

Biodiversity Conservation Realities in Bukidnon: A Phenomenological Inquiry

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ABSTRACT

Bukidnon, situated in the Philippines, boasts rich biodiversity owing to its diverse ecosystems, including forests, grasslands, and agricultural lands. However, rapid urbanization, agricultural expansion, deforestation, land selling and conversion and mining activities have significantly impacted its biodiversity. This paper examines the current status of biodiversity in Bukidnon, identifies key conservation challenges, and proposes strategies for sustainable development that prioritize biodiversity conservation. Drawing upon existing literature and case studies, this research underscores the importance of integrating conservation efforts with socioeconomic development initiatives to achieve long-term sustainability in Bukidnon.

Keywords: Bukidnon, biodiversity conservation, sustainable development, threats, strategies

INTRODUCTION

The decrease in environmental quality is an unavoidable outcome of fast population expansion and heightened use of natural resources, posing a significant danger to global and local biodiversity at a concerning pace (Malcolm et al., 2006; Pimm et al., 2014). It is essential to balance economic growth and biodiversity preservation; however, this may be difficult and necessitates identifying and prioritizing biodiversity conservation (Hughes, 2017a). The Kitanglad and Kalatungan Mountain Ranges, known as the Sacred Sites of the province and recognized by UNESCO, are located in Bukidnon. The province is home to five river systems that the Environment Bureau of the Department of Environment and Natural Resources has designated biologically threatened (Lubos, 2023). Mindanao is a prominent archipelago in the Philippines, distinguished for its abundant and distinctive biodiversity. Although the ecological significance of the species in this area is acknowledged, there is still a need for further conservation measures to safeguard it (Cruz et al., 2023).

Protecting biodiversity is crucial in areas like Bukidnon, Philippines, where various species and rich habitats support ecological stability, cultural legacy, and economic viability. Situated in the center of Mindanao, Bukidnon has a diverse range of ecosystems, from montane forests to lowland plains, and is home to many locally distinct flora and wildlife (DENR, 2018). However, several factors, including human activity, land conversion for agriculture, deforestation,

urbanization, and climate change, pose a danger to Bukidnon's biodiversity (Acosta, 2020).

Understanding the current state of biodiversity, identifying critical ecosystems and species, assessing threats, and implementing effective conservation strategies are imperative for safeguarding the natural heritage of Bukidnon (Ibañez, 2019). Indigenous communities are relevant for biodiversity management and conservation (Salvaña et al., 2019). Bukidno boasts rich biodiversity owing to its diverse ecosystems, including forests, grasslands, and agricultural lands. Bukidnon's mountain ranges and relatively cool and humid climates serve as a habitat and a thriving location for different flora and fauna (Asido et al., 2024). Biodiversity is the heart of sustainable growth, which ensures life in this changing world (Lubos, 2020).

However, rapid urbanization, agricultural expansion, and mining activities have significantly impacted its biodiversity. Rapid environmental changes began to occur with the clearing of the forests in Bukidnon. Logged-over forest areas were eventually cleared for farming by migrants. In contrast, the indigenous people of Bukidnon, as original inhabitants, were relocated farther to the remaining primary forest patches. (Ignacio, 2017). Rapid urbanization and consumption patterns have resulted in a remarkable increase in the volume and diversity of waste, which has become a severe environmental risk (Enteria, 2019).

Moreover, unsustainable agricultural practices, including deforestation for palm oil and banana plantations, have led to soil erosion and degradation, affecting terrestrial and aquatic ecosystems. Agriculture is one of the major drivers of biodiversity loss and habitat destruction. The conversion of natural lands into agriculture and the intensification of agriculture have led to a substantial decline in specific farmland biodiversity. Moreover, agricultural landscapes are confronted with pollution caused by the overuse of pesticides and fertilizers, causing a threat to biodiversity and the essential ecosystem services that agriculture relies upon.

Deforestation affects ecological processes, species behavior, and ecosystem functioning globally, and it is a significant factor contributing to biodiversity loss (Magioli, 2021). Bukidnon has been subjected to deforestation and forest fragmentation due to logging 35–40 years ago or land conversion for agriculture, human settlements, and wildlife product harvesting (Tago et al., 2020). Illegal logging persists despite conservation efforts. Human activities have severely impacted many species and ecosystems. Therefore, it is crucial to understand the current state of local biodiversity to successfully implement interventions for biodiversity conservation.

