

Assessment And Effectiveness of Protected Area Community-Based Resource Management Agreement (PACBRMA) Monitoring Within Siargao Island Protected Landscape and Seascapes (SIPLAS) In the Province of Surigao Del Norte

**Harriet Jean P. Cabalog, Carren Grace O. Macul,
Rowena L. Cajes, Syrell F. Ebin**

DOI: <https://doi.org/10.63363/aijfr.2026.v07i05.8361>

Abstract

This study assessed the implementation and effectiveness of the Protected Area Community-Based Resource Management Agreement (PACBRMA) monitoring system within the Siargao Island Protected Landscape and Seascape (SIPLAS) in the Province of Surigao del Norte during Calendar Year 2025 as basis for strengthening community participation and protected area management. Specifically, the study determined the demographic profile of respondents, assessed the level of implementation of PACBRMA monitoring activities, identified the monitoring activities implemented within SIPLAS, evaluated the perceived effectiveness of PACBRMA monitoring, examined the relationship between implementation and effectiveness, and identified the challenges and barriers encountered in conservation monitoring activities. The study utilized a descriptive-correlational research design employing a quantitative approach. A total of sixty (60) respondents composed of PACBRMA holders, community representatives, local stakeholders, and DENR personnel participated in the study through purposive sampling. Data were gathered using a structured questionnaire validated by environmental experts and research professionals. Statistical tools such as frequency, percentage, weighted mean, and Chi-square test were used in analyzing and interpreting the data.

The findings revealed that PACBRMA monitoring activities within SIPLAS were generally perceived as effectively implemented and positively impactful in supporting biodiversity conservation, sustainable resource utilization, environmental awareness, and protected area governance. Community participation and stakeholder engagement obtained the highest implementation ratings, while biodiversity conservation and governance strengthening received high effectiveness ratings. Correlation analysis showed a strong statistically significant positive relationship ($r = 0.86$, $p = 0.000$) between the level of implementation of PACBRMA monitoring and its perceived effectiveness, indicating that better

implementation contributed significantly to positive conservation outcomes. However, challenges such as inadequate funding, limited environmental training, insufficient monitoring tools, weak enforcement of environmental regulations, and poor stakeholder coordination affected implementation efficiency. Based on the findings, a PACBRMA Monitoring Enhancement and Protected Area Management Implementation Plan was proposed to strengthen environmental monitoring systems, improve stakeholder collaboration, and enhance biodiversity conservation efforts within SIPLAS.

Keywords: PACBRMA Monitoring, Protected Area Management, Biodiversity Conservation, Community Participation, Environmental Monitoring, SIPLAS, Sustainable Resource Management, Environmental Governance, Conservation Effectiveness

1. Introduction

THE PROBLEM AND ITS SCOPE

Rationale of the Study

Protected areas play a critical role in conserving biodiversity, sustaining ecosystem services, and supporting the livelihoods of communities that depend on natural resources. However, conservation efforts are increasingly challenged by environmental degradation, climate change, and competing land and resource uses. Globally, scholars emphasize that conservation strategies are more effective when they incorporate community participation and inclusive governance structures that involve local stakeholders in monitoring and decision-making processes (van Vliet et al., 2025; Hoffmann, 2022; Danielsen et al., 2022). Community-based conservation approaches have been widely promoted as mechanisms that bridge conservation goals with socio-economic development by recognizing the role of local knowledge and participation in managing natural resources (Zafar et al., 2023; He & Jiao, 2023). Such approaches not only strengthen biodiversity protection but also foster sustainable livelihoods and improve resilience among vulnerable communities living near protected areas.

Community-based resource management agreements have emerged as an important governance mechanism for balancing conservation objectives with local community needs. Studies show that when communities are actively involved in resource governance, they develop stronger stewardship over ecosystems and are more likely to comply with conservation regulations (Pulhin et al., 2021; Masud et al., 2022). Furthermore, collaborative governance arrangements between governments and local communities have been associated with improved environmental outcomes, particularly in marine and forest ecosystems where community monitoring can enhance resource management efficiency (Cardoso-Andrade et al., 2022; Ullah et al., 2022). Nevertheless, the effectiveness of such agreements depends heavily on institutional arrangements, stakeholder coordination, and equitable access to resources (Cerenó & Roxas, 2025; Mawutor & Hajjar, 2024).

