

Guardians of the Forest, Keepers of Ancestral Spirits: The Role of Traditional Shamans in the Ecological Resilience of Bangka Island

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ARTICLE INFO

Article history

Received: May 19th, 2025

Revised: July 22nd, 2025

Accepted: July 29th, 2025

Published: July 31st, 2025

Keywords :
Traditional Shamans,
Sacred Forest,
Ecological Conservation,
Traditional Ecological Knowledge,
Bangka Island.

ABSTRACT

Bangka Island, located in the Province of Bangka Belitung Islands, is currently experiencing significant environmental degradation caused by extensive tin mining and the expansion of monoculture plantations. These activities have led to the depletion of forest ecosystems and the erosion of local ecological values. Amidst this ecological crisis, traditional shamans (*dukun adat*) in the Mapur customary territory continue to play a pivotal role in forest conservation through the application of customary laws, spiritual rituals, and taboos related to sacred forest areas (*hutan larangan*). This study aims to explore the role of *dukun adat* in preserving ecological resilience and safeguarding indigenous forests, while also identifying the challenges they face in the context of socio-economic transformation and environmental exploitation. Using a qualitative ethnographic approach, data were collected through in-depth interviews, focus group discussions, and participatory observation in several customary communities, including Pelangas, Air Abik, and Gunung Muda. The findings reveal that *dukun adat* function not only as spiritual leaders but also as custodians of traditional ecological knowledge, enforcing sustainable land use practices and ensuring the spiritual balance between humans and nature. However, the influence of modernization, industrial expansion, and weakening cultural transmission poses serious threats to the continuation of their roles. This study concludes that the recognition and integration of traditional knowledge systems into formal environmental governance and climate change adaptation strategies are crucial for achieving inclusive and sustainable conservation. Strengthening the position of *dukun adat* may contribute significantly to community-based environmental resilience.

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1. Introduction

Bangka Island, part of the Bangka Belitung Islands province in Indonesia, is renowned for its rich biodiversity and cultural heritage. However, the island faces significant environmental challenges due to extensive tin mining and monoculture plantations, leading to deforestation and ecological

degradation. Amidst these challenges, traditional shamans, known locally as "*dukun*," have played a pivotal role in preserving the remaining forests and maintaining ecological balance (Ismi & Wijaya, 2022a).

The *dukun* are not merely spiritual leaders; they are custodians of indigenous knowledge and environmental stewards. Their roles encompass healing, conducting rituals, and enforcing customary laws that regulate the use of natural resources. This intricate relationship between the *dukun*, the community, and the environment underscores the importance of integrating traditional practices into contemporary conservation efforts.

Historically, the *dukun* have been instrumental in designating sacred forests, known as "*hutan larangan*," where logging and hunting are prohibited. These areas serve as biodiversity hotspots and are crucial for the survival of various endemic species. The enforcement of these customary laws has been effective in conserving forest areas that are otherwise vulnerable to exploitation.

The *Jerieng* tribe, an old Malay subtribe in West Bangka Regency, exemplifies the integration of spiritual beliefs and environmental conservation. Penyabung Hill, a sacred area for the *Jerieng*, is protected through rituals and taboos enforced by the *dukun*, ensuring the preservation of its unique ecosystem (Wijaya & Ismi, 2022).

Similarly, the Mapur community has faced challenges in maintaining their traditional practices due to external pressures such as government resettlement programs and industrial expansion. Despite these challenges, the *dukun* continue to uphold their roles, striving to protect their ancestral forests and cultural identity (Budi et al., 2024).

The ecological knowledge possessed by the *dukun* is vast, encompassing the use of medicinal plants, understanding of animal behaviors, and weather patterns. This knowledge, passed down through generations, is invaluable for sustainable resource management and disaster mitigation. In recent years, there has been a resurgence in recognizing the importance of indigenous knowledge systems. Collaborations between local communities, NGOs, and government agencies have begun to incorporate the insights of the *dukun* into broader conservation strategies.

However, the *dukun* face numerous challenges, including diminishing respect for traditional practices among the younger generation, lack of legal recognition, and threats from illegal logging and mining activities. These challenges necessitate concerted efforts to empower and support the *dukun* in their conservation roles. The integration of traditional ecological knowledge with scientific approaches offers a holistic framework for environmental conservation. By acknowledging the contributions of the *dukun*, conservation initiatives can be more culturally sensitive and effective.

