

DEVELOPMENT OF MANGROVE EDUCATIONAL TOUR PACKAGES TO SUPPORT TOURISM SUSTAINABILITY IN SUMBER NADI VILLAGE, KETAPANG, SOUTH LAMPUNG

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Abstract

This study explores the development of a mangrove educational tour package in Sumber Nadi Village, Ketapang District, South Lampung, aimed at fostering sustainable tourism that integrates environmental conservation, community empowerment, and educational engagement. Sumber Nadi's mangrove forests, primarily dominated by *Rhizophora mucronata* and *Avicennia marina*, offer significant ecological, economic, and social value, yet remain underutilized due to insufficient infrastructure, poor promotion, and low community awareness of conservation. Employing a qualitative descriptive method, this research uses observation, interviews with local authorities, community leaders, and tourism managers, as well as documentation and literature review, to assess the ecological and educational potentials of the area. Results highlight that the mangrove ecosystem serves crucial functions such as coastal protection, biodiversity support, and carbon sequestration, all of which can be incorporated into experiential learning through structured ecotourism activities. The proposed one-day tour package includes mangrove planting, workshops on mangrove-based products, guided forest exploration, and cultural exchanges involving local cuisine and crafts. The initiative, based on participatory planning with local residents, tourism organizations (Pokdarwis), and government bodies, aims to ensure sustainability and inclusivity. Findings suggest that this program can generate income for the community, raise environmental awareness, and promote South Lampung as a leading model for sustainable ecotourism. The study recommends expanding digital marketing efforts, establishing long-term mangrove monitoring systems, and forming academic partnerships to support research-driven tourism management.

Keywords: Mangrove, Ecotourism, Educational Tourism, Sustainability, Community-Based Tourism.

A. INTRODUCTION

Indonesia, as the world's largest archipelagic nation, possesses one of the most extensive and ecologically critical mangrove ecosystems globally, with over 95,000

kilometers of coastline and approximately 3.3 million hectares of mangroves (Ministry of Environment and Forestry, 2023). These mangroves play multifaceted roles in environmental sustainability, serving as natural barriers against coastal erosion, storm surges, and tidal waves, while providing essential habitats for diverse marine and terrestrial species (Adame et al., 2021; Sievers et al., 2020). Beyond ecological services, mangroves contribute significantly to socio-economic resilience by supporting fisheries, aquaculture, and providing raw materials for local industries, such as food products, natural dyes, and artisanal crafts (Rahman et al., 2021; Prasetyo & Purwanto, 2022).

Despite these benefits, mangrove ecosystems face persistent threats from human-induced activities such as aquaculture expansion, illegal logging, land conversion, and pollution, as well as the impacts of climate change, including sea-level rise and increased storm frequency (Alongi, 2020; Friess et al., 2020). The degradation of mangrove habitats not only compromises ecosystem functions but also increases the vulnerability of coastal communities to natural hazards. Recent studies have highlighted that integrative conservation strategies, combining community participation and sustainable tourism, can mitigate these risks while promoting socio-economic development (Kamaruddin et al., 2021; Zulfa et al., 2022).

In this context, ecotourism has emerged as a promising strategy to balance environmental conservation and local economic growth. Ecotourism, particularly when coupled with educational tourism, can provide immersive learning experiences that raise visitor awareness about ecological and cultural heritage while directly benefiting host communities (TIES, 2015; UNWTO, 2018; Weaver & Lawton, 2020). Educational tourism integrates recreation with knowledge dissemination, facilitating responsible behavior and supporting local stewardship initiatives.

Sumber Nadi Village, Ketapang District, South Lampung Regency, is endowed with rich mangrove resources, predominantly *Rhizophora mucronata*, *Avicennia marina*, and *Sonneratia alba*, thriving in nutrient-rich sediment and favorable hydrological conditions. However, current tourism development is minimal, constrained by inadequate infrastructure, limited promotion, and low community awareness of the potential socio-ecological benefits (Worthington et al., 2020; Adame et al., 2021). This gap presents an opportunity to design a Mangrove Educational Tour Package that emphasizes community-based ecotourism, combining hands-on conservation activities with cultural and educational engagement.