Monitoring systems are essential components of community-based resource management because they provide data that guide decision-making, track ecological changes, and ensure accountability in conservation initiatives. Community monitoring programs allow local communities to participate in environmental data collection while enhancing transparency and adaptive management strategies (Mamun & Natcher, 2023; Danielsen et al., 2024). In many conservation areas worldwide, monitoring mechanisms have been used to evaluate the performance of protected areas, assess biodiversity trends, and determine whether conservation programs are meeting their objectives (Urbano et al., 2024; Meilana et al., 2023). Effective monitoring also strengthens environmental governance by linking local knowledge with

scientific data, thereby improving the capacity of conservation institutions to respond to ecological challenges.

Despite these benefits, many protected areas continue to experience governance and management challenges. Research has shown that issues such as weak institutional capacity, limited community empowerment, and unequal distribution of benefits can undermine community-based conservation initiatives (Mawutor & Hajar, 2022; Jani et al., 2024). Social equity and inclusivity are therefore crucial elements in ensuring that conservation programs are sustainable and supported by local stakeholders (Chen et al., 2022; Rabbitt et al., 2022). Moreover, studies highlight that effective conservation governance must address power relations among stakeholders and ensure that communities are meaningfully involved in decision-making processes rather than merely serving as implementers of conservation policies (Ghayoumi et al., 2023; Kahsay et al., 2023).

In addition, growing evidence suggests that community engagement and local stewardship significantly contribute to the success of protected area management. Indigenous leadership and local ecological knowledge have been recognized as valuable assets in biodiversity conservation and environmental governance (Mason et al., 2022; Champagne-Côté et al., 2023). Community-based initiatives such as ecotourism development, coral reef restoration, and mangrove management have demonstrated how conservation programs can generate socio-economic benefits while protecting ecosystems (Wiratno et al., 2022; Sebastian et al., 2024; Maulidah et al., 2023). These initiatives reinforce the importance of empowering communities as active partners in conservation rather than passive beneficiaries.

In the Philippine context, protected areas such as the Siargao Island Protected Landscape and Seascape represent vital ecosystems that support biodiversity conservation and local livelihoods. However, ensuring the effectiveness of community-based resource management agreements requires systematic monitoring and evaluation to determine whether conservation goals are being achieved and whether local communities are benefiting from these initiatives. Previous studies emphasize that adaptive governance, community engagement, and effective monitoring systems are essential in sustaining protected areas and strengthening environmental management practices (Jennings et al., 2024; Sharma, 2023; Lesorogol & Lesorogol, 2024). Therefore, assessing the effectiveness of the Protected Area Community-Based Resource Management Agreement (PACBRMA) monitoring within SIPLAS is crucial for understanding how community participation contributes to conservation outcomes and for identifying opportunities to enhance the governance and sustainability of protected areas in the province of Surigao del Norte.

Theoretical Background

The present study is theoretically grounded in the view that protected area management becomes more effective when conservation is pursued through participatory and community-based approaches rather than purely centralized control. Community-based conservation emphasizes that local communities are not merely beneficiaries of protected areas but are active actors in resource governance, biodiversity protection, and environmental stewardship. This perspective is consistent with studies showing that community monitoring, local participation, and collaborative management can improve conservation outcomes while strengthening the relationship between people and ecosystems (van Vliet et al., 2025; Danielsen et al., 2022; Mamun & Natcher, 2023; O'Garra et al., 2023; Jamu et al., 2023). In the context of PACBRMA monitoring, this perspective supports the assumption that conservation effectiveness is

closely linked to the extent to which communities are meaningfully engaged in management and monitoring activities.

Another major theoretical lens of the study is co-management theory, which explains that sustainable resource governance emerges through shared responsibility between the state and local stakeholders. Co-management recognizes that neither government institutions nor local communities alone possess complete authority, knowledge, or capacity to manage protected resources effectively. Instead, cooperation, negotiated roles, and shared accountability are necessary in conservation governance. Several studies affirm that co-management arrangements can enhance compliance, improve decision-making, and encourage long-term conservation commitment, especially in protected forests and marine ecosystems (Masud et al., 2022; Gamarra et al., 2022; Ullah et al., 2022; Guimarães et al., 2023; Jompa et al., 2023). For SIPLAS, this implies that PACBRMA monitoring should be examined not only as a technical activity but also as a governance mechanism reflecting the quality of collaboration between institutions and local communities.