Furthermore, empowering the *dukun* can enhance community resilience, as their roles often extend to conflict resolution, health care, and social cohesion. Their involvement in environmental governance can lead to more inclusive and sustainable outcomes. The preservation of cultural heritage is intrinsically linked to environmental conservation. Protecting the roles and knowledge of the *dukun* not only safeguards biodiversity but also ensures the continuity of cultural identities and traditions.

Forests in Indonesia are not only rich ecosystems but also sacred spaces for many Indigenous communities. On Bangka Island, forests are intricately linked to ancestral beliefs and customary traditions maintained by traditional shamans or *dukun*. These spiritual leaders play crucial roles in conserving the forest through rituals, taboos, and traditional knowledge systems that are deeply embedded in the community's identity. Deforestation in Indonesia, including on Bangka to the presence of strong spiritual and traditional norms. These sacred forests are not merely ecological spaces but cosmological realms.

For example, Mount Cundong is a site where rituals are performed to honor ancestral spirits, ensuring both ecological protection and spiritual balance. Violation of such sites, as reported, has reached critical levels due to tin mining, palm oil expansion, and weak enforcement of environmental regulations. The Ministry of Environment and Forestry reported that critical land in Bangka Belitung

reached over 114,836 hectares in 2011, threatening the sustainability of both the ecosystem and the Indigenous communities who depend on it (Cholillah, 2017).

Amidst this ecological degradation, dukun adat emerge as guardians of ecological and spiritual equilibrium. In villages like Air Abik, Gunung Muda and Pejem, they uphold sacred prohibitions (*pantangan*) that prevent logging and forest conversion. The community believes that violating these taboos will incur natural calamities or spiritual consequences (Ismi, 2024). The concept of Sacred Natural Sites (SNS), widely recognized in conservation literature, resonates with the *hutan larangan* (forbidden forest) of the Mapur people in Bangka.

According to Bhagwat & Rutte (2006), Sacred Natural Sites (SNS) can function as *de facto* conservation areas due to the strong belief of local communities in the sacred power associated with these sites. This belief gives rise to specific taboos, such as prohibitions against cutting trees or hunting wildlife within these areas. Violating these taboos is believed to result in severe consequences, including illness or death. Consequently, these cultural and spiritual norms indirectly establish a system of ecological protection rooted in local traditions. In other words, the fear of supernatural retribution acts as a social mechanism that helps preserve the integrity of local ecosystems. This practice illustrates how spiritual values can reinforce sustainable ecological behavior and open pathways for more inclusive and community-based conservation approaches. In this context, integrating sacred natural sites into national conservation strategies could serve as a vital bridge between traditional ecological knowledge and modern environmental policy.

Traditional Ecological Knowledge (TEK) embedded in shamanic practices includes an understanding of plant medicine, animal behavior, seasonal cycles, and disaster signs. This knowledge has evolved adaptively and is transmitted culturally across generations (Berkes et al., 2000). Shamans in Bangka, like those in Ngadas, Tengger, are regarded not only as healers but also environmental stewards. Research by Purnawan (2010) in Tengger highlights that shamans act as mediators between the spiritual and ecological world, enforcing harmony through rituals and traditional law.

A study by Fitriani & Ruswandi (2020) confirms that shamans possess both knowledge and social power that surpass biomedical authority in many rural communities. Their legitimacy stems from lived experiences and proven healing capabilities, thus reinforcing their ecological authority. However, the resilience of Indigenous systems faces pressure from modernization, extractive industries, and cultural erosion. The marginalization of the Mapur people since the Dutch colonial era and the New Order government has weakened their land rights and cultural expressions.

The integration of Traditional Ecological Knowledge (TEK) into formal conservation and climate mitigation strategies is crucial. As Berkes (2012) argues, conservation rooted in local customs is more sustainable than externally imposed programs. Local ownership and participation are key to long-term ecological outcomes. The dual function of shamans—as spiritual leaders and ecological custodians—makes them essential actors in Indonesia’s biodiversity conservation. Their roles, however, remain underrecognized by state institutions and conservation agencies, resulting in policy gaps.

