



Wildlife Conflict, Integrative Conservation, and Coffee Farmers in Bener Meriah, Aceh: Sociological and Anthropological Perspectives

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Abstract

Forest degradation has driven the emergence of the green economy as a paradigm of sustainable development. In Indonesia, the government strives to maintain forest conservation and food security simultaneously. However, human–wildlife conflict, such as that occurring in Bener Meriah Regency, Aceh, has become a huge challenge. Gayo coffee farmers face disturbances from elephants and tigers, which threaten both harvests and ecosystems. They respond to the challenges with local wisdom and integrative conservation approaches. Through the role of customary institutions and farmer groups and the potential of wildlife-friendly coffee, farmers have become key actors in sustainable and community-oriented conservation. In light of this, the present study employs a qualitative method using Antonio Gramsci’s critical sociology theory of hegemony and Clifford Geertz’s anthropological perspective of culture as a system of meaning. Data collection was carried out by means of observation, in-depth interviews, focus group discussions (FGD), and document analysis. The data analysis used was Spradley’s analysis technique consisting of domain analysis, taxonomic analysis, componential analysis, and thematic analysis. Findings reveal that the conflict between wildlife and coffee farmers in Bener Meriah has been caused by the loss of habitat and the expansion of plantation land. The conflict has fueled economic, social and cultural impacts. As such, the community has applied local wisdom as an adaptive strategy; yet, for sustainable solutions, it is necessary to have an integrative model, involving the government, conservation institutions and local communities.

Keywords: Human–wildlife conflict, local wisdom, coffee farmers, integrative conservation, sociology, anthropology

Abstrak

Degradasi hutan telah mendorong munculnya ekonomi hijau sebagai paradigma pembangunan berkelanjutan. Di Indonesia, pemerintah berupaya menjaga konservasi hutan dan ketahanan pangan secara bersamaan. Namun, konflik manusia–satwa liar, seperti yang terjadi di Kabupaten Bener Meriah, Aceh, telah menjadi tantangan besar. Petani kopi Gayo menghadapi gangguan dari gajah dan harimau, yang mengancam hasil panen maupun ekosistem. Mereka menanggapi tantangan tersebut dengan kearifan lokal dan pendekatan konservasi integratif. Melalui peran lembaga adat dan kelompok tani serta potensi kopi ramah satwa liar, petani telah menjadi aktor kunci dalam konservasi yang berkelanjutan dan berorientasi pada masyarakat. Sehubungan dengan hal ini, studi ini menggunakan metode kualitatif dengan teori sosiologi kritis hegemoni Antonio Gramsci dan perspektif antropologi Clifford Geertz tentang budaya sebagai sistem makna. Pengumpulan data dilakukan melalui observasi, wawancara mendalam, diskusi kelompok terpumpun (FGD), dan analisis dokumen. Analisis data yang digunakan adalah teknik analisis Spradley yang terdiri dari analisis domain, analisis taksonomi, analisis komponensial, dan analisis tema. Temuan mengungkapkan bahwa konflik antara satwa liar dan petani kopi di Bener Meriah disebabkan oleh hilangnya habitat dan perluasan lahan perkebunan. Konflik tersebut telah memicu dampak ekonomi, sosial dan budaya. Dengan demikian, masyarakat telah menerapkan kearifan lokal sebagai strategi adaptif; namun, untuk solusi berkelanjutan, diperlukan model integratif yang melibatkan pemerintah, lembaga konservasi dan masyarakat lokal.

Kata kunci: Konflik manusia–satwa liar, kearifan lokal, petani kopi, konservasi integratif, sosiologi, antropologi

Introduction

The worsening forest degradation has threatened human life, which leads to the emergence of the green economy as a global economic ideology.¹ Forest and other natural resource management have been directed toward achieving the Sustainable Development Goals (SDGs).² In line with this, the Indonesian

¹Eleonore Loiseau et al., “Green Economy and Related Concepts: An Overview,” *Journal of Cleaner Production* 139 (2016), p. 361–71 Ibrahim Rashid Al-Shamsi & Boumedyen Shannaq, “Leveraging Clustering Techniques to Drive Sustainable Economic Innovation in the India–Gulf Interchange,” *Cogent Social Science* 10, No. 1 (2024). Nicoleta Ungureanu & Nicolae-Valentin Vlăduț, “Sustainable Valorization of Spent Coffee Grounds Within the Circular Economy: Innovative Applications in Food, Agriculture, Environmental, and Industrial Sectors,” *Sustainability* 18, No. 8 (2026), p. 4127.

²Suadi Zainal et al., Actualizing Local Knowledge for Sustainable Ecotourism Development in A Protected Forest Area: Insights from the Gayonese in Aceh Tengah, Indonesia,” *Cogent Social Science* 10, No. 1 (2024). Ahmad Muzaki, et al., “Pengendalian Kebakaran Hutan Melalui Penguatan Peran Polisi Kehutanan Untuk Mewujudkan Sustainable Development Goals,” *LITRA: Jurnal Hukum Lingkungan, Tata Ruang, Dan Agraria* 1, no. 1 (2021), p. 22–44.

government under the leadership of President Prabowo Subianto continues to strive for forest conservation intertwined with food security, positioning the green economy as a development paradigm to enhance equitable and sustainable community welfare.³⁴

Human–wildlife conflict has become a serious concern to conservation efforts in many regions of Indonesia,⁵ including in Aceh Province. The Natural Resources Conservation Agency recorded up to 787 human-wildlife conflicts in Aceh between 2019 and 2024, the highest of which occurred in Bener Meriah Regency. This area is known as a highland region rich in biodiversity and a center of production for some of Indonesia’s finest Gayo Arabica coffee.⁶ However, behind the success of its agricultural sector, Gayo coffee farmers face serious challenges from wildlife conflicts involving Sumatran elephant and Sumatran tiger.⁷ Damage to coffee plantations puts not only the farmers’ harvest at risk, but also creates tensions between wildlife conservation and sustainable food security.⁸

As wildlife attacks increase, coffee farmers have begun to develop initiatives that combine local wisdom with an integrative conservation approach to mitigate human–wildlife conflict. Coffee farmers in Bener Meriah have long possessed ecological knowledge passed down through generations.⁹ This includes customary beliefs that prohibit damaging habitats or cutting down large trees around plantations, as these are believed to be the dwelling places of “guardians,” as well as taboos against capturing, injuring, or killing *nenek*—the local term for the Sumatran tiger. These practices are also reflected in community-based efforts to restore degraded forest areas and to drive wildlife away from settlement zones without harming the animals.¹⁰

³ “Presiden Prabowo Panggil Menteri Kehutanan, Bahas Keseimbangan Pembangunan Dan Pelestarian Hutan,” 2025, <https://www.setneg.go.id/baca/index>, accessed in December 2025.