The study is also informed by participatory monitoring theory, which holds that monitoring systems are more responsive and sustainable when communities themselves are involved in gathering, validating, and interpreting environmental information. Participatory monitoring bridges local ecological knowledge and scientific assessment, allowing decision-makers to detect changes in biodiversity, habitat condition, and resource use more efficiently. This theoretical orientation highlights monitoring as a democratic process that improves transparency, builds ownership, and strengthens adaptive action in conservation programs. Current literature supports this by showing that community-based monitoring contributes to environmental decision-making, strengthens biodiversity frameworks, and helps improve data-driven management in protected areas (Danielsen et al., 2024; Urbano et al., 2024; Stephenson et al., 2022; Cardoso-Andrade et al., 2022; Thapa & Lindner, 2023). Thus, in this study, PACBRMA monitoring is viewed as both a source of ecological information and a participatory process that can empower communities within protected area governance.

Adaptive governance and resilience thinking likewise provide a strong theoretical foundation for this inquiry. These perspectives suggest that protected areas operate within dynamic ecological and social environments, and therefore management systems must be flexible, learning-oriented, and responsive to change. Climate risks, political shifts, weak institutions, and social pressures can undermine conservation if governance systems remain rigid or overly bureaucratic. Studies across different contexts show that community-based conservation contributes to resilience when local institutions are supported, when knowledge systems are integrated, and when governance can adjust to emerging environmental and social realities (Zafar et al., 2023; Croker et al., 2023; Neugarten et al., 2024; Hoffmann, 2022; He & Jiao, 2023). From this perspective, PACBRMA monitoring in SIPLAS may be understood as part of an adaptive governance framework that helps managers and communities respond to ecological threats and management gaps over time.

Institutional theory is likewise relevant because it explains how rules, power relations, formal mandates, and organizational structures shape conservation outcomes. Protected area management does not depend solely on ecological objectives; it is also affected by policy design, institutional coordination, authority distribution, and enforcement arrangements. Studies on protected area governance show that conservation succeeds when institutional arrangements are clear, stakeholder roles are properly defined, and decision-making structures support accountability and participation (Cerenó & Roxas, 2025; Pulhin et al., 2021; Ghayoumi et al., 2023; Mawutor & Hajjar, 2022; Meilana et al., 2023). Applied to this study,

institutional theory suggests that the effectiveness of PACBRMA monitoring within SIPLAS may depend on how well agencies, local organizations, and community members understand and perform their respective responsibilities under the protected area management framework.

The study also draws from empowerment and social equity perspectives, which argue that conservation programs become sustainable only when they distribute responsibilities, benefits, and opportunities fairly among stakeholders. Community-based initiatives may fail when they reproduce inequality, marginalize local voices, or exclude certain groups from decisions and benefits. Literature on community resource management stresses that empowerment involves not only participation but also access to power, recognition, and fair treatment in governance processes. This is reflected in studies that examine disempowerment, social exclusion, fairness perceptions, and women's participation in conservation and resource management (Mawutor & Hajjar, 2024; Jani et al., 2024; Chen et al., 2022; Rabbitt et al., 2022; Jennings et al., 2024). In relation to PACBRMA monitoring, this lens is important because it highlights that effectiveness should not be measured solely through ecological indicators but also through how inclusively and equitably the monitoring system engages local stakeholders.

A related theoretical strand is livelihood-based conservation, which posits that protected area governance is more sustainable when conservation efforts are linked to tangible and intangible benefits for local communities. This perspective assumes that people are more likely to support environmental protection when they perceive that conservation contributes to livelihood security, cultural continuity, and community well-being. Research on ecotourism, mangrove management, wildlife conservation, and protected area livelihoods consistently shows that conservation outcomes improve when community welfare and ecosystem stewardship are mutually reinforced (Wiratno et al., 2022; Maulidah et al., 2023; Lesorogol & Lesorogol, 2024; Champagne-Côté et al., 2023; Sebastian et al., 2024). For SIPLAS, this means PACBRMA monitoring may also be interpreted through the extent to which it helps sustain not only protected landscapes and seascapes but also the social and economic interests of participating communities.