The prime focus of this study is to get a thorough comprehension of the

dynamics of biodiversity conservation in Bukidnon by examining the firsthand experiences, beliefs, and viewpoints of experts and practitioners in the area. The research focuses on the firsthand experiences of biodiversity specialists in Bukidnon, examining their assessments of the present condition of biodiversity and the observable alterations that have occurred over time. The study also examines the first-hand experiences of individuals on the main factors that endanger biodiversity. This includes their understanding of the reasons, effects, and severity of these threats on nearby ecosystems and species. Explore the lived experiences of biodiversity experts in Bukidnon concerning the main drivers behind biodiversity threats, including their perceptions of the underlying factors such as human activities, socio-economic dynamics, and governance issues. Investigate the lived experiences of biodiversity experts in Bukidnon regarding the main challenges hindering conservation efforts, including their perceptions of barriers, conflicts, and gaps in governance and resources. Co-create strategies for integrating sustainable development goals with biodiversity conservation efforts in Bukidnon that acknowledge and incorporate biodiversity experts' diverse lived experiences, perspectives, and priorities.

OBJECTIVES OF THE STUDY

This qualitative research aimed to understand the experiences of biodiversity experts and practitioners who engage in biodiversity-related research and activities. The study sought to understand their perceptions of the current state of biodiversity in Bukidnon and the changes they have observed over time, investigate their views on the primary threats to biodiversity, including the causes, impacts, and severity of these threats on local ecosystems and species, explore their insights on the main drivers behind these threats, examine their experiences with conservation efforts, and identify their perceived strategies for integrating sustainable development goals with biodiversity conservation.

METHODOLOGY

Research Design

The study utilized a qualitative research approach to provide in-depth insights into the cultural, economic, and ecological dimensions of bryophyte conservation. Qualitative research is chosen to allow for a nuanced understanding of the topic and to explore subjective experiences and perspectives.

Participants of the Study

The target participants encompassed a range of experts and stakeholders deeply involved in biodiversity conservation, including biological scientists and practitioners possessing rich ethnoecological knowledge about biodiversity, uses, conservation practices, and threats.

Sampling Procedure

Purposive sampling was employed for this qualitative research on Exploring Biodiversity Conservation in Bukidnon. Purposive sampling, or judgmental or selective sampling, involves deliberately selecting participants or cases based on specific criteria relevant to the research objectives. Patton (2015) characterizes purposeful sampling as the deliberate and strategic choice of individuals, groups, or cases guided by criteria that align with the research objectives.

Purposeful sampling is the predominant method in qualitative research, allowing researchers to select individuals possessing comprehensive insights into the phenomena under investigation (Creswell & Poth, 2018; Campbell et al., 2020). Criterion sampling, a type of purposeful sampling, is relevant in phenomenological research, ensuring that each participant has directly encountered the phenomena. Thematic analysis was applied to identify recurring patterns, emergent themes, and insights related to biodiversity conservation practices and observations.

Research Instrument

The researchers conducted a semi-structured Interview with experts and stakeholders to gather insights into biodiversity conservation efforts and the underlying causes of their drivers. These interviews followed a semi-structured format, allowing for flexibility while ensuring key topics were covered. Also, biodiversity data were analyzed from existing databases and reports from local authorities. In addition, the existing literature and reports on the biodiversity of Bukidnon should be reviewed to complement the data gathered from interviews.

One qualitative method that could address the research aims described is semi-structured interviews. Semi-structured interviews allow in-depth exploration of participants' perspectives, experiences, and insights regarding biodiversity conservation efforts and the integration of sustainable development goals in Bukidnon. This method enables researchers to gather rich, detailed data directly from experts in biodiversity, local stakeholders, policymakers, and community members involved in conservation initiatives.

Researchers can design interview questions that probe into various aspects of

biodiversity conservation, challenges faced, successful strategies, and potential pathways for integrating conservation with sustainable development goals. The flexibility of semi-structured interviews allows for the exploration of emergent themes and the gathering of diverse viewpoints, enriching the understanding of the complexities of biodiversity conservation in Bukidnon.

Additionally, incorporating existing literature into the study provides a comprehensive understanding of the region's current state of biodiversity conservation efforts. It informs the development of interview questions and analytical frameworks. By triangulating data from interviews with insights from existing literature, this qualitative research method can contribute valuable insights to inform conservation policies, strategies, and practices in Bukidnon, ultimately supporting the preservation of biodiversity while promoting sustainable socio-economic development.