⁴ Vitaly Ivlev and Marina Ivleva, “Philosophical Foundations of the Concept of Green Economy,” in *International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSSES 2018)* (Atlantis Press, 2018), p. 869–73.

⁵ Farid Rifaie, et al., “A Review of Patterns and Geographical Distribution of Human-Wildlife Conflicts in Indonesia,” *Berkala Penelitian Hayati Journal of Biological Researches* 27, no. 1 (2021), p. 41–50. Efendi Efendi et al., “Animal Protection in the Perspective of Positive Law and Islamic Law: A Study of Elephant-Human Conflict in Aceh, Indonesia,” *Samarah: Jurnal Hukum Keluarga Dan Hukum Islam* 7, no. 1 (2023), p. 175–94.

⁶ Muammar Yulian, “Pemanfaatan Dan Pengelolaan Energi Baru Terbarukan Dari Limbah Kulit Kopi Berbasis Potensi Masyarakat Di Kabupaten Bener Meriah, Aceh,” 2023.

⁷ “Konflik Manusia Dengan Gajah Masih Berlanjut Di Aceh,” 2025, <https://www.mongabay.co.id/2024/12/09/konflik-manusia-dengan-gajah-masih-berlanjut-di-aceh>, accessed in December 2025.

⁸ Paolo Corvo, “Food Sovereignty and the Right of Farmers,” in *Zero Hunger* (Springer, 2020), p. 347–54.

⁹ Zuhda Amalia and M Hafizul Furqan, “Kearifan Lokal Masyarakat Gayo Dalam Budidaya Kopi,” *Jurnal Pendidikan Geosfer* 9, no. 1.1 (2024), p. 179–87. Nayyara Shafa Qabilla, et al., “Ecofeminism in the Framework of Local Wisdom: Viewing the Existence of MPU Uteun as a Forest Guardian,” *Journal of Governance and Public Policy* 5, No. 2 (2024).

¹⁰ “Masyarakat Pining Siap Denda Para Perusak Hutan Leuser,” 2017.

This local wisdom serves as an important foundation for developing an integrative conservation model that supports farming communities.^{11,12} In this model, farmers are not only victims of human–wildlife conflict, but also key actors to protect wildlife and ecosystem.¹³ Farmers in Bener Meriah are directly involved in mapping conflict-prone areas, planting natural barriers made of thorny and strong-smelling plants that wildlife dislike and managing buffer zones between forests and coffee plantations.

The role of customary institutions and farmer groups is highly crucial in uniting community social capital.¹⁴ Farmer deliberation forums are often used to formulate collective agreements for peaceful human–wildlife conflict management. These opportunities can expand when supported systematically.¹⁵ For example, the development of a wildlife-friendly coffee scheme could open niche markets that provide economic incentives for farmers who contribute to conservation.¹⁶ Product labeling that reflects environmental commitment could also increase added value and strengthen the global identity of Gayo Arabica coffee.

In light of this, it is essential to investigate the integrative conservation model practiced by coffee farmers in Bener Meriah in managing human–wildlife conflict. This study may serve as a lesson learned and be replicated in other regions of Aceh, at the national level, and even globally. The study also aligns with *Asta Cita*,¹⁷ the Indonesian government’s priority agenda related to national food security. Studies on wildlife conflict across Southeast Asia have received growing attention from academics and practitioners as part of strengthening sustainable development strategies.

¹¹ Agus Suroño and Maslihati Nur Hidayati, “Peran Perguruan Tinggi Dalam Harmonisasi Kebijakan Pengelolaan SDA Berbasis Kearifan Lokal Untuk Ketahanan Nasional,” in *National Conference on Law Studies (NCOLS)*, vol. 6, (2024), p. 15–55.

¹² Vaisal Amir et al., *Gugurnya Petani Rakyat: Episode Perang Laba Pertanian Nasional* (Malang: Universitas Brawijaya Press, 2014).

¹³ Efendi et al., “Animal Protection in the Perspective of Positive Law and Islamic Law: A Study of Elephant-Human Conflict in Aceh, Indonesia.”

¹⁴ Syaikhu Syaikhu et al., “Community, Family and Animal Conservation Sustainability in the Perspective of Normative Law and Maqasid Sharia,” *El-Usrah: Jurnal Hukum Keluarga* 7, no. 2 (2024), p. 521–40.

¹⁵ Moh Mufid, “Fikih Ekowisata Berbasis Maqasid Al-Syari’ah (Studi Pengelolaan Wisata Alam Hutan Mangrove Di Wonorejo Kota Surabaya),” *Al-Manahij: Jurnal Kajian Hukum Islam* 13, no. 1 (2019), p. 83–98.

¹⁶ Ikbāl Herdiansyah and Budi Setiyono, “Pemberdayaan Dalam Perspektif Pembangunan Berkelanjutan: Studi Kasus Strategi Pemberdayaan Masyarakat Hutan Sokokembang LSM SwaraOwa Di Kabupaten Pekalongan,” *Journal of Politic and Government Studies* 8, no. 03 (2019), p. 301–10. Ashabul Anhar et al., *Pemberdayaan Masyarakat Sekitar Hutan Berbasis Konservasi Dan Budidaya Kopi Ramah Lingkungan: Buku Untuk Mahasiswa* (Banda Aceh: Syiah Kuala University Press, 2018).

¹⁷ Republik Indonesia, “Peraturan Presiden Republik Indonesia Nomor 12 Tahun 2025 Tentang Rencana Pembangunan Jangka Menengah Nasional Tahun 2025-2029,” 2025.