The study is theoretically supported by inclusive and knowledge-based conservation perspectives, which recognize the value of Indigenous knowledge, civil society participation, and locally grounded environmental understanding in protected area governance. These perspectives reject the idea that conservation knowledge is produced only by formal institutions and instead emphasize plural knowledge systems and broad-based stewardship. Studies show that Indigenous leadership, civil society capacity, and locally embedded conservation practices enrich governance and can make protected area management more legitimate, context-sensitive, and effective (Mason et al., 2022; Sharma, 2023; Estradivari et al., 2022; Kahsay et al., 2023; Kahsay et al., 2023). Taken together, these theoretical perspectives frame the present study by positioning PACBRMA monitoring within SIPLAS as a participatory, institutional, adaptive, and equity-sensitive process through which biodiversity conservation and community-based resource governance can be assessed and strengthened.

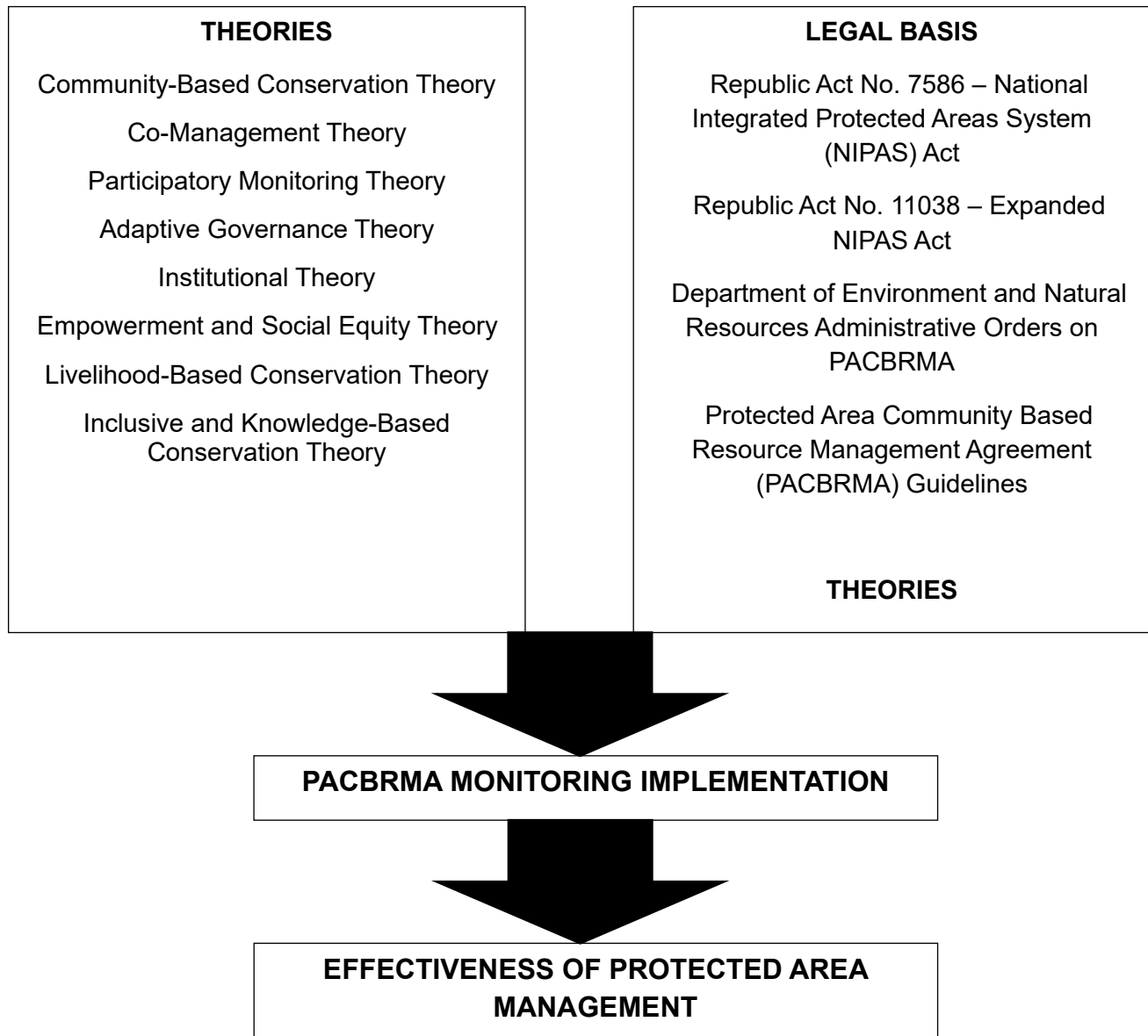


Figure 1.