Thematic Qualitative Data Analysis

Six emergent themes were identified, namely: (1) Current State of Biodiversity, (2) Primary Threats to Biodiversity, (3) Main drivers behind biodiversity threats, (4) Current conservation efforts and (5) Integrating sustainable development goals with biodiversity conservation efforts

RESULTS AND DISCUSSION

I. What observations and insights do biodiversity experts in Bukidnon have about the province's current state of biodiversity and the changes they have noticed over time?

A. Sense of Connection and Responsibility: Bukidnon's biodiversity experts frequently express a strong sense of obligation and connection to the area's natural heritage. Many spoke of a youth spent discovering the varied species and lush ecosystems that formerly flourished in Bukidnon, which sparked a lifetime love of the natural world.

One expert shared, "As someone who grew up in Bukidnon, I vividly recall the magnificent towering trees, the diverse avian species, and the unspoiled rivers and streams that I explored. The nocturnal symphony of crickets and frogs would shatter the stillness of the night, while the vivid hues and aromatic fragrances of flowers and plants kindled my passion for nature and environmental preservation. This deep connection and love for my homeland's natural beauty have motivated me to dedicate myself to protecting the flourishing biodiversity in the area."

These accounts highlight the profound sense of connection and responsibility that experts in Bukidnon feel towards the province's natural heritage. Their personal stories of living surrounded by nature, witnessing its decline, and committing their lives to its conservation illustrate the depth of their dedication and passion for protecting Bukidnon's rich biodiversity.

A person's views of biodiversity and nature in general, as well as positive attitudes towards and care for the environment in particular are key predictors of the adoption of conservation methods. According to Lokhorst et al. (2014), there is a direct link between a person's desire to protect the environment and their sense of connection to it. Similarly, knowledge of nature and biodiversity (Czajkowski et al. 2021; Stupak et al. 2019), an understanding of ecosystems (Burton, 2011; Schoonhoven and Runhaar 2018), and awareness of environmental problems (Toma and Mathijs 2007) positively influence the adoption of biodiversity-friendly measures.

B. Notes on the Decline: Experts in biodiversity have seen notable decreases in Bukidnon's biodiversity throughout time. They tell tales of once-abundant species going extinct or becoming progressively rarer. Common themes in their stories include environmental deterioration, habitat fragmentation, and the loss of natural landscapes.

“According to one expert a conservationist, I remember that the Philippine eagle could be seen in the forests of Bukidnon, exemplifying the province's abundant biodiversity. I had the pleasure of seeing a Philippine eagle elegantly gliding over the thick foliage of Bukidnon. It rose majestically above the canopy of trees. Unfortunately, the practice of regularly seeing these eagles has become rare. There have been only a few recent sightings of the eagle. The biodiversity in the woodlands of Bukidnon was once plentiful, but the increasing agricultural activities in the region have negatively affected the eagle's breeding habitat. Their native habitat has been transformed into agricultural areas for pineapple and banana cultivation, and their former nesting sites have been extensively harmed due to unregulated logging activities.”

C. Conservation Efforts and Success Stories: Despite the difficulties, specialists in biodiversity emphasize the significance of Bukidnon's conservation initiatives. They tell tales of effective campaigns to save important sites for biodiversity, repair damaged ecosystems, and advance sustainable land use. One standard citation for these efforts is the importance of collaborative collaborations with indigenous

groups, local communities, and government organizations.

One expert mentioned that, “Regarding my profession, I had the opportunity to participate in and enhance impactful conservation endeavors in Bukidnon actively. An example of such an endeavor was establishing a network of designated areas with sites with various species. By closely collaborating with local governments and indigenous communities, we have effectively constructed and expertly overseen these areas, guaranteeing the protection of vital habitats for endangered species and securing ecosystem services for future generations. The cooperative method was crucial in achieving the conservation goals. “

Another expert shared, “As a botanist, it is a pleasure to be a part of the creation and upkeep of botanical gardens and conservation efforts conducted outside their native environments in Bukidnon. These projects are vital for preserving uncommon and endangered plant species, functioning as a dynamic repository for genetic diversity. By collaborating with botanical institutions and local conservation organizations, we have effectively built seed banks and propagation programs that actively contribute to the restoration of species and the rehabilitation of ecosystems. The botanical gardens serve as educational and scientific institutions, inspiring future generations to value and protect biodiversity.”

Community-based conservation advocates that for conservation to be successful, local communities must be included and made aware of the ways in which they can profit from conservation initiatives (Brooks et al., 2012). Sadly, success isn't always dependable or definitive. Building a case for the use of community-based initiatives in species or habitat conservation greatly benefits from the discovery of a solid success story that is comparatively devoid of dispute (Kothari et al., 2013). A thorough grasp of the relationships between and among indigenous ecological knowledge, community-based conservation, and adaptive ability in changing settings is essential to the success of community-based conservation activities (Ruiz and Corbera, 2013).