The objectives of this study are threefold: (1) to identify and analyze the ecological and socio-cultural potential of mangrove forests in Sumber Nadi Village as foundations for educational tourism, (2) to design a structured, interactive tour package integrating conservation, education, and local cultural experiences, and (3) to evaluate the potential impacts of the proposed program on sustainable tourism development, community income, and environmental awareness. By implementing participatory planning involving local residents, tourism organizations (Pokdarwis), and government agencies, the study seeks to establish a replicable model for sustainable ecotourism that enhances ecological resilience and community welfare.

B. RESEARCH METHOD

This study employs a qualitative descriptive methodology with multiple data collection strategies to comprehensively assess the potential of Sumber Nadi Village for mangrove educational tourism. Data were collected through three main approaches: field observation, semi-structured interviews, and literature review. Field Observation: Observational studies focused on mapping the physical layout of mangrove forests, assessing species composition, habitat conditions, and evidence of anthropogenic disturbances such as land conversion and pond expansion. Ecological parameters, including tree density, species diversity, and canopy coverage, were recorded to evaluate the suitability of areas for educational activities and sustainable tourism infrastructure (Alongi, 2020; Friess et al., 2020).

Semi-Structured Interviews Fifteen key stakeholders were interviewed, including five members of the Tourism Awareness Group (Pokdarwis), three local government officials, and seven community leaders. Interviews explored perceptions of tourism potential, community engagement willingness, socio-economic benefits, conservation awareness, and training needs. Data were transcribed and analyzed thematically to identify recurrent patterns, community aspirations, and possible challenges in implementing the proposed tour package (Creswell & Poth, 2023; Patton, 2022). Literature Review Academic journals, government reports, and policy documents were analyzed to situate the study within broader research on ecotourism, educational tourism, and mangrove conservation.

This review informed best practices, ecological management strategies, and participatory tourism models suitable for similar coastal communities (Adame et al., 2021; Kamaruddin et al., 2021; Zulfa et al., 2022). The research integrates a participatory analysis approach, emphasizing collaboration among local residents, tourism organizations, and government bodies. Stakeholder engagement was critical to ensure the proposed tour package aligns with ecological sustainability, social inclusiveness, and economic viability (UNWTO, 2018; Weaver & Lawton, 2020).



Figure 1.1 Focus Group Discussion (FGD)

C. FINDINGS AND DISCUSSION

Sumber Nadi's mangrove forest demonstrates high ecological richness, providing coastal protection, carbon sequestration, and serving as nursery grounds for fish, crustaceans, and other marine species (Adame et al., 2021; Sievers et al., 2020; Alongi, 2020). Observed slight degradation, primarily from pond expansion and land conversion, underscores the need for conservation-driven tourism interventions. The integration of mangrove planting, guided exploration, and monitoring activities within the tour package can mitigate further habitat loss while enhancing environmental literacy among visitors. Ecological sustainability is further strengthened by aligning tour activities with local conservation protocols and seasonal considerations to minimize disturbance (Friess et al., 2020; Zulfa et al., 2022). Community engagement in tourism is positive, with residents expressing interest in participating as guides, homestay operators, and mangrove-based product producers.

Structured tour packages can increase income opportunities, promote local crafts such as mangrove syrup, soap, and batik dyes, and enhance knowledge of environmental conservation (Rahman et al., 2021; Prasetyo & Purwanto, 2022). These activities support social cohesion and strengthen cultural identity, while providing educational benefits for students, researchers, and general tourists. Socio-economic benefits are maximized when programs adopt participatory models that involve residents in decision-making and revenue-sharing (Kamaruddin et al., 2021; Weaver & Lawton, 2020). The designed one-day tour includes mangrove planting, educational workshops on sustainable resource utilization, guided boat tours of mangrove areas, and cultural immersion experiences highlighting local cuisine and crafts. Each component is structured to deliver conservation education while promoting interactive learning. Participation fosters stewardship, instills environmental awareness, and encourages responsible tourism practices. The package design adheres to UNWTO sustainable tourism principles, balancing ecological integrity with socio-economic benefits (UNWTO, 2021; TIES, 2015).