Theoretical Framework

THE PROBLEM

Statement of the Problem

This study assessed the effectiveness of the implementation of Protected Area Community-Based Resource Management Agreement (PACBRMA) monitoring system for the Protected Area in Siargao Island Protected Landscape and Seascape (SIPLAS) of the DENR in the Province of Surigao del Norte during the Calendar Year 2025 as basis for collaborative effort of community participation. The study aimed to evaluate how PACBRMA monitoring contributes to sustainable resource management, biodiversity conservation, and community participation within the protected area. Specifically, the study sought to answer the following questions:

1. **What relevant information was derived from the respondents in terms of:**
 - 1.1 DENR Personnel
 - 1.1.1 Age;
 - 1.1.2 Gender;
 - 1.1.3 Civil status;
 - 1.1.4 Highest educational attainment;
 - 1.1.5 Length of involvement in PACBRMA activities; and
 - 1.1.6 Participation in environmental trainings or conservation programs.
 - 1.2 Community Representative
 - 1.2.1 Age;
 - 1.2.2 Gender;
 - 1.2.3 Civil status;
 - 1.2.4 Highest educational attainment;
 - 1.2.5 Length of involvement in PACBRMA activities; and
 - 1.2.6 Participation in environmental trainings or conservation programs.
2. **How did the respondents perceive the level of implementation of PACBRMA monitoring in terms of:**
 - 2.1 Program planning and management;
 - 2.2 Availability of resources and logistical support;
 - 2.3 Community participation and stakeholder involvement;
 - 2.4 Monitoring and evaluation mechanisms; and
 - 2.5 Institutional coordination among implementing agencies?
3. **What PACBRMA-related monitoring activities were implemented within SIPLAS in terms of:**
 - 3.1 Forest and mangrove resource monitoring;
 - 3.2 Coastal and marine ecosystem protection activities;
 - 3.3 Biodiversity conservation and wildlife protection initiatives;
 - 3.4 Enforcement of environmental regulations and protected area policies;
 - 3.5 Community participation in conservation monitoring; and
 - 3.6 Collaboration with government agencies and environmental organizations?
4. **What is the effectiveness of the implementation as perceived by the respondents?**
 - 4.1 Biodiversity conservation and protection of natural resources;
 - 4.2 Sustainable utilization of forest and marine resources;
 - 4.3 Improvement of environmental awareness among community members; and
 - 4.4 Strengthening of protected area governance and compliance with environmental regulations?
5. Was there a significant relationship between the level of implementation of PACBRMA monitoring and its perceived effectiveness within SIPLAS?
6. What challenges and barriers were encountered in the implementation and monitoring of PACBRMA within SIPLAS?
7. Based on the findings, what are the action plan may be proposed to strengthen PACBRMA monitoring and improve the effectiveness of protected area management within SIPLAS?

2. SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary, findings, conclusions, and recommendations of the study. The research aimed to assess the implementation and effectiveness of the Protected Area Community-Based Resource Management Agreement (PACBRMA) monitoring system within the Siargao Island Protected Landscape and Seascape (SIPLAS) in the Province of Surigao del Norte during Calendar Year 2025. The study employed a descriptive-correlational research design using a quantitative approach. Data were analyzed across several domains, including program planning and management, resource availability and logistical support, community participation and stakeholder engagement, monitoring and evaluation mechanisms, institutional coordination, biodiversity conservation, sustainable resource utilization, environmental awareness, and protected area governance. The demographic profiles of respondents, such as age, gender, civil status, educational attainment, length of involvement in PACBRMA activities, and participation in environmental trainings, were also examined to determine their influence on perceptions regarding PACBRMA implementation and effectiveness.

Summary

The study assessed the level of implementation and perceived effectiveness of PACBRMA monitoring activities within SIPLAS in supporting biodiversity conservation, sustainable utilization of forest and marine resources, environmental awareness, and protected area governance. Key monitoring initiatives examined included forest and mangrove resource monitoring, coastal and marine ecosystem protection, wildlife conservation activities, environmental law enforcement, community participation in monitoring, and collaboration with government agencies and environmental organizations.