Human–wildlife conflict (HWC) is a global issue that is becoming more serious, especially in areas adjacent to natural wildlife habitats.¹⁸ The expansion of agriculture and changes in land use reduce the habitat of wildlife, forcing animals to find food in plantation areas, including coffee farms in Bener Meriah.¹⁹ Some studies show that commodities such as coffee grown in the highlands are closely related to human–wildlife interactions.²⁰ However, conflict mitigation approaches are still dominated by technical approaches such as electric fences, wildlife deterrence, and compensation systems that are often unsustainable and pay little attention to the socio-cultural context of local communities.²¹

In the local context of Aceh, especially in Bener Meriah, the farming community has rich local knowledge which has long enabled them to coexist with nature and wildlife.²² Local wisdom, such as the use of wildlife-repellent plants, customary rituals, taboo systems (*hukum adat*), and spatial arrangements based on traditional ecological knowledge, is an important part of wildlife conflict mitigation. Previous studies, such as those by Levang²³ and Padmanaba et al.,²⁴ stress on the importance of integrating scientific approaches with local wisdom practices to create inclusive and participatory conservation.²⁵ Unfortunately, the role of local wisdom is still often marginalized in formal conservation policies.²⁶

Accordingly, the novelty of this study lies in the urgent need to develop an integrative conservation model that not only focuses on ecological dimensions, but also foregrounds local values and community participation. Examining an integrative

¹⁸ Pindi Patana and Wanda Afnes Rahmatika, “Community Perceptions of the Sumatran Tiger (*Panthera Tigris Sumatrae*) in Besitang District, Langkat Regency: Case Study of Bukit Mas Village,” *Global Forest Journal* 2, no. 01 (2024), p. 73–82.

¹⁹ Ahmad Munif, “Ihyā’ Al-Mawāt Dalam Kerangka Hukum Pertanahan Di Indonesia,” *Al-Ahkam* 18, no. 1 (2018), p. 73.

²⁰ Michael P Muehlenbein, “Disease and Human/Animal Interactions,” *Annual Review of Anthropology* 45, no. 1 (2016), p. 395–416.

²¹ Ramadhanita Mustika Sari, “Jaring Pengaman Pencegahan Konflik: Kasus Masyarakat Oku Timur,” Tesis: Universitas Islam Negeri Jakarta, 2011.

²² Ahyar Gayo et al., “Pengulu Uten’s Forest Management in Central Aceh: A Perspective of Fiqh Al-Bi’ah,” *AHKAM : Jurnal Ilmu Syariah* 24, no. 1 (2024), p. 17–36.

²³ Patrice Levang et al., “Oil Palm Plantations and Conflict in Indonesia: Evidence from West Kalimantan,” *The Oil Palm Complex: Smallholders, Agribusiness and the State in Indonesia and Malaysia*, (2016), p. 283–300.

²⁴ Michael Padmanaba et al., “Jurisdictional Approaches to High Conservation Value Area Designation Using Regulatory Instruments: An Indonesian Pilot Project,” *Frontiers in Environmental Science* 11 (2023). Syamsuar Syamsuar, et.al., “Settlement of Islamic Sharia Violations in the Perspective of Teungku Dayah and Local Wisdom Values on the West Coast of Aceh,” *Jurnal Ilmiah Peuradeun* 11, No. 3 (2023).

²⁵ Citranu Citranu, “Penerapan Sanksi Tindak Pidana Adat Dayak (Singer/Denda) Terhadap Pelaku Pembakaran Hutan Dan Lahan Di Wilayah Kalimantan Tengah,” *El-Mashlahah* 10, no. 1 (2020), p. 64–78.

²⁶ Nur Chanifah et al., “Ecological Wisdom of The Bajo Tribe in The Perspective of Fiqh Al-Bi’ah and Green Constitution,” *AL-IHKAM: Jurnal Hukum & Pranata Sosial* 19, no. 2 (2024), p. 470–95.

conservation model of coffee farmers in managing human–wildlife conflict in Bener Meriah is therefore highly relevant, particularly for supporting food security and the sustainable welfare of coffee farmers. This study thus seeks to fill a gap by proposing a local wisdom–based integrative conservation model for managing human–wildlife conflict as a best practice that can serve as a lesson learned and be replicated in other regions of Aceh and across Indonesia. It also seeks to develop a more adaptive, sustainable and community based conservation approach in wildlife conflict management based on coffee farmers’ local knowledge.

This study employs a qualitative approach using ethnographic methods²⁷ to explore in depth the local wisdom practices of coffee farmers in managing human–wildlife conflict in Bener Meriah. Analysis is framed through critical sociology, particularly drawing on the concept of hegemony developed by Antonio Gramsci, alongside a political ecology approach.²⁸ From this perspective, the conflict between coffee farmers and wildlife in Bener Meriah can be understood not merely as a natural confrontation, but as a consequence of unequal power relations in land control. The expansion of coffee plantations, which is often considered a rational strategy to improve the economic well-being of the farmers, can also be considered as part of the hegemony of agrarian development that normalizes the exploitation of ecological space. From a political ecology perspective, state and economic actors tend to dominate the governance of space and smallholder farmers face the greatest risks, including crop damage and threats to their safety. Wildlife conflict thus becomes an example of broader ecological injustice rooted in broader socio-economic structures.²⁹

In the perspective of cultural anthropology, this conflict is the result of a change in human-nature relations driven by the changes in values and ways of life. Referring to the thought of Clifford Geertz, who defines culture as a system of meaning,³⁰ the shift in Gayo society from a way of life that was more in harmony with nature to commodity-oriented production has changed the perception of forests and wildlife. Forests that were previously understood as shared living spaces have increasingly been reduced to economic spaces, while wildlife is often seen as a threat. This transformation also reveals tensions between local knowledge and modern conservation approaches that tend to be technocratic. Therefore, a cultural approach is essential in integrative conservation, since only by understanding local meanings,

²⁷ Lexy J. Moleong, *Metodologi Penelitian Kualitatif*, Edisi Revisi. Bandung: Remaja Rosdakarya, 2019.