This study aims to explore the multifaceted roles of the *dukun* in ecological resilience on Bangka Island, examining their contributions, challenges, and the potential for integrating their knowledge into contemporary conservation efforts. Specifically, this study asks how do traditional shamans contribute to the ecological resilience of Bangka Island and what institutional barriers hinder the recognition of their roles? Drawing on a combined framework of political ecology and resilience theory, this analysis highlights the intersections between customary ecological knowledge, spiritual governance, and institutional power. It investigates how cultural practices sustain local adaptive capacities, while also interrogating the socio-political dynamics that marginalize traditional actors within mainstream environmental policy.

2. Research Method

This study employs a qualitative ethnographic approach to explore the ecological roles of traditional shamans (*dukun adat*) in environmental conservation on Bangka Island. Fieldwork was conducted in customary Mapur territories, including Pelangas Village in Simpang Teritip District, Aik Abik Hamlet in Belinyu District, and Gunung Muda Village. These sites were selected due to their active engagement in traditional practices and the presence of sacred forests.

Primary data in this study were collected using a qualitative, exploratory approach. The sampling method employed was purposive sampling, which involved the deliberate selection of informants based on their knowledge, roles and involvement in traditional practices and forest conservation. The selection criteria included traditional shamans (*dukun adat*), customary law figures, community leaders with local ecological knowledge, as well as village officials and local authorities familiar with natural resource management policies.

A total of six key informants were interviewed in-depth, consisting of one dukun, one customary leader, two community figures, and two local officials. In addition, two Focus Group Discussions (FGDs) were conducted, each involving 8–10 participants representing various community groups such as indigenous youth, women, local farmers, and village officials. Participant observation was carried out over 30 days in stages, including participation in customary ceremonies related to forest preservation, observation of community interactions with sacred forests, and documentation of narratives emerging during ritual practices. The overall duration of the field research was three months, including the initial field entry, the implementation of interviews and FGDs, and the ongoing observation process.

A triangulated methodological approach—consisting of in-depth interviews, Focus Group Discussions (FGDs), and participant observation—was employed to ensure data validity and to capture the complexity of local knowledge systems related to customary-based environmental conservation. Secondary data were sourced from academic journals, policy reports, theses, and reputable media outlets including Fitriani & Ruswandi (2020), Ismi's (2024) thesis on Sacred Natural Sites in Bangka, as well as articles from Mongabay Indonesia, Ekuatorial, and the Rainforest Journalism Fund. These materials provided valuable contextual information to support and triangulate the primary data.

Thematic data analysis was conducted using NVivo software to identify key patterns related to the functions, knowledge systems, and socio-ecological impacts of the shamans' roles. This ethnographic approach facilitates a deep understanding of the cultural and ecological relationships between indigenous communities and their environments, highlighting the significance of traditional practices in sustaining forest ecosystems amidst contemporary challenges.

3. Results and Discussion

3.1. Shamans as Guardians of Sacred Forests: A Biocultural and Political Ecology Perspective

On Bangka Island, traditional shamans—known locally as *dukun adat* or *batin gunung*—play a central role in safeguarding sacred forests. These figures are not only traditional healers and ritual leaders, but also serve as custodians of ecological harmony and cultural continuity. In Pelangas Village, for example, shamans are entrusted with maintaining the sanctity of Penyabung Hill, a sacred forest site that remains untouched due to its spiritual significance. Categorized as *hutan larangan* (forbidden forest), this site is protected from extractive activities such as mining, logging, or hunting, serving simultaneously as a biodiversity refuge and a cultural sanctuary (Ismi & Wijaya, 2022).

The sacred value of these forests is upheld through customary laws and ceremonies passed down orally across generations. Among the Jerieng people, annual rituals like *Taber Gunong* are held as expressions of gratitude to the earth and as spiritual appeals for safety and ecological balance. These ceremonies, usually led by shamans, involve offerings, chants, and traditional prayers addressed to

ancestral spirits believed to reside within the forests (Wijaya, 2022a). Through these rituals, the community reaffirms its collective responsibility to treat forests as sacred and inviolable spaces.