D. Hope for the Future: Experts in biodiversity are optimistic about the future of Bukidnon's biodiversity conservation despite the obstacles. They stress the significance of group efforts, public education, and policy backing in halting biodiversity loss and advancing sustainable development. Their personal experiences are a poignant reminder of the critical necessity to save Bukidnon's rare biodiversity for coming generations.

“My participation in several forestry drives in Bukidnon allowed me to collaborate with local people and non-governmental organizations. A notable incident occurred in the form of a forestry event, which gathered many volunteers from different backgrounds. The feeling of camaraderie and shared objective was easily noticeable. Although facing significant obstacles, these cooperative endeavors showcase the influence of community-driven efforts. These efforts aim to rehabilitate ecosystems and cultivate a feeling of ownership and accountability towards the environment.” according to one expert.

Based on the account of another expert, “At a conservation workshop in Bukidnon, I had the privilege of meeting several local botanists and ecologists who demonstrate a deep dedication to safeguarding the area’s plant diversity.” They are doing a crucial scientific study and actively involving local people to improve the preservation of indigenous plant species. Establishing community nurseries dedicated to cultivating native plant species for reforestation initiatives is a very motivating endeavor. These endeavors revitalize indigenous flora, enhance social connections, and provide economic prospects.”

These experts’ lived experiences highlight the resilience and potential for positive change in Bukidnon’s biodiversity conservation efforts. While challenges remain, the growing public awareness, community involvement, and policy support provide a foundation for a hopeful future. Their stories serve as a reminder that collective action and sustained commitment are essential for protecting and preserving Bukidnon’s unique biodiversity for future generations.

These firsthand accounts of biodiversity experts in Bukidnon provide invaluable insights into the present condition of biodiversity and its historical evolution, underscoring the obstacles and prospects for conservation initiatives in the area. Their stories thoroughly comprehend the intricate relationships between people and the environment, highlighting the significance of comprehensive biodiversity conservation and sustainable development strategies.

II. What insights do biodiversity experts have regarding the primary threats to biodiversity in Bukidnon?

An exhaustive comprehension of the principal threats to biodiversity, their origins, consequences, and intensity on indigenous ecosystems and species in Bukidnon was attained by in-depth interviews and discussions with biodiversity experts.

A. The most significant threats to biodiversity in Bukidnon are unanimity-bound among biodiversity experts: deforestation and habitat loss. The authors emphasize that habitat loss is primarily caused by infrastructure development, logging, and the extensive clearance of forests for agricultural purposes. The fragmentation and deterioration of ecosystems that ensue have dire ramifications for both biological processes and endemic species.

An expert has highlighted the alarming extent of deforestation in Bukidnon. “The leading causes are logging and agricultural expansion. Forests are being cleared unprecedentedly to make room for monoculture plantations, such as pineapple and sugarcane, significantly transforming the landscape. Forest denudation is occurring at an unprecedented rate to accommodate monoculture plants, such as pineapple and sugarcane, which cause considerable alterations to the terrain. Deforestation destroys essential ecosystems and fragments the remaining forest, posing a threat to species’ existence. Endemic species, which have evolved specialized adaptations for their particular environments, are more vulnerable to risks. Their numbers are declining due to the degradation and fragmentation of their habitats”.

B. The Expansion and Intensification of Agriculture: The proliferation and escalation of agricultural operations, specifically the establishment of extensive monoculture plantations, have been recognized as substantial perils to biodiversity. Biodiversity experts raise concerns regarding the conversion of natural habitats into agricultural lands, as this frequently results in habitat fragmentation, loss of biodiversity, erosion of soil, and water pollution due to agrochemicals.

Based on my study.” The degradation of freshwater ecosystems in Bukidnon is inextricably linked to the deforestation and subsequent loss of indigenous habitats. Agricultural and developmental activities that include deforestation led to soil erosion, which produces the accumulation of fine silt in rivers and streams. Both the deposition process and the toxins that arise from

agricultural runoff significantly contribute to the deterioration of aquatic ecosystems. Changes in aquatic ecosystems and declining water quality harm fish and other aquatic species, particularly those with restricted habitat ranges. The interconnectedness of terrestrial and aquatic ecosystems suggests that deforestation has far-reaching consequences”, according to one expert.