²⁸ Geoff Mann, “Should Political Ecology Be Marxist? A Case for Gramsci’s Historical Materialism,” *Geoforum* 40, no. 3 (2009), p. 335–44.

²⁹ Yevhen Leheza et al., “The Human Right to an Environment Safe for Life and Health: Legal Regulation, Contemporary Challenges and Comparative Perspectives,” *Syariah: Jurnal Hukum Dan Pemikiran* 23, no. 2 (2024), p. 138–50.

³⁰ Clifford Geertz, “The Impact of the Concept of Culture on the Concept of Man,” in *Man in Adaptation* (Routledge, 2022), p. 19–32.

values, and practices can conflict resolution be pursued in a more contextual and sustainable manner.

The research site was selected purposively in areas that are ecologically important habitats for the Sumatran elephant (*Elephas maximus sumatranus*) and Sumatran tiger (*Panthera tigris sumatrae*), and that are also socio-culturally home to Gayo coffee farming communities that continue to uphold customary values and local knowledge. The site was chosen based on the high intensity of human–wildlife interaction and the potential of local values to be developed into a community-based conservation model. Informants in this study were selected through purposive sampling, consisting of individuals considered knowledgeable about wildlife conflict situations and community management practices. Key informants include villagers living around conflict-prone areas, coffee farmers, customary leaders, religious leaders, community leaders, local government officials, as well as NGOs and conservation institutions working in environmental and wildlife protection. Informants were selected based on their direct involvement in land management, environmental conservation, and social interactions related to the research issue.

Data collection was carried out by means of participant observation, in-depth interviews, focus group discussions (FGDs), and document analysis. The researchers used participant observation, where they participated in the social life of the community, to observe their farming activities and their interactions with the surrounding environment and community responses to wildlife conflict. In-depth interviews were conducted in an unstructured and open-ended manner to explore relevant information, values and personal experiences of the informants. FGDs were used to understand the collective perspectives and to build shared understanding of the conservation practices and local wisdom. Document analysis involved reviewing archives, policy documents, customary records, photographs and relevant activity reports as supporting data sources.

Progressive data analysis was conducted using the ethnographic analysis model developed by James P. Spradley, consisting of four major stages, namely domain analysis, taxonomic analysis, componential analysis, and thematic analysis. Domain analysis was used to obtain a broad understanding of the social situations and cultural practices under study. Taxonomic analysis then organized and structured more specific information derived from those domains. Componential analysis was applied to identify similarities and differences among the informational elements obtained. Finally, thematic analysis aimed to formulate major cultural themes representing the research findings comprehensively. Through this method, the study is expected to reveal comprehensively the forms of local wisdom practiced by coffee farmers in responding to wildlife conflict, assess their effectiveness and sustainability, and formulate an applicable local wisdom–based integrative conservation model to support food security, environmental preservation, and harmony between humans and nature in Bener Meriah Regency.

Portrait of Human–Wildlife Conflict and Coffee Farmers in Bener Meriah

Bener Meriah Regency, one of the highland regions of Gayo, is widely known as a producer of premium Gayo Arabica coffee that has reached global markets. The aroma and distinctive flavor of Gayo coffee are not only a source of pride for local communities, but also the primary foundation of farmers' household economies. Yet behind the fragrance of this coffee lies a complex story of conflict between human activities and wildlife, particularly the Sumatran elephant, a conflict that has yet to find a just and sustainable resolution.

Human–elephant conflict in Bener Meriah cannot be separated from landscape changes caused by large-scale plantation expansion, especially oil palm, over the past two decades.³¹ The expansion of palm plantations and forest encroachment has significantly reduced elephant roaming spaces.³² These animals, which naturally depend on forest edges and open landscapes, have lost access to their natural food sources. As a result, community coffee farms have become vulnerable targets. Elephants invade plantations, uproot trees and crush young productive coffee plants. For farmers, these losses are not just economic, they threaten the mainstay of their families.

Zulfikar, also known as Aman Dio, an elephant history observer, said wildlife conflict in the Pinto Rime area of Bener Meriah has increased significantly since 2020, from 13 to 17 cases. The increase is largely due to the shrinking of elephant habitat, as forests are converted into oil palm plantations. Ironically, the economic impacts are felt most severely by smallholder farmers. Due to the community fears in the conflict prone areas, the prices of land have drastically dropped, forcing many farmers to sell their land at low prices. Some have subsequently become laborers on plantations, losing the independence of coffee farming that had been passed down through generations.³³

For the Gayo community, the Sumatran elephant is not a foreign animal, but has long been part of cultural and spiritual life. Historical records show that since the sixteenth century, elephants have held an important place in local tradition. The story of Sengeda presenting an elephant to Iskandar Tsani and the emergence of Tari Guel, whose movements are inspired by elephants, show quite a deep symbolic relationship. Elephants are even respectfully referred to as *Abang Kul*, a term that signifies the community's emotional closeness to the animal.³⁴ Yet this once harmonious relationship is now under severe strain due to ecological change.

Wildlife conflict results not only economic losses, but also social and cultural shifts. Gayo's elephant observer, Aman Dio explained that land-use conversion has

³¹Interview with Amiruddin, Reje (Village Head) of Ulo Naroen, Bener Meriah, May 25 2025.

³² Rachmat B Suba et al., "Rapid Expansion of Oil Palm Is Leading to Human–Elephant Conflicts in North Kalimantan Province of Indonesia," *Tropical Conservation Science* 10 (2017).

³³ Khoirul Hidayah, "Analisis Kritis Pengaturan Sistem Resi Gudang Dalam Mendukung Sektor Pertanian Di Indonesia," *De Jure: Jurnal Hukum Dan Syar'iah* 13, no. 2 (2021), p. 156–69.