Within these ritual systems lie deeply rooted ecological principles—balance, reciprocity and non-exploitation. Forest resources such as honey, herbal roots, and rattan are harvested only during certain seasons and in limited quantities, as regulated by the dukun. This reflects a form of indigenous ecological governance that promotes forest regeneration and ensures long-term communal benefits (Bernadio, 2023). In this capacity, shamans act as both moral guides and environmental regulators, maintaining equilibrium between human activities and natural systems.

Analyzing this from a political ecology lens highlights how traditional ecological practices are increasingly marginalized by external pressures—capitalist extraction, religious orthodoxy, and state-led development agendas. According to Robbins (2022), political ecology explores how environmental knowledge and resource governance are shaped by power relations and socio-economic structures. In Bangka, the erosion of the dukun's role through modernization and religious delegitimization represents a form of epistemic exclusion, where local knowledge is devalued or dismissed by formal institutions. Peluso & Vandergeest (2020) argue that such exclusions often lead to ecological and cultural conflicts, especially when traditional authorities are stripped of their influence over customary territories.

Despite this, the communal governance of sacred forests by shamans illustrates a form of co-management or *shared governance*, wherein decision-making over resource use is collectively negotiated based on local norms and customary institutions. As Berkes (2012) notes, successful co-management is contingent upon the recognition of Traditional Ecological Knowledge (TEK), community legitimacy, and strong place-based stewardship. For instance, the shaman's authority to determine harvesting seasons or enforce ritual taboos exemplifies a locally embedded form of rule-making that ensures ecological resilience.

Moreover, the relationship between the Jerieng community and their sacred forests exemplifies biocultural diversity, which emphasizes the interdependence of biological and cultural systems. Sacred sites like Penyabung Hill are not merely ecological habitats but also spiritual and narrative landscapes that embody ancestral memory and identity. Maffi & Woodley (2021) contend that such areas are often hotspots of biocultural richness precisely because they are protected by holistic systems of values and meaning. The continued practice of rituals such as *Taber Gunong* reinforces both environmental care and cultural continuity, aligning with Gavin, et al (2020) who affirm the role of cosmological narratives and ecological rituals in community-based conservation.

Underlying these practices is a rich reservoir of Local Ecological Knowledge (LEK) or Traditional Ecological Knowledge (TEK), encompassing seasonal cycles, species behavior, and sacred cosmologies—knowledge that is inherently spiritual, empirical, and adaptive. Kimmerer (2020) describes this as an ecological epistemology, rooted in reverence and relational ethics, where nature is not an object of domination but a subject of respect. This worldview gives rise to what scholars call moral ecology—a normative system where ecological behavior is guided by spiritual and cultural obligations rather than utilitarian logics.

However, this centuries-old system of ecological guardianship faces existential threats. The stigmatization of dukun by some segments of the population as "un-Islamic" or outdated, coupled with the aggressive expansion of mining and monoculture plantations, has severely undermined traditional forest governance. According to Wijaya & Ismi (2022), Bangka Belitung has lost over 70% of its forest cover in just six years—an ecological collapse that parallels the decline of dukun-centered systems.

Recognizing and reinvigorating the role of *dukun adat* is therefore not only a cultural imperative but also an ecological necessity. Environmental NGOs and scholars have increasingly called for the integration of indigenous knowledge systems into formal environmental policymaking, arguing that forest protection must combine scientific innovation with cultural revitalization and spiritual stewardship (Erick, 2022; Bernadio, 2023).

In this light, shamans are not remnants of a primitive past, but critical actors for a sustainable future. Their knowledge—encoded in ritual, taboo, and collective memory—offers an alternative paradigm for living with forests. Communities that continue to respect and empower their shamans, as (Wijaya, 2022a), are the ones most resilient in the face of ecological disruptions. To protect these spiritual leaders is, ultimately, to protect the forests—and by extension, the planet itself.

3.2. Traditional Ecological Knowledge and Customary Laws

Traditional shamans (*dukun adat*) in Bangka Belitung Islands are among the last holders of an invaluable body of Traditional Ecological Knowledge (TEK), developed through centuries of close interaction with the natural environment. This knowledge includes deep insights into forest succession, animal behavior, soil characteristics, and weather cycles, which help communities make decisions regarding planting seasons, medicinal plant use, and sustainable harvesting (Ismi & Wijaya, 2022; Peter, 2023). For instance, communities consult *dukun* before tapping honey or collecting forest roots to ensure these activities do not disrupt ecological balance.