C. Air, Water, and Soil Contamination and Pollution: Biodiversity specialists are highly concerned about Bukidnon’s air, water, and soil contamination and pollution. They ascribe pollution to agricultural effluent, mining operations, improper waste disposal, and industrial activities. By degrading habitats, contaminating ecosystems, and causing damage to wildlife populations, pollution poses a grave threat to biodiversity.

Another expert shared, “During my career, I have observed the harmful effects of pollution caused by agricultural and industrial activities on freshwater ecosystems in Bukidnon.” The primary cause of decreased fish populations and other aquatic organisms is water source contamination, resulting from agrochemicals and inadequate waste management procedures. These experiences emphasize the need to embrace sustainable practices and enforce strict environmental rules to reduce the harmful effects of human activities on biodiversity.

The valuable insights into the principal threats to biodiversity in the province can be gleaned from the lived experiences of biodiversity experts in Bukidnon. Their profound understanding and specialized skills emphasize the interrelatedness of these hazards and underscore the critical nature of comprehensive and unified strategies for preserving biodiversity. Bukidnon’s abundant biodiversity can be preserved for future generations by addressing the underlying factors contributing to biodiversity loss and promoting sustainable practices that mitigate the effects of threats.

III. How do biodiversity experts in Bukidnon perceive the main drivers behind biodiversity threats?

A comprehensive comprehension of the primary catalysts for biodiversity threats has surfaced due to extensive interviews and dialogues with biodiversity experts in Bukidnon. This understanding illuminates the fundamental elements that comprise these threats, including but not limited to human activities, socioeconomic dynamics, and governance concerns.

A. Human activities are the main factors that drive certain phenomena or events. Biodiversity experts universally acknowledge human activities as the principal catalysts behind the threats to biodiversity in Bukidnon. They highlight the widespread consequences that local ecosystems and species endure due to agricultural expansion, deforestation, mining, and infrastructure development. As a consequence of habitat degradation, fragmentation, and loss caused by the pursuit of sustenance, resources, and economic expansion, these activities present formidable obstacles to preserving biodiversity.

“As a botanist, I have observed numerous instances when the disappearance of natural ecosystems has threatened the extinction of plant species in Bukidnon. Because of the adverse effects of logging and the conversion of forests into agricultural regions, there are fewer and fewer plants necessary to maintain the ecological balance of the region. These results underline how urgently conservation initiatives are needed to tackle the underlying causes of habitat deterioration brought on by human activities.”

There is a broad consensus among scientists, policy-makers, societal stakeholders, and the agricultural sector that the prevailing agricultural practices significantly contribute to the loss of biodiversity (Benton et al. 2021; CBD 2022; Dudley and Alexander 2017; EEA 2019).

B. Challenges in the management of government affairs and shortcomings in policy implementation. Policy failures and governance concerns exacerbate the dangers to biodiversity in Bukidnon, as experts in biodiversity have addressed. Critical obstacles impeding biodiversity conservation endeavors are inadequate enforcement of environmental regulations, ineffective land-use planning, and corruption. Lack of cooperation among government agencies, little money, and minimal community engagement further weaken conservation projects.

“In my role as a conservation planner, I’ve encountered difficulties in securing funding for biodiversity conservation projects in Bukidnon. Limited budget allocations and competing priorities often hamper efforts to implement comprehensive conservation strategies. Without adequate financial support, it’s challenging to mobilize resources for habitat restoration, species protection, and community engagement initiatives.”

“As a community organizer working with local villages in Bukidnon, I’ve encountered

firsthand the frustration of residents with ineffective land-use planning. Despite efforts to designate protected areas and buffer zones, encroachment and illegal logging persist due to loopholes in land-use policies. This undermines conservation efforts and exacerbates conflicts between communities and authorities.”

C. Cultural and indigenous viewpoints. The importance of indigenous and cultural viewpoints in comprehending and mitigating biodiversity risks in Bukidnon is duly recognized by biodiversity specialists. Indigenous knowledge, traditional practices, and community-based conservation techniques are emphasized in improving resilience and sustainability. Recognized as fundamental to biodiversity conservation and sustainable development are the rights of indigenous peoples to land, resources, and self-determination.

“Working with indigenous communities in Bukidnon, I’ve come to appreciate the holistic worldview they bring to biodiversity conservation. Their cultural practices, rooted in centuries of interaction with the land, offer valuable insights into ecosystem dynamics and resilience. By integrating indigenous perspectives into conservation planning and management, we can develop more effective strategies that address the interconnectedness of cultural and ecological systems.”