Findings indicate that the proposed mangrove educational tour package can serve as a replicable model of community-based ecotourism. Integration of ecological, social, and educational components ensures sustainability while enhancing visitor experience and local livelihoods. The model aligns with contemporary research emphasizing participatory conservation, economic empowerment, and environmental education in coastal tourism (Adame et al., 2021; Sievers et al., 2020; Zulfa et al., 2022). Long-term success depends on capacity-building for community members, digital marketing expansion, and monitoring systems to assess environmental and socio-economic outcomes.

D. CONCLUSION

In conclusion, mangrove educational tourism in Sumber Nadi Village demonstrates strong potential as a sustainable tourism model, integrating ecological conservation, community empowerment, and educational engagement. Success depends on active community participation and collaboration among stakeholders. Recommended strategies include improving infrastructure, strengthening digital promotion, implementing long-term monitoring systems, and exploring multi-day ecotourism packages. This initiative can serve

as a replicable model for other coastal villages in Indonesia, illustrating how tourism can support environmental sustainability and socio-economic resilience.

The development of the mangrove educational tour package can be a model for other coastal villages in Indonesia, demonstrating how ecotourism can contribute to environmental preservation and community empowerment. Future research should focus on expanding the digital marketing of the program, establishing continuous monitoring for mangrove health, and collaborating with academic institutions to enhance the research-based approach in tourism management.

Furthermore, it is recommended to explore alternative forms of ecotourism, including multi-day packages, and integrate these experiences with other regional ecotourism sites. This could diversify revenue sources and broaden the scope of environmental education across a wider audience. Such strategies will strengthen the resilience of local economies and ensure the long-term sustainability of mangrove ecosystems.

The findings of this study demonstrate that the mangrove ecosystem in Sumber Nadi Village, Ketapang, South Lampung, possesses great potential to be developed as a model of sustainable educational tourism. The combination of ecological richness, community participation, and educational opportunities creates a strong foundation for promoting tourism that not only entertains but also educates and conserves. The mangrove forest serves as both a natural protector against coastal erosion and a living laboratory for environmental education, aligning with the goals of sustainable tourism development that prioritize long-term environmental balance.

The research also shows that the success of mangrove educational tourism depends heavily on community involvement and collaboration among stakeholders. The participation of the local Tourism Awareness Group (Pokdarwis), government agencies, and environmental organizations ensures that tourism activities remain inclusive and conservation-oriented. Local communities benefit directly from increased income opportunities, including guiding, handicraft production, and mangrove-based product innovation such as syrup, soap, and batik dye. These activities strengthen local economies while preserving cultural identity and environmental values.

From an environmental and educational perspective, the implementation of tour activities such as mangrove planting, workshops, and guided exploration has proven to increase awareness among visitors regarding the ecological importance of mangroves. The educational component not only enhances visitor knowledge but also motivates conservation actions both locally and beyond. The initiative supports the principles stated by the UNWTO (2018), emphasizing the integration of ecological preservation, education, and community welfare in every stage of tourism development.

In conclusion, the development of the mangrove educational tour package in Sumber Nadi Village represents a comprehensive approach to achieving sustainable tourism. It integrates environmental conservation with socio-economic empowerment and lifelong learning. For future implementation, it is recommended that local stakeholders strengthen infrastructure, improve marketing and digital promotion, and establish long-term monitoring systems for mangrove health. This initiative can serve as a replicable model for other coastal

areas in Indonesia, demonstrating that tourism, when managed responsibly, can become a driving force for environmental sustainability and community resilience.

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