This Traditional Ecological Knowledge (TEK) is tightly interwoven with *adat*—customary laws that define sacred zones, regulate forest access, and establish taboos on exploitation. Sacred forests (*hutan larangan*) are commonly protected by strong customary prohibitions. These forests are often believed to be inhabited by ancestral spirits or forest guardians (*penunggu*), and entering or damaging them without ritual clearance is thought to bring spiritual harm (Ismi & Wijaya, 2022). In Pelangas Village, for example, the Penyabung Hill is off-limits due to its sacred status, guarded by the *dukun* who lead rituals to honor the spirits of the land (Wijaya, 2022).

Fear of supernatural consequences has historically reinforced community adherence to conservation principles. Punishments for violating sacred laws are not legal but metaphysical—illness, crop failure, or misfortune are seen as manifestations of cosmic imbalance (Bernadio, 2023). This spiritual framework serves as a social enforcement mechanism that has, in practice, preserved biodiversity far more effectively than many formal legal frameworks.

The *dukun* also mediate environmental knowledge through ceremonies and oral traditions. For example, the annual *Taber Gunong* ritual is a thanksgiving ceremony to nature, asking for harmony between humans and the forest. During this ceremony, the *dukun* determine planting and harvesting times based on natural signs and ancestral teachings (Wijaya, 2022). These rituals not only serve religious purposes but also transmit ecological knowledge across generations.

However, modernization and religious orthodoxy have marginalized the role of *dukun*. Young people increasingly view their role as outdated, and some religious authorities have labeled their practices as heretical (Peter, 2023; Wijaya, 2022). This has led to a decline in the transmission of ecological knowledge and the weakening of *adat*-based forest protection. Combined with rising external pressures such as mining and deforestation, the loss of traditional knowledge systems poses a serious threat to local ecosystems.

Several conservation initiatives now advocate for re-integrating Traditional Ecological Knowledge (TEK) and *adat* into formal environmental governance. NGOs and researchers argue that local wisdom, especially when held by *dukun* and elders, can guide more ethical and effective land-use planning (Wijaya, 2022). For instance, community-led forest monitoring, participatory mapping, and customary zoning are being tested as ways to blend indigenous governance with national environmental policy.

Ultimately, the recognition of *dukun* and their ecological knowledge is not simply about cultural preservation—it is a crucial step toward sustainable environmental management. As affirmed by recent environmental journalism and indigenous rights advocates, empowering local guardians of the forest is essential for maintaining ecological balance in the era of climate crisis (Bernadio, 2023; Peter, 2023).

3.3. Challenges to Traditional Practices

Despite their vital role as guardians of sacred forests and custodians of ecological wisdom, *dukun adat* in Bangka Belitung face a constellation of structural challenges rooted in the intersecting forces of state control, extractive capitalism, and religious orthodoxy. The degradation of *hutan larangan* (forbidden forests) is not merely an ecological issue, but also a political one—reflecting power asymmetries that systematically marginalize traditional authorities.

One of the most visible threats to traditional forest governance is the rapid expansion of tin mining and monoculture palm oil plantations. These activities, often backed by legal concessions, have encroached upon sacred territories such as Penyabung Hill, undermining the authority of shamans and desecrating spiritually significant landscapes (Ismi & Wijaya, 2022). In the case of the Mapur people, state-issued mining licenses have facilitated land grabs that not only displace communities but also disrupt ritual continuity and customary ecological stewardship (Bernadio, 2023).

This marginalization of *dukun* can be understood through the lens of political ecology, which interrogates how power, knowledge, and economic systems shape access to natural resources. Robbins (2022) argues that traditional ecological practices are often undermined by the logic of modernization, economic development, and legal centralism. In Indonesia, this manifests through the dominance of state law over customary law, exemplified in Forestry Law No. 41/1999, which asserts that all forests are state property. Such legal frameworks invalidate indigenous claims and render the ecological-spiritual authority of shamans "illegitimate" in the eyes of formal governance (Afiff & Rachman, 2019).