Additionally, the study identified several challenges and barriers affecting PACBRMA monitoring implementation, including inadequate funding, limited environmental training, insufficient monitoring tools and equipment, weak enforcement of environmental regulations, limited community participation, poor stakeholder coordination, and lack of technical support from government agencies. Correlational analysis was conducted to determine the relationship between the level of implementation of PACBRMA monitoring and its perceived effectiveness within SIPLAS. Comparative analysis was likewise conducted to determine whether significant differences existed in respondents' perceptions when grouped according to demographic profile variables.

To provide a clearer overview of the study's results, the summary table that follows presents the key findings regarding the assessment of PACBRMA monitoring implementation and effectiveness within SIPLAS during Calendar Year 2025.

Major Area	Key Findings (Quantitative)	Overall Result	Interpretation
Demographic Profile	Majority aged 26–30 (30%); Male (70%); Married (53%); High School/Bachelor's Degree holders	—	Respondents were mostly active community-based conservation participants.
Environmental Trainings	Biodiversity Conservation Training (25%); Coastal Resource Management Training (20%)	Moderate	Training exposure was present but still limited.

Monitoring Activities Implemented	Forest and mangrove monitoring (87%); Community participation (90%)	High	Conservation monitoring activities were widely implemented.
Level of Implementation	Composite mean range: 3.82–4.14 (“Often Implemented”)	High	PACBRMA monitoring activities were consistently implemented.
Perceived Effectiveness	Composite mean range: 4.10–4.19 (“Agree”)	High	Monitoring activities were perceived as effective.
Challenges and Barriers	Funding (83%); Limited training (75%); Lack of equipment (72%)	High Constraint	Financial and technical limitations affected implementation.
Implementation vs Effectiveness	$r = 0.86, p = 0.000$	Strong Positive Relationship	Better implementation significantly improved effectiveness.
Demographic Difference	Significant differences in age, education, training, and involvement	Significant	Demographic factors influenced perceptions of implementation.

Table 35
Summary Results

Findings

The findings of the study revealed that respondents generally perceived PACBRMA monitoring within SIPLAS as effectively implemented and positively impactful in supporting biodiversity conservation, sustainable resource management, environmental awareness, and protected area governance. The highest levels of implementation were observed in community participation and stakeholder engagement, forest and mangrove resource monitoring, and monitoring and evaluation mechanisms. Weighted mean scores across implementation domains ranged from 3.82 to 4.14, verbally interpreted as often implemented, indicating that PACBRMA monitoring activities were systematically planned, coordinated, and consistently implemented within the protected area. Community involvement, institutional coordination, and environmental monitoring activities were particularly emphasized, reflecting active participation and collaborative conservation efforts among stakeholders.

In terms of perceived effectiveness, respondents rated PACBRMA monitoring highly in protecting biodiversity, promoting sustainable resource utilization, improving environmental awareness, and strengthening protected area governance, with average weighted mean scores ranging from 4.10 to 4.19, verbally interpreted as agree. A strong and statistically significant positive relationship ($r = 0.86, p = 0.000$) was observed between the level of implementation of PACBRMA monitoring and its perceived effectiveness, indicating that effective implementation significantly contributed to positive environmental and governance outcomes within SIPLAS. The findings further revealed significant differences in respondents’ perceptions based on age, educational attainment, length of involvement in PACBRMA activities, and participation in environmental trainings, suggesting that demographic factors influenced stakeholder perspectives regarding PACBRMA monitoring implementation.

Challenges and barriers identified included inadequate funding for monitoring activities, limited environmental training opportunities, insufficient monitoring tools and equipment, weak enforcement of

environmental regulations, limited community participation, poor stakeholder coordination, and lack of technical support from government agencies. Despite these constraints, PACBRMA monitoring activities achieved positive results due to active community involvement, stakeholder collaboration, institutional support, and continued conservation efforts, demonstrating the importance of participatory environmental governance within SIPLAS during Calendar Year 2025.