³⁴ Interview with Adriansyah (Bang Jali), Elephant Handler, Bener Meriah, June 10, 2025

changed not only livelihoods but also induced social instability, such as increasing divorce rates. Frustration caused by the loss of land and income has made families increasingly vulnerable. In addition, the presence of elephants near settlements often disrupts children's education. Many parents prevent their children from going to school when elephants are sighted near villages, interrupting the learning process. In this respect, wildlife conflict is more than an ecological problem, it is a social crisis that erodes the basis of rural communities.³⁵

Ecologically, it is important to remember that elephants are not innately destructive, they are merely being driven by their survival instincts. Elephants spend their days foraging until midnight, and their routes of travel are often consistent, known in Gayo culture as *denai jerjeran gajah* (paths of the elephants). When these routes intersect with coffee plantations, conflict with humans is inevitable. The problem is that humans are no longer adjusting their activities to the wildlife cycle, but instead attempt to scare off the animals with harmful methods, such as firecrackers or electric fences. These measures tend to increase the danger to humans and wildlife alike.

Behind all this lies a profound irony: Gayo Arabica coffee, a globally valued export commodity, is itself threatened by unresolved ecological conflict. If farmers continue losing land and harvests, coffee productivity will decline. At the same time, if elephants continue losing habitat, their population, now estimated at only around 1,000 individuals in Sumatra, will be pushed closer to extinction. In Gayo cosmology, elephants, together with the Sumatran tiger, rhinoceros, and orangutans, are regarded as pillars of forest ecosystem balance. Their disappearance would mean the loss of ecological equilibrium that ultimately threatens human life as well.³⁶

Finding solutions to the conflict between wildlife and coffee farmers in Bener Meriah requires a cross-sectoral approach. Solutions cannot be based only on deterrence measures or building fences. What is needed is sustainable spatial planning, including wildlife corridors in order for Sumatran elephant populations to move without crossing settlements or coffee plantations. The local wisdom of the Gayo people, who once understood the cycles of elephant movement, can also be revitalized as a guide for adaptation. In addition, strengthening alternative livelihoods for farmers is also important so they are not fully dependent on land that is prone to conflict.

This portrait of conflict ultimately shows that clashes between wildlife and coffee farmers are not only a struggle between humans and animals, but also an expression of skewed environmental governance. As forests continue to deteriorate, so will conflict. Saving elephants and sustaining Gayo Arabica coffee are two sides of the same coin. Saving elephants must also mean saving coffee, culture, and the future of the people of Bener Meriah.

³⁵ Interview with Zulfikar, Community Figure and Elephant Observer, Bener Meriah, May 25, 2025

³⁶ Interview with Zulfikar, Community Figure and Elephant Observer, Bener Meriah, May 25, 2025

Farmers in some of the affected villages, such as Blang Rakal, Negeri Antara, and Wihni Duri, have created practices based on local knowledge handed down through generations and adapted to present conditions. These strategies are not only technical, but also a reflection of collective values, ecological experience and agrarian spirituality which are embedded in the community. One of the most conspicuous forms of local wisdom is the construction of barbed-wire fences along the boundaries of plantations and routes of entry for elephants. While such fences are seemingly simple constructions, they are built through mutual cooperation and located based on local knowledge of the paths of elephant migration that are remembered by villagers over many years. As Pak Rahmad, a farmer in Blang Rakal, explained, "That route used to be forest; now it has become oil palm, but the elephants still pass through there." This statement illustrates what Geertz³⁷ described as a "symbolic system of knowledge" embedded in the collective memory of a community.

In addition, community members employ practices such as burning coconut leaves, setting off homemade firecrackers made from tin cans, and creating loud noises to drive elephants away at night. These strategies do not emerge from formal training, but from their empirical interactions with wildlife behavior. In the context of practice theory proposed by Michel de Certeau,³⁸ these actions can be understood as "everyday tactics" through which communities survive structural domination, including the absence of state support and weak institutional responses.

In many cases, residents organize self-initiated night watch posts, guarding from 9:00 p.m. to 3:00 a.m., when elephant attacks are most frequent. The decision to stay on watch during this time is based on socially remembered patterns of attacks. This reinforces the view of Haverkort et al.³⁹ that local knowledge is not merely accumulated experience, but an adaptive system that continues to evolve. Furthermore, field narratives show that farmers do not necessarily view the Sumatran elephant as an enemy. In several interviews, the locals expressed the view that elephants are also "creatures of God" simply seeking food after losing their habitat. This reflects how local wisdom also embodies a distinctive ecological ethic: a spiritual way of relating to nature and living beings. From this perspective, efforts to deter elephants are intended not to kill or injure them, but to defend human living space ethically.⁴⁰

³⁷ Clifford Geertz, "Thinking as a Moral Act: Ethical Dimensions of Anthropological Fieldwork in the New States," *The Antioch Review* 28, no. 2 (1968), p. 139–58.

³⁸ Michel De Certeau, "The Practice of Everyday Life. 1984," *Trans. Steven Rendall. Berkeley: University of California Press, 1984.*

³⁹ Bertus Haverkort and Stephan Rist, "Towards Co-Evolution of Knowledges and Sciences: No Shortcut in Integrating Local and Global Knowledge," in *Paper for the Kompas Panel in the Conference: Bridging Scales and Epistemologies: Linking Local Knowledge with Global Science in Multi-Scale Assessments, 2004.*

⁴⁰ Rahmi Hidayati, "Hukum Islam Dan Kelestarian Lingkungan (Studi Tentang Hukum Adat Sebagai Alternatif Terhadap Kerusakan Lingkungan Di Jambi)," *Al-Risalah: Forum Kajian Hukum Dan Sosial Kemasyarakatan* 15, no. 01 (2018), p. 101–17.

From the perspective of informal institutions, the locals identify customary leaders, *imam meunasah* (village prayer hall leaders), and other informal leaders as key figures in coordinating collective action in response to elephant incursions. This local leadership becomes social capital that strengthens community solidarity, e.g., when fences are made or firecrackers are obtained collectively, not merely waiting for external assistance. This is in accordance with the theory of community resilience from Adger, where adaptive capacity is not only based on economic resources, but also on social networks and collective mechanisms. Thus, the local wisdom of farmers in Bener Meriah should not be seen as an “emergency solution,” but as a form of ecological rationality based on contextual knowledge, intergenerational experience, and adaptation to ecological pressures. These strategies also demonstrate that within spaces of ecological injustice, shaped by oil palm expansion and the declining carrying capacity of natural habitats, local communities are not entirely passive. They possess social, cultural, and spiritual capital that can be developed as the foundation of a more just and community-based conservation model.

