arboretum has strong potential to continue as an effort to preserve the coastline, develop ecotourism, educate the public about the environment, and boost the local economy sustainably.

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