Conclusions

Based on the findings of the study, it can be concluded that PACBRMA monitoring within the Siargao Island Protected Landscape and Seascape (SIPLAS) was generally well-implemented and perceived by respondents as effective in achieving biodiversity conservation, sustainable resource management, environmental awareness, and protected area governance objectives. High levels of community participation, institutional coordination, stakeholder engagement, and consistent environmental monitoring significantly contributed to the success of PACBRMA implementation within the protected area. The findings further indicated that participatory conservation approaches and collaborative environmental governance strengthened environmental stewardship and promoted sustainable utilization of natural resources within SIPLAS.

The strong positive relationship observed between the level of implementation and perceived effectiveness of PACBRMA monitoring emphasized the critical importance of systematic planning, sufficient logistical support, stakeholder coordination, and active community involvement in ensuring successful conservation outcomes. Furthermore, demographic variables such as educational attainment, environmental training exposure, and length of involvement influenced respondents' perceptions regarding implementation effectiveness, highlighting the importance of continuous capacity-building and environmental education initiatives among stakeholders.

However, challenges such as inadequate funding, insufficient technical support, limited environmental training opportunities, weak enforcement mechanisms, and lack of monitoring resources remained significant barriers affecting the sustainability and effectiveness of PACBRMA monitoring activities. These operational and institutional constraints may hinder long-term conservation success if not properly addressed. Nevertheless, the study demonstrated that community-based environmental management and participatory monitoring systems remain essential strategies in strengthening biodiversity conservation and protected area governance within SIPLAS during Calendar Year 2025.

Recommendations

1. **Capacity Building and Environmental Training.** Conduct continuous environmental education, biodiversity conservation training, and technical workshops for community members, PACBRMA holders, and local stakeholders to improve conservation knowledge and monitoring skills.
2. **Resource Enhancement.** Increase financial allocation, logistical support, and provision of monitoring tools and equipment necessary for effective environmental monitoring and conservation activities within SIPLAS.
3. **Strengthen Monitoring and Evaluation Systems.** Establish systematic monitoring, documentation, evaluation, and reporting mechanisms to improve the consistency, transparency, and effectiveness of PACBRMA monitoring activities.

4. **Improve Stakeholder Coordination.** Strengthen collaboration among DENR personnel, local government units, NGOs, community organizations, and environmental stakeholders to improve coordination, information-sharing, and conservation planning.
5. **Strengthen Environmental Law Enforcement.** Enhance enforcement of environmental regulations and protected area policies through regular patrols, monitoring activities, and increased community participation in conservation governance.
6. **Promote Community Participation.** Encourage broader community involvement in PACBRMA monitoring activities by strengthening awareness campaigns, participatory conservation initiatives, and community-based environmental programs.
7. **Technical Support Enhancement.** Provide greater technical assistance and scientific guidance from government agencies, environmental experts, and partner organizations to improve monitoring effectiveness and conservation practices.
8. **Future Research.** Conduct future studies focusing on long-term ecological impacts, climate resilience, and sustainability outcomes of PACBRMA monitoring systems, as well as the effectiveness of community-based conservation approaches in protected area management.

3. OUTPUT OF THE STUDY

PACBRMA MONITORING ENHANCEMENT AND PROTECTED AREA MANAGEMENT IMPLEMENTATION PLAN RATIONALE

The strengthening and continuous implementation of the Protected Area Community-Based Resource Management Agreement (PACBRMA) monitoring system within the Siargao Island Protected Landscape and Seascape (SIPLAS) are essential in promoting biodiversity conservation, sustainable utilization of natural resources, environmental awareness, and effective protected area governance. PACBRMA monitoring activities integrate community participation, environmental monitoring, institutional collaboration, and conservation management practices aligned with national environmental laws, protected area policies, and sustainable development principles. These initiatives support ecological protection, strengthen community stewardship, and contribute to long-term environmental sustainability within SIPLAS.

The findings of the study revealed that respondents generally perceived PACBRMA monitoring activities as effectively implemented and positively impactful in protecting biodiversity, promoting sustainable resource management, strengthening environmental awareness, and improving governance and compliance with environmental regulations. Monitoring activities such as forest and mangrove resource monitoring, coastal and marine ecosystem protection, biodiversity conservation initiatives, environmental law enforcement, and community participation were consistently implemented within the protected area.