Moreover, corporations—especially mining and plantation firms—act as powerful agents of dispossession. Enabled by permissive state policies and protected by security apparatuses, these actors form what Peluso & Vandegeest (2020) call an "*alliance of convenience*" that prioritizes economic extraction over indigenous rights. Development narratives often frame resource exploitation as pathways to welfare, sidelining shamans as "obstacles" to progress. This depoliticizing logic aligns with Li's (2007) concept of "*the will to improve*," which critiques how technocratic interventions erase the political agency of indigenous institutions.

Adding to this structural exclusion is the role of formal religious institutions, which have increasingly delegitimized traditional spiritual practices. In many cases, shamans are stigmatized as *klenik* or *syirik*—accusations that alienate them from younger generations educated in formal religious schools. This moral contestation reflects a deeper epistemic violence Spivak (1998), where indigenous knowledge systems are dismissed as irrational or heretical. As Beatty (2004) observed in Java, religious orthodoxy often places local spiritual authorities in inferior positions, further eroding their legitimacy.

The convergence of state hegemony, corporate power, and religious formalism has produced a condition of *triple marginalization* that fractures the ecological and cultural systems upheld by shamans. This marginalization is not merely rhetorical but is concretely experienced as a disempowerment of indigenous ecological governance. Generational disconnects are increasingly visible, as younger community members no longer aspire to become shamans, contributing to the erosion of Traditional Ecological Knowledge (TEK) that once formed the backbone of local environmental stewardship (Peter, 2023; Purnawan, 2010).

Further compounding this erosion is spatial dislocation caused by state-led resettlement policies. These initiatives forcibly detach communities from their sacred landscapes, severing ritual and cosmological ties that are essential to maintaining ecological balance. As Peter (2023) notes, the displacement of communities from sites such as Penyabung Hill breaks the embeddedness of sacred geography in everyday life. Meanwhile, *legal invisibility* persists despite constitutional recognition of indigenous rights under Article 18B of the 1945 Constitution. In practice, enforcement remains sporadic and subordinated to national development priorities, a disjunction long recognized in the literature (Nilna, 2022).

These dynamics highlight a deep tension between *legal pluralism* and dominant development narratives. While *adat* law technically coexists with state law, it does so in a subordinated and often symbolic position—frequently excluded from land-use planning and policymaking processes. This has led to what Cooke & Kothari (2001) term *participatory tokenism*, wherein shamans are invited to ceremonial openings of conservation projects but excluded from substantive governance and decision-making.

From a *biocultural diversity* perspective, the disappearance of shamans constitutes not only a cultural loss but a profound threat to ecological sustainability. Sacred forests like Penyabung Hill embody high biocultural value and are safeguarded through holistic systems of belief, governance, and ritual practice. As emphasized by Maffi & Woodley (2021), these landscapes harbor irreplaceable ecological and cultural knowledge, which cannot simply be supplanted by technocratic conservation approaches. Rituals such as *Taber Gunong* are not just spiritual events—they function as performative ecological regulation and collective reaffirmation of community responsibility toward nature.

Similarly, Berkes (2012) stresses that co-management regimes only succeed when indigenous institutions are afforded real authority and Traditional Ecological Knowledge (TEK) is acknowledged as a legitimate epistemology. The role of shamans in regulating harvest cycles, enforcing seasonal taboos, and orchestrating collective rituals is a clear expression of localized rule-making power—one that must be centered rather than sidelined in conservation discourse.

The marginalization of shamans should not be seen as an inevitable consequence of modernization—it is a political outcome rooted in contested ideas of legitimacy, knowledge, and progress. Reversing this trajectory requires a reframing of shamans not as relics of a primitive past, but as vital actors in the pursuit of planetary sustainability. Their ecological insights, spiritual cosmologies, and community-based moral authority represent a living archive of sustainable lifeways and adaptive resilience.

Addressing the systemic challenges they face calls for multidimensional strategies. Legal reforms must move beyond recognition to ensure the enforcement of *adat* rights within a genuine framework of legal pluralism. Institutional arrangements should enable the active inclusion of shamans in environmental governance structures—not merely as ceremonial figures, but as full and equal stakeholders. Cultural revitalization is likewise essential, particularly through intergenerational transmission of knowledge via storytelling, apprenticeship, and ritual participation. Moreover, fostering respectful interfaith and intercultural dialogue is critical to bridging the divide between religious orthodoxy and indigenous spirituality.