Local Wisdom of Farmers in Mitigating Wildlife Disturbances

Conflict between humans and wildlife, especially elephants, has been a serious problem in the inland areas of Aceh including in the Pinto Rime Gayo Subdistrict of Bener Meriah. The presence of elephants that have encroached agricultural land and settlements have caused significant losses, e.g., crop damage and threats to the safety of the locals. Nonetheless, in the face of these challenges, the local communities have developed their own methods of coping, namely through the application of local wisdom handed down from generation to generation. This wisdom not only serves as a practical strategy to keep wildlife away, but also reflects the community’s worldview, which emphasizes harmony with humans, nature and other living beings.

Since the early 2010s, the Pinto Rime communities have been increasingly disturbed by elephants, particularly between 2011 and 2014. Unlike other places where destructive methods such as firecrackers or poison are often practiced, the local farmers have taken a cultural approach. Adriansyah (Bang Jali), a traditional elephant handler, said that the community uses traditional musical instruments such as *guntong* and *canang* to produce sounds to scare elephants without hurting them. They also use simple objects such as broken hoe handles to produce sounds that deter wildlife. The practice is a reflection of one of the core Gayo values, that is, to avoid violence against wildlife, as violence is believed to only increase aggression and conflict.⁴¹

The community also performs customary rituals to establish spiritual communication with wildlife. They believe that elephants have “guardians” who must be respected. Hence, before performing certain actions, special rituals are carried out led by customary or religious leaders. The rituals include the recitation

⁴¹ Interview with Adriansyah, Elephant Handler, Bener Meriah, June 10, 2025

of *shalawat* (blessings upon the Prophet Muhammad) and Al-Fatihah, burning of *kemenyan* (benzoin incense), and prayers delivered through customary symbols. The community does not want to chase elephants away with these practices, but rather to build a peaceful, reciprocal relationship which reiterates the hope that humans and wildlife can live together in the same space.⁴²

In their daily lives, the community is also aware of symbolic boundary markers to uphold agreements with wildlife. For example, when leaving a certain area of land or shifting from an area, wooden stakes are placed as territorial markers, along with a symbolic mandate asking elephants not to pass through the area. Beyond this, the community practices *khanduri*, a communal ritual prayer involving offerings of harvest products such as glutinous rice or paddy, and the sacrifice of a white chicken as a symbol of devotion. The locals believe that the ritual can protect them from any misfortune and at the same time, reaffirm a commitment to keep balance between humans, nature and wildlife. The ritual is usually repeated every year as a sign of consistency with the vows and prayers that have been made.

The spirit of sacrifice is also mirrored in the actions of some locals who voluntarily relinquish part of their land, up to a hectare, to give space for the Sumatran elephant to still move. This is a gesture of respect for the elephant as an important component of the ecosystem. Despite the huge consequences, such as losing land which is a source of livelihood, this choice is an embodiment of an ecological ethic that is seldom seen in modern technical approaches. Living with elephants is not a discourse but a reality for the people of Blang Rakal that takes patience and wisdom to deal with.

Still, this local wisdom is often not supported by formal government policies. Conflict management tends to be more focused on technical projects such as fencing or the use of firecrackers, which can in fact exacerbate tensions. Communities see such approaches as not getting to the heart of the problem, since they do not correspond to local perspectives that emphasize harmony. As a result, the gap between government strategies and local wisdom has become wider. Yet, the experience of the Gayo community shows that traditional methods can be effective when managed collectively, consciously, and based on cultural values.

Local wisdom in addressing wildlife disturbances also reflects a strong concept of spiritual ecology. The community views the Sumatran elephant not merely as a threat, but as one of God's creatures with an ecological role. For this reason, communication with elephants is carried out not only physically, but also through prayer and customary symbols.⁴³ This awareness places the community in a unique position in managing human-wildlife conflict, because they do not operate

⁴² Interview with Fauzan Azima, Community Figure and Former GAM Combatant, Bener Meriah, May 25, 2025.

⁴³ Liza Diniarizky Putri et al., "Developing Ecological Piety in Pesantren: The Kyai's Cognition and the Practice of Living Fiqh Al-Bi'ah in Banten," *Ijtihad : Jurnal Wacana Hukum Islam Dan Kemanusiaan* 23, no. 2 (2024), p. 235–59.

within a logic of human domination over nature, but instead seek to build an equal relationship with it.

Teuku Aga mentioned that the resolution of human-wildlife conflict should not only be based on modern technical approaches, but also combined with local wisdom that has been proven adaptive over time. By appreciating cultural principles, government and conservation institutions can find more humane, sustainable solutions that are in line with the worldview of local communities. At its core, farmers' local wisdom in dealing with elephants is an effort to maintain harmony: how to survive without sacrificing wildlife's right to live within its habitat.⁴⁴

Integrative Model of Wildlife Conflict and Coffee Farmers in Bener Meriah: A Sociological and Anthropological Perspective

The human-Sumatran elephant conflict in Pinto Rime, Bener Meriah is an example of the complexity of interconnected ecological, social and economic issues. Interviews with the locals reveal that the presence of elephants is not recent but has been quite a big concern for a long time. The conflict has further escalated since 2021, along with the expansion of large-scale oil palm plantations. Moreover, land use changes have led to the degradation of elephant habitats and fragmentation of migration corridors, which has forced elephants into residential areas in search of food.⁴⁵

The local communities have come up with a number of adaptive strategies to deal with such a situation. Their attempt includes the use of firecrackers as both a deterrent and a warning signal. Village money funds firecrackers, which have an annual budget of around five million rupiah for two boxes, then distributed to households. When elephants enter settlements, firecrackers are used to scare away the elephants and as a signal for other residents to gather and collectively chase them away. The collective mechanism is characterized by strong social solidarity, in which community members participate in the activity without financial reward, to protect collective safety.

Traditional efforts, however, have their limitations. First, use of firecrackers is not necessarily effective as Sumatran elephants may gradually become accustomed to the sound of explosions. Secondly, the cost of firecrackers is relatively expensive and the availability is often not enough to meet the needs of the community. Third, there are risks to human safety, both from technical accidents and from potentially aggressive elephant reactions. In addition, experience has shown that older methods, such as involving traditional handlers or conducting *khanduri* rituals, are no longer always effective, as elephants are believed to be less responsive to human rituals than in the past.