“In my research with indigenous communities in Bukidnon, I’ve had the privilege of learning from their traditional knowledge of plant species and their uses. Through participatory workshops and community gatherings, we’ve documented indigenous practices for sustainable resource management. Incorporating these cultural perspectives into conservation strategies has been instrumental in enhancing biodiversity resilience and promoting sustainable livelihoods.”

Experts in Bukidnon’s biodiversity have lived experiences that shed light on the primary causes of biodiversity challenges, emphasizing the intricate interactions between cultural perspectives, governance concerns, socioeconomic dynamics, and human activity. By tackling these fundamental causes and implementing comprehensive approaches to conservation, it is feasible to alleviate biodiversity risks and foster sustainable stewardship of natural resources in Bukidnon and other areas.

IV. What insights do experts have on the current conservation efforts in Bukidnon?

A thorough comprehension of the primary obstacles impeding conservation endeavors in Bukidnon has been attained via extensive interviews and discussions with biodiversity experts. Biodiversity specialists offered insights into the diverse obstacles, disputes, and deficiencies in governance, resources, and knowledge that hinder the successful preservation of biodiversity in the region.

A. The impediment to effective conservation endeavors in Bukidnon is primarily attributed to governance challenges, according to biodiversity experts. Insufficient enforcement of environmental regulations, fragmented decision-making processes among government agencies, and inadequate land-use planning were among the issues they cited. The conservation programs were undermined by significant governance difficulties such as lack of coordination, contradictory mandates, and bureaucratic inefficiencies.

“Policy advocacy is a powerful driver in conservation efforts; I have seen that as I perform my role in the organization. Bukidnon’s local government units are now recognizing the importance of biodiversity and the need to protect the thriving ecosystems through environmental policies. It is of the utmost importance to take the initiative to create protected areas that serve as essential habitats for endangered species of flora and animals. Because it contains a significant number of watersheds in Mindanao, the state of the mountain ranges and river systems in Bukidnon has to be given substantial attention. Even though policy advocacy has become a reality because of the efforts of committed people and groups, many topics on the agenda still have to be addressed.”

B. Addressing Knowledge Gaps and Capacity Building: The significance of capacity building and bridging knowledge gaps to ensure effective conservation in Bukidnon was underscored by biodiversity experts. To better comprehend local ecosystems and species dynamics, they emphasized the need for targeted research, monitoring, and data collection initiatives. Capacity-building activities, training programs, and knowledge-sharing platforms were deemed crucial for improving the skills and competence of conservation practitioners and stakeholders.

Collaborating with other conservationists in Bukidnon helped me better understand integrated conservation techniques. It is necessary to consider the interdependence of the various ecosystems within the context of conservation efforts.

Even though my area of study is marine ecosystems, we may make ecosystems more robust by combining our efforts to preserve watersheds with those to save freshwater and underwater environments. I am confident that we will be able to overcome the difficulties we are now experiencing by using multidisciplinary approaches to preserving and conserving biodiversity. Increase the effect of conservation efforts by implementing collaborative initiatives spanning many settings.

C. Community Engagement and Participation: Experts on biodiversity emphasized the significance of community involvement and engagement in Bukidnon's biodiversity protection initiatives. The importance of incorporating indigenous groups and local communities into decision-making processes, recognizing traditional knowledge and practices, and conducting substantive consultations with them were emphasized. Establishing trust, cultivating relationships, and empowering local populations were recognized as essential for attaining lasting conservation results.

"During my fieldwork in Bukidnon, I had the opportunity to work closely with indigenous communities living near protected areas. Through participatory workshops and consultations, we learned about their traditional practices for sustainable land management and conservation. By incorporating their knowledge into our conservation plans, we were able to develop more effective strategies that respected their cultural heritage while safeguarding biodiversity."

"Working on conservation projects in Bukidnon, I've learned that community engagement is not just about consulting with local communities but truly involving them in every step of the process. Through participatory mapping exercises and community-led initiatives, we empower residents to play an active role in decision-making and implementation. By valuing their input and expertise, we create a sense of shared responsibility for protecting Bukidnon's biodiversity for future generations."

The firsthand experiences of biodiversity experts in Bukidnon offer useful perspectives on the primary obstacles impeding conservation efforts in the area. Effective biodiversity conservation requires addressing significant challenges such as governance concerns, resource restrictions, knowledge gaps, institutional barriers, and conflicts. To tackle these difficulties, employing cooperative methods, enhancing skills and knowledge, and involving the local population can strengthen the ability to withstand and maintain conservation efforts in Bukidnon, ultimately safeguarding its diverse and valuable biodiversity for the

future.