Ultimately, protecting *dukun adat* (traditional shamans) is inseparable from protecting the forests they have long stewarded. Both are foundational to our collective efforts to confront the twin crises of climate change and biodiversity loss. By recognizing and restoring the governance role of shamans, we affirm a more just, pluralistic, and ecologically rooted future.

3.4. Integrating Traditional Knowledge into Conservation Efforts

In recent years, there has been a growing recognition of the crucial role indigenous knowledge—particularly that held by traditional shamans (*dukun*)—can play in sustainable environmental management. On Bangka Island and other regions in Indonesia, partnerships between NGOs, local communities, and government institutions have initiated efforts to incorporate *dukun* into community-based forest management programs. These collaborations aim to harness the deep ecological wisdom of traditional leaders, integrating it with formal conservation strategies to improve both ecological outcomes and community empowerment (Peter, 2023).

One example of such an initiative can be found in Pelangas Village, where conservationists have worked alongside *dukun adat* to protect sacred forest zones like Bukit Penyabung. Here, the *dukun* serve not only as spiritual figures but also as advisors on forest zoning, guiding decisions based on customary law and ancestral wisdom. The involvement of *dukun* in ecological monitoring and ritual ceremonies has enhanced local legitimacy for conservation rules, ensuring stronger compliance

among community members (Ismi & Wijaya, 2022). These programs validate the knowledge systems of indigenous people, which are often overlooked in state-centric environmental governance models.

From an academic standpoint, studies have consistently highlighted the effectiveness of integrating Traditional Ecological Knowledge into modern conservation. Berkes (2012), for instance, emphasizes that local knowledge systems are adaptive, place-based, and founded on long-term observations of ecosystem dynamics. Similarly, research by Alcorn (1993) argues that indigenous belief systems, including taboos and ritual practices, function as informal environmental regulations that contribute to biodiversity conservation. In this context, the role of *dukun* as custodians of both spiritual and ecological knowledge becomes not only culturally significant but ecologically strategic.

Furthermore, integrating *dukun* into conservation efforts aligns with the principles of biocultural conservation, which recognizes the interdependence of biological and cultural diversity. According to Gavin, et al (2018), conservation programs that engage indigenous communities and respect their knowledge systems are more likely to be sustainable and socially just. When *dukun* are invited into decision-making spaces, they bring with them a holistic perspective—one that considers not just species or land, but relationships, cosmology, and moral responsibility to nature.

In addition to enhancing conservation outcomes, these integrative approaches help rebuild the authority and status of *dukun*, many of whom have faced marginalization due to modernization and religious orthodoxy. By situating them as partners in environmental governance rather than relics of the past, such initiatives offer a pathway for cultural revitalization. As reported by Wijaya (2022), communities where shamans are reintegrated into village leadership have shown greater resilience in resisting exploitative development projects and protecting their customary territories.

Despite these successes, challenges remain. Institutional reluctance, legal ambiguity, and insufficient funding continue to hinder full integration of indigenous knowledge into formal conservation systems. However, the growing body of evidence—both academic and practical—suggests that a pluralistic approach to conservation, one that values and supports *dukun* and their traditions, may be key to protecting Indonesia's rich but fragile ecosystems. As Berkes, et al (2000) argue, “bridging knowledge systems” is not only possible but necessary in an era of ecological crisis.

3.5. The Need for Legal Recognition and Support

To effectively preserve indigenous environmental wisdom, it is imperative to grant legal recognition to the *dukun adat* and their roles in managing sacred forests. Research on indigenous communities in Indonesia consistently highlights that customary leaders like the *dukun* serve as pivotal custodians of ecological balance, integrating spiritual, cultural, and environmental dimensions in their stewardship (Riswan, 2021). However, existing Indonesian forest and environmental laws have yet to fully accommodate such traditional governance systems, which leaves sacred forests vulnerable to external threats like mining and plantation expansion (Maria et al., 2021).