⁴⁴ Interview with Teuku Aga, Community Figure and Guel Dance Artist, Bener Meriah, May 25, 2025

⁴⁵ Field observations in Bener Meriah, July 17-18, 2025.

On the other hand, formal institutions such as the Conservation Response Unit (CRU) also play a significant role. The CRU has sought to carry out elephant herding, GPS-based tracking, and community training related to elephant behavior and emergency response. Communities have even participated in training to produce carbide-based deterrent devices as alternatives to firecrackers. Yet, CRU efforts still face serious obstacles, some of which are the existence of elephant trenches and oil palm plantation areas that block elephant movement corridors, making herding efforts less effective. Furthermore, when elephants are in mating periods, their aggressive behavior increases and becomes difficult to control, even with tame elephants brought in as “companions”.

Given these conditions, an integrative conservation model needs to be designed to bring together ecological, social, cultural, and public policy approaches. First, from an ecological perspective, the government has planned to allocate a special 20,000-hectare area along the border of Bener Meriah Regency, Central Aceh Regency, and Bireuen Regency. This land is expected to serve as an alternative habitat for wild elephant groups, managed through a system similar to that in Saree, including the installation of electric fencing to prevent elephants from returning to settlements. However, the success of this program depends greatly on consistent land protection so that the area is not converted into oil palm plantations or other productive agricultural land.

Second, from a social perspective, community involvement is essential. The solidarity of mutual cooperation already developed in driving away Sumatran elephant needs to be strengthened through formal organization, for example by establishing Village Conservation Partner Groups trained and directly connected with the CRU and local government. These groups could serve as frontline actors in monitoring elephant movements, managing early warning systems, and becoming active partners in programs for alternative food provision or habitat restoration.

Third, from a cultural perspective, although magical approaches such as relying on traditional handlers may no longer be fully effective, the values of local wisdom remain important. For example, the community principle of not harming elephants can provide an ethical basis for conservation. Cultural approaches can increase social acceptance of conservation policies by viewing elephants not only as threats, but also as part of an ecosystem that should be respected.

Fourth, from a policy point of view, village funds currently used for firecrackers could be gradually redirected to more sustainable conservation programs such as wildlife-friendly fencing, emergency food provision or conflict mitigation training. Local government could also provide clearer compensation for damaged homes or plantations, reducing the economic burden on communities. By integrating these four dimensions, the resulting conservation model would move beyond emergency responses based on firecrackers toward a sustainable, participatory, and adaptive system. This integrative conservation model places communities as key actors, supported by the CRU, local government, and consistent spatial planning policies. Only through such an approach can human–elephant conflict in Bener

Meriah be managed without sacrificing either wildlife survival or community welfare.⁴⁶

Human-wildlife conflict related to agricultural activities is a major issue in many areas, including Bener Meriah. The problem is caused by the reduction of wildlife roaming areas due to land expansion, forest conversion and uncontrolled encroachment. Deputy Regent Armia said that elephants themselves do not disturb humans, but humans have disturbed their natural habitat first. As their living space becomes narrower, elephants are forced to look for food in plantations and settlements, causing conflict with the community. In this case, government plays a strategic role as a key player in wildlife-agriculture conflict management.⁴⁷ The role includes regulation, conservation, social mediation and alternative solutions to balance the ecological interests and the economic welfare of the community.

The local government is facing a strategic issue concerning the release of 90,000 hectares of land previously under Land Management Rights (*Hak Pengelolaan Lahan/HPL*) associated with President Prabowo Subianto. This land is now being transferred for management to Wahana Lingkungan Hidup Indonesia (Walhi) with the expectation that its management will prioritize conservation. This step demonstrates that land governance policy can serve as an important entry point for preventing wildlife-agriculture conflict. The government helps to ensure that these lands are not overused and are managed ecologically to preserve wildlife habitat.

In Bener Meriah, there are two major elephant routes, namely Beureughang and Gunung Salak, which are ecologically important as natural migration corridors for the survival of the Sumatran elephant. However, economic activities such as deforestation and land conversion have disrupted the connectivity of these corridors. The government is obliged to protect and rehabilitate these routes through conservation policies, area patrols, and cross-sector collaboration with environmental institutions and local communities. Such efforts are important to ensure that elephants retain access to their habitat without entering community agricultural lands.

Elephant conflicts are two-fold; they affect not only the wildlife but also cause great losses to farmers. When elephants forage for food, they often raid food crops, coffee plantations and other commodities. These economic losses may force communities to adopt defensive strategies that endanger elephant lives. Hence, to help farmers affected by wildlife conflicts, the government should bring in compensation schemes or agricultural insurance. This will ease the financial stress on communities and reduce the tendency to resort to violence against elephants.

In addition to regulatory measures, the government must also be actively involved in educating communities on the value of conservation and conflict resolution. The awareness that this conflict is a result of habitat degradation needs to

⁴⁶ Focus Group Discussion, Bener Meriah, July 19, 2025.

⁴⁷ Interview with Armia, Deputy Regent of Bener Meriah, Bener Meriah, July 17, 2025.

be reinforced so that communities do not just blame wildlife. The government can involve farmer groups, customary institutions and community leaders in awareness raising and empowerment programs. In this way, communities are positioned not only as those affected by the conflict, but also as part of the solution.