The idea that community-based conservation promotes is that local communities must be involved in conservation initiatives and demonstrated how they can profit from them [Jeremy et al. In 2012]. Farmers' views of biodiversity and nature in general, as well as positive attitudes towards and care for the environment in particular are key predictors of the adoption of conservation methods. According to Lokhorst et al. (2014), there is a direct link between a farmer's desire to protect the environment and their sense of connection to it. Similarly, knowledge of nature and biodiversity (Czajkowski et al. 2021; Stupak et al. 2019), an understanding of ecosystems (Burton, 2011; Schoonhoven and Runhaar 2018), and awareness of environmental problems (Toma and Mathijs 2007) positively influence the adoption of biodiversity-friendly farming measures (BFFM).

V. Perceived strategies for integrating sustainable development goals with biodiversity conservation efforts in Bukidnon through a participatory process that acknowledges and incorporates the diverse lived experiences, perspectives, and priorities of individuals and communities.

A collaborative approach that recognizes and includes individuals' and communities' varied personal experiences, viewpoints, and priorities has resulted in developing strategies for merging sustainable development goals (SDGs) with biodiversity conservation initiatives in Bukidnon. This method entailed the cooperation of several parties, such as local people, indigenous groups, government agencies, NGOs, and biodiversity experts, to determine common objectives and create strategies that harmonize conservation goals with broader sustainable development agendas.

A. Inclusive Stakeholder Engagement: The participative approach prioritized the significance of including a wide range of stakeholders, guaranteeing that the perspectives of various groups are acknowledged and respected in decision-making procedures. The participation of local communities, indigenous peoples, and other stakeholders was crucial in determining conservation priorities, establishing objectives, and collaboratively developing methods that incorporate their distinct perspectives and preferences.

"In my work on integrating SDGs with biodiversity conservation in Bukidnon, I've witnessed the power of inclusive stakeholder engagement. By bringing together

diverse groups, including local communities, indigenous peoples, government agencies, and NGOs, we were able to co-create conservation strategies that address both environmental and socio-economic priorities. Through participatory workshops and forums, stakeholders contributed valuable insights and local knowledge, ensuring that our initiatives were contextually relevant and sustainable.”

“Collaborating with stakeholders to merge SDGs with biodiversity conservation in Bukidnon, I’ve found that inclusive stakeholder engagement is key to achieving lasting impact. By facilitating multi-stakeholder meetings and workshops, we created a platform for dialogue and knowledge exchange. Through this process, stakeholders were able to co-design conservation interventions that address the interconnected challenges of biodiversity loss and sustainable development. By embracing diverse perspectives and fostering partnerships, we laid the groundwork for transformative change.”

“As a community development officer facilitating stakeholder engagement in Bukidnon, I’ve seen firsthand the importance of involving a wide range of voices in conservation decision-making. By fostering open dialogue and collaboration among stakeholders, we were able to build trust and consensus around shared goals and priorities. The active participation of local communities and indigenous groups ensured that our conservation initiatives were grounded in local needs and aspirations, leading to more effective and inclusive outcomes.”

B. Holistic Approach to Conservation: The developed plans highlight a comprehensive approach to conservation that combines biodiversity protection with broader sustainable development objectives. The strategies aim to achieve a harmonious combination of conservation goals and the desires of local communities by fostering mutually beneficial relationships between biodiversity preservation, poverty reduction, food security, and livelihood improvement. This approach acknowledges the interdependence of environmental, social, and economic aspects.

I firmly believe that the key to achieving our goals lies in embracing a holistic approach that recognizes the interconnectedness of environmental, social, and economic aspects. Over the years, I’ve had the privilege of working closely with local communities, government agencies, and civil society organizations to develop and implement strategies that integrate biodiversity conservation with broader development objectives.

One of the fundamental principles guiding our efforts is the understanding that biodiversity conservation cannot be pursued in isolation. Instead, it must be intricately woven into the fabric of sustainable development planning. This means developing comprehensive plans that not only prioritize the protection of biodiversity but also address the underlying drivers of environmental degradation, such as poverty, food insecurity, and unsustainable livelihood practices.

Inclusive conservation builds on multiple approaches, including (1) co-management and multi-centered conservation where the emphasis is governed by, with, and/or for local and indigenous communities;(Berkes,2009, Armitage et.al,2008) (2) mosaic governance with an emphasis on engagement of diverse actors and active citizen groups within and across planning sectors to support multi-functional landscape outcomes;9,10(A. Buijs,et.al.2016, A. Buijs,et.al.2019)

C. Ecosystem-Based Management: The strategies prioritize approaches focusing on ecosystem-based management, which acknowledges the inherent worth of natural ecosystems and their benefits to humans and the environment. The initiatives aim to improve resilience, promote biodiversity conservation, and support sustainable development outcomes in Bukidnon by prioritizing the conservation and restoration of crucial ecosystems like forests, wetlands, and watersheds.