Legal frameworks that overlook the role of *dukun* and customary laws (*adat*) risk marginalizing indigenous communities and eroding their knowledge systems. Studies in Bangka Belitung and other regions demonstrate how the absence of formal recognition for indigenous governance results in conflicts over land rights and undermines community capacity to conserve forests sustainably. In Pelangas Village, for example, the forest *hutan larangan* is protected through local rituals and taboos, but without legal safeguards, these protections remain fragile against commercial exploitation (Agatta, 2021).

Capacity-building and policy reforms are essential to empower *dukun* and indigenous institutions as co-managers of natural resources. This means not only recognizing their authority legally but also supporting their knowledge transmission and involvement in participatory decision-making processes. According to Fitriani & Ruswandi (2020), integrating local wisdom into environmental governance fosters more culturally appropriate and ecologically effective conservation strategies, strengthening resilience against environmental degradation.

In the Mapur community, the forest is conceptualized as a sentient being inhabited by ancestral spirits, with rituals such as *ngukus* and *sesajen* performed to maintain balance between humans and nature (Elis & Almi, 2025). This spiritual dimension of forest management embodies a relational worldview where ecological sustainability is inseparable from cultural and spiritual well-being. Protecting this worldview requires legal systems that respect and uphold indigenous cosmologies and practices (Silvia, 2024).

The recognition of *dukun* as environmental stewards aligns with broader movements in Indonesia toward the acknowledgment of indigenous rights and biocultural conservation. Such recognition not only preserves cultural heritage but also offers a model of sustainable coexistence that modern conservation approaches can learn from (Maria et al., 2021; Riswan, 2021). It underscores that forest conservation is as much a social and spiritual issue as it is an ecological one.

In conclusion, legal recognition and institutional support for the *dukun*'s role in environmental governance are crucial for maintaining both cultural continuity and ecological integrity in Bangka Island. Governments and policymakers must create enabling environments for indigenous governance, which include protecting sacred forests legally and fostering community capacity. This integrated approach ensures that the *dukun* can continue serving as vital guardians of Indonesia's natural and spiritual heritage.

4. Conclusion

Traditional shamans (*dukun adat*) of Bangka Island embody a vital convergence of culture, ecology, and spirituality. Their profound environmental knowledge, grounded in spiritual cosmology, customary law, and communal trust, enables them to effectively regulate forest use, safeguard sacred sites such as Gunung Cundong, and resist ecological degradation. Through rituals, taboos, and customary governance, they contribute significantly to biodiversity conservation, climate adaptation, and the spiritual well-being of their communities.

However, the enduring roles of the *dukun adat* face multiple threats including environmental degradation, cultural erosion, generational disconnect, and lack of formal institutional support. Modernization, policy exclusion, and insufficient recognition of Indigenous land and sacred forest rights further jeopardize the sustainability of these traditional systems.

Addressing these challenges demands a multifaceted approach. It is imperative that state institutions formally recognize the authority and roles of *dukun adat* within forest management and conservation frameworks. Legal acknowledgment of Indigenous land tenure and sacred forests (*hutan adat*) must be prioritized to secure community rights and ecological resilience.

Moreover, conservation strategies should integrate Traditional Ecological Knowledge (TEK), promote intergenerational transmission of cultural and ecological wisdom, and foster participatory governance models that include shamans, local elders, and Indigenous youth. Community engagement and cultural education programs can help bridge generational gaps and empower the custodians of this invaluable knowledge.

Future research is recommended to further document the knowledge systems of the *dukun adat*, evaluate the effectiveness of integrated conservation initiatives, and explore mechanisms for legal recognition and institutional support. By honoring both the forests and the ancestral spirits—and those who serve as their earthly guardians—we can ensure the sustainability of Bangka Island's environmental and cultural heritage for generations to come.

5. Acknowledgment

The author would like to thank everyone who contributed to this research, especially Atok Janum bin Lamat as the traditional shaman (*dukun adat*) of the Jerieng tribe in Pelangas village, Mr. Welly Wahyudi as the head of Pelangas village, and the two journalists who assisted, Mr. Nopri Ismi and Taufik Wijaya, who acted as sources, so that this research can be developed into an article that can be enjoyed by readers and academics interested in exploring similar case studies.

6. References

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