Despite these achievements, several challenges and barriers affecting PACBRMA monitoring implementation were identified, including inadequate funding, limited environmental training opportunities, insufficient monitoring tools and equipment, weak enforcement of environmental regulations, poor stakeholder coordination, and lack of technical support from government agencies. These operational and institutional constraints may hinder the sustainability and effectiveness of conservation initiatives if not properly addressed. Therefore, a structured PACBRMA Monitoring Enhancement and Protected Area Management Implementation Plan is necessary to strengthen conservation activities,

improve stakeholder collaboration, enhance technical and logistical support, and ensure the long-term sustainability of biodiversity conservation and protected area governance within SIPLAS.

OBJECTIVES

This plan aims to:

1. Strengthen biodiversity conservation and protection of natural resources within SIPLAS.
2. Enhance community participation and environmental awareness in conservation and monitoring activities.
3. Improve sustainable utilization and management of forest, coastal, and marine resources.
4. Strengthen institutional coordination and stakeholder collaboration in protected area management.
5. Improve monitoring, evaluation, and environmental law enforcement mechanisms.
6. Enhance technical capability, environmental training, and professional development among PACBRMA stakeholders.
7. Address operational and institutional barriers affecting PACBRMA monitoring implementation.
8. Promote sustainable and community-based environmental governance within SIPLAS.

SCHEME OF IMPLEMENTATION

Area of Concern	Objectives	Strategies	Budget (PHP)	Budget Source	Time Frame	Implementors	Evaluative Measures	Actual Accomplishment	Remarks
Forest and Mangrove Resource Monitoring	Strengthen biodiversity conservation and habitat protection	Conduct regular forest patrols, mangrove monitoring, biodiversity assessments, and rehabilitation activities	90,000	DENR Environmental Fund / LGU Support	One year	DENR Personnel, PACBRMA Holders, Community Volunteers	Area rehabilitated, biodiversity reports, number of monitoring activities conducted	N/A	N/A
Coastal and Marine Ecosystem Protection	Protect marine ecosystems and coastal biodiversity	Conduct coastal clean-ups, coral reef monitoring, marine patrols, and coastal conservation campaigns	80,000	DENR Coastal Management Fund / NGO Grants	One year	Coastal Monitoring Teams, Community Organizations	Coastal areas monitored, marine biodiversity records, number of clean-up activities	N/A	N/A
Biodiversity Conservation and Wildlife Protection	Prevent environmental degradation and protect wildlife species	Implement wildlife protection programs, habitat monitoring, and anti-illegal	60,000	DENR Biodiversity Conservation Fund	One year	Environmental Officers, Wildlife Protection Teams	Wildlife monitoring reports, reduced illegal activities, habitat protection records	N/A	N/A

		hunting campaigns							
Environmental Law Enforcement	Strengthen compliance with environmental regulations	Conduct regular monitoring, environmental law enforcement patrols, and compliance inspections	70,000	DENR Enforcement Fund / Partner Agencies	One year	DENR Enforcement Personnel, LGUs, Community Watch Groups	Violations recorded, patrol frequency, compliance reports	N/A	N/A
Community Participation and Stakeholder Engagement	Enhance community involvement and participatory governance	Conduct environmental awareness campaigns, stakeholder meetings, and participatory monitoring activities	50,000	Community Engagement Fund / NGO Support	One year	Community Leaders, DENR Personnel, NGOs	Participation rate, awareness campaign reach, stakeholder feedback	N/A	N/A
Environmental Training and Capacity-Building	Improve environmental knowledge and monitoring skills	Conduct seminars, workshops, and technical training on conservation and monitoring systems	85,000	DENR Training Fund / External Grants	One year	Training Officers, Environmental Experts	Number trained, post-training evaluations, technical competency improvement	N/A	N/A
Monitoring and Evaluation System Enhancement	Improve monitoring efficiency and environmental reporting	Establish systematic monitoring tools, reporting systems, and evaluation mechanisms	65,000	DENR Monitoring Fund	One year	Monitoring Officers, Environmental Staff	Monitoring reports submitted, evaluation frequency, data accuracy	N/A	N/A
Institutional Coordination and Partnership Development	Strengthen collaboration among agencies and organizations	Develop partnership agreements, inter-agency coordination meetings, and collaborative conservation projects	45,000	DENR Partnership Fund / External Agencies	One year	DENR Officials, LGUs, NGOs, Partner Organizations	Number of partnerships, joint projects implemented, coordination reports	N/A	N/A

Table 36

PACBRMA Monitoring Enhancement and Protected Area Management Implementation Plan

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