The management of wildlife–agriculture conflict shall not rely on one institution alone. The government needs also to establish collaboration with environmental organizations, research institutions, the private sector, and local communities. This multi-stakeholder approach indicates the importance of developing sustainable strategies from habitat rehabilitation to buffer zone development to wildlife friendly agricultural innovations. The synergy between economic development and ecological conservation is the key to sustaining the long-term balance.⁴⁸

The fact that a Sumatran elephant needs hundreds of kilograms of food daily points out that this conflict cannot be solved with instant solutions.⁴⁹ The government shall make a long-term commitment to balancing ecological sustainability with community economic needs. Current conflict responses still tend to be reactive and technocratic, e.g., wildlife deterrence or field patrols, without addressing root causes, e.g., land conversion and disrupted wildlife corridors. Hence, an integrative model shall aim for long-term efforts such as habitat restoration, strengthening local institutions and empowering coffee farmers through sustainable economic schemes, e.g., wildlife-friendly coffee. In this context, the government plays a facilitator role that bridges conservation interests and community economic needs, thereby ensuring that policies are participatory and context-sensitive.⁵⁰

From the perspective of cultural anthropology, an integrative approach must include value systems, local knowledge, and the community's perception of nature. Based on the ideas of Geertz, culture is a system of meanings that underlie social actions within society. For the Gayo community, changes in the economic orientation have transformed the meaning of forests from a space for common living to a space for production, making wildlife a threat.⁵¹ Hence, the government needs to incorporate local knowledge in conservation strategies such as traditional practices in interpreting natural signs or community-based mitigation patterns. This cultural approach is important so that policies are not merely top-down, but can be accepted and implemented in a sustainable manner by the community.

⁴⁸ Focus Group Discussion, Bener Meriah, July 19, 2025.

⁴⁹ Graeme Caughley, "The Elephant Problem—an Alternative Hypothesis," *African Journal of Ecology* 14, no. 4 (1976), p. 265–83.

⁵⁰ Zainul Mun'im et al., "'Ulamā', Authority, and Political Relations: How the PCNU Jember Fatwā Influenced Public Policy on Gold Mining in Silo?," *Journal of Islamic Law* 6, no. 1 (2025), p. 46–66.

⁵¹ Ajidar Matsyah, et al., "Cultural Continuity and Legal Adaptation: The Evolution of Suluh in Aceh's Conflict Resolution System," *Juris: Jurnal Ilmiah Syari'ah* 24, No. 1 (2024). Syarifuddin, Syarifuddin., "Integration of Religion and Culture in Hadrah Nurun Nabi in Aceh: Perspective of Symbolism and al-'Urf," *Ulumuna* 29, No. 2 (2025). p. 1135-1164.

The above analysis can be further improved by synthesizing sociological and anthropological theories. In terms of critical sociology, in particular the ideas of Antonio Gramsci,⁵² wildlife conflict is the state's failure to build a just hegemony in which economic development is more dominant than ecological protection and the interests of local communities. From the perspective of cultural anthropology, this conflict is a transformation of meaning and the relationship between humans and nature, as explained by Geertz.⁵³ Therefore, the integrative model can be interpreted not only as a technical solution, but also a social and cultural reconstruction effort, namely reconstructing a harmonious relationship between humans, the state, and the environment. The combination of these two approaches embodies the idea that the resolution of wildlife conflict in Bener Meriah should be conducted holistically, by considering power structures and cultural meanings at the societal level.⁵⁴ Short-term programs can be in the form of the protection of agricultural land subject to conflict while long-term programs include habitat restoration, the establishment of green corridors, and spatial planning that considers the presence of wildlife.

Conclusion

The conflict between wildlife, especially Sumatran elephant, and coffee farmers in Bener Meriah is a reflection of interconnected ecological, social, cultural and economic problems. The root cause of the issue lies in the change in land use due to the expansion of large-scale plantations, especially oil palm, and forest encroachment, which causes the loss of habitat and disruption of elephant migration routes. As such, elephants are forced to enter coffee plantations owned by the community, thereby damaging the crops and causing considerable losses that affect the livelihoods of farmers. To the Gayo people, elephants are not wild animals but part of their history, culture and spirituality. However, ecological changes have transformed this once harmonious relationship into a source of conflict. The tangible impacts of this conflict involve economic losses, declining land values, decreasing independence of farmers and social problems, e.g., divorce and disruption to children's education. Yet, the community is not passive since they have developed adaptive strategies based on local wisdom, which range from collective efforts, e.g., *gotong royong* to build fences and conduct night patrols, to traditional sounds and customary rituals. These strategies illustrate how the community can survive while coexisting with nature. However, local solutions often do not align with formal government policies, which are usually technical (e.g., firecrackers or electric fences). The efforts made to mitigate habitat fragmentation by formal institutions,

⁵² Endah Siswati, "Anatomi Teori Hegemoni Antonio Gramsci," *Translitera Jurnal Kajian Komunikasi dan Studi Media* 5, No. 1 (2018), p. 11-33.

⁵³ Ahmad Sugeng Riady, "Agama dan Kebudayaan Masyarakat Perspektif Clifford Geertz," *Jurnal Sosiologi Agama Indonesia* 2, No. 1 (2021), p. 13-22.

⁵⁴ Choirur Rois, Nur Jannani, and Moh. Hoirul Mufid, "Islamic Law Paradigm Responding Conflicts of Interest of Economic Development and Ecological Conservation Hifdz Al-Bi'ah Perspective," *Al-Istinbath: Jurnal Hukum Islam* 9, no. 1 (2024), p. 193.

e.g., the Conservation Response Unit (CRU), are also hindered due to habitat fragmentation. Hence, an integrative model that combines ecological, social, cultural, and public policy aspects is highly necessary to resolve this conflict. The government plays an important role in providing wildlife corridors, providing compensation to farmers, and incorporating local wisdom into conservation policies. This analysis can be further augmented by synthesizing sociological and anthropological theories. Critical sociology, especially the ideas of Gramsci, view wildlife conflict as a failure of the state to build a just hegemony in which economic development takes precedence over ecological protection and the interests of local communities. In addition, from the cultural anthropology perspective, this conflict signifies a transformation of meaning and the relationship between humans and nature as Geertz explained. To this end, conservation of elephants and the sustainability of Gayo coffee are not conflicting goals, but rather complementary. Protecting elephants equals to maintaining ecosystem balance, cultural identity, and economic sustainability of the people of Bener Meriah.

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Interview with Fauzan Azima, Community Figure and Former GAM Combatant, Bener Meriah, May 25, 2025.

Interview with Teuku Aga, Community Figure and Guel Dance Artist, Bener Meriah, May 25, 2025.

Interview with Zulfikar, Community Figure and Elephant Observer, Bener Meriah, May 25, 2025