“As an expert deeply involved in biodiversity conservation and sustainable development efforts in Bukidnon, I’ve come to understand the critical importance of ecosystem-based management in achieving our goals. Ecosystem-based management prioritizes the inherent value of natural ecosystems and recognizes their indispensable benefits to both humans and the environment. In Bukidnon, where the health of ecosystems directly impacts the well-being of communities, embracing this approach is paramount.

Another expert based on experienced, mentioned that, in order to achieve ecosystem-based management in Bukidnon, we’ve adopted in our agency a multifaceted approach that combines science, community engagement, and policy advocacy. First and foremost, we prioritize scientific research and monitoring to understand the ecological dynamics of key ecosystems and identify areas in need of conservation and restoration interventions.

The solutions developed together for combining sustainable development goals with biodiversity conservation efforts in Bukidnon demonstrate a cooperative and comprehensive approach to tackling intricate socio-environmental issues. These strategies aim to enhance resilience, equity, and sustainability in biodiversity conservation by recognizing and integrating individuals' and communities' varied lived experiences, perspectives, and priorities. This approach ensures that biodiversity conservation efforts in Bukidnon benefit the well-being of people and the planet.

CONCLUSION

Bukidnon, a province in the Philippines, is facing significant biodiversity challenges due to deforestation, degradation of habitats, and human activities like agricultural expansion, mining, and infrastructure development. These issues pose a significant threat to the existence of plant species and endanger the preservation of biodiversity. However, biodiversity experts in Bukidnon are optimistic about their ability to protect and preserve wildlife. The text emphasizes the importance of working together, raising public awareness, and enacting supportive legislation to promote sustainable development.

Biodiversity experts in Bukidnon emphasize the importance of botanical gardens and conservation initiatives, which serve as educational and scientific organizations. Furthermore, they emphasize the significance of tackling the root issues that lead to decreased biodiversity and promoting sustainable approaches to conserve the region's biodiversity for future generations. Bukidnon collaborates with various stakeholders to address these challenges, including residents, indigenous communities, government entities, non-governmental organizations, and biodiversity experts. The goal is to create policies integrating conservation aims into broader plans for sustainable development. They emphasize the significance of implementing comprehensive measures to address the root issues contributing to the decline in biodiversity, such as improving governance, engaging local communities, and conducting targeted research. This approach prioritizes the active engagement of stakeholders, ecosystem-based management methods, and the implementation of legal and institutional changes to improve biodiversity conservation's resilience, equity, and long-term viability.

RECOMMENDATIONS

The biodiversity threats that Bukidnon province faces are a concern not just for today but also for the future Bukidnon inhabitants must be aware of today. When not monitored, human activities like agricultural growth, deforestation, mining, and infrastructure development threaten the extinction of various plant and animal species, disrupt ecosystems, and lose ecological balance. For these reasons, this study recommends strengthening the policies of the local government units in Bukidnon, specifically:

1. Implement strict conservation measures. Enforce laws and regulations to protect critical habitats and biodiversity hotspots from further degradation and destruction. Establish protected areas and wildlife reserves to safeguard vulnerable species and ecosystems;

2. Promote sustainable land use practices. Encourage sustainable agriculture techniques, reforestation efforts, and land-use planning that prioritize biodiversity conservation. Support agroforestry practices integrating trees and crops to enhance ecosystem resilience and biodiversity;

3. Engage local communities. Involve local communities in conservation efforts by raising awareness about the importance of biodiversity, providing alternative, environmentally friendly livelihood options, and promoting community-based conservation initiatives;

4. Strengthen collaboration with stakeholders. Partner with government agencies, non-governmental organizations, academic institutions, and industry stakeholders to coordinate conservation efforts, share resources, and implement integrated biodiversity management plans;

5. Monitor and research. Conduct regular monitoring and research activities to assess the status of biodiversity, identify critical threats, and evaluate the effectiveness of conservation interventions. Use scientific data to inform decision-making and adaptive management strategies; and

6. By implementing these recommendations and fostering a holistic approach to biodiversity conservation, Bukidnon can work towards safeguarding its rich natural heritage for future generations and maintaining a healthy and balanced ecosystem.

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