



## **Retro-Prosppective Analysis of Indigenous Ecological Narratives: Ecosemiotic-Cultural Perspectives on Sustainable Development**

**Agik Nur Efendi<sup>(1)</sup>, Anas Ahmadi<sup>(2)</sup>, Titik Indarti<sup>(3)</sup>, Erika Kurniawati<sup>(4)</sup>,  
Himatus Sya'adah<sup>(5)</sup>, Salimulloh T Sanubarianto<sup>(6)</sup>, Ilmatius Sa'diyah<sup>(7)</sup>,  
Zahro Rokhmawati<sup>(8)</sup>**

<sup>1</sup>Institut Agama Islam Negeri Madura, Indonesia

<sup>2,3,4</sup> Universitas Negeri Surabaya, Indonesia <sup>5</sup>Sekolah Indonesia Kuala Lumpur, Malaysia

<sup>6</sup>Badan Riset dan Inovasi Nasional, Indonesia <sup>7,8</sup>Universitas Pembangunan Nasional  
"Veteran" Jawa Timur, Indonesia

<sup>1</sup>agiknur@iainmadura.ac.id

### **Abstract**

This study explores the role of indigenous ecological narratives in shaping sustainable environmental practices through an ecosemiotic-cultural perspective. By employing a retro-prosppective analysis, the research examines traditional ecological knowledge embedded in Indonesian literary texts, revealing how past wisdom informs contemporary and future environmental consciousness. The primary data for this research comprises three contemporary Indonesian novels that encapsulate indigenous ecological wisdom and human-nature relationships: *Mata dan Manusia Laut* (2019) by Okky Madasari, *Tanjung Kemarau* (2020) by Royyan Julian, *Sanggarguri* (2021) by Lalu Agus Fathurrahman. The findings demonstrate that indigenous narratives function as semiotic systems that encode ecological values, communal responsibility, and harmonious relationships with nature. Through cultural symbols, myths, and folklore, these narratives offer sustainable models of environmental stewardship rooted in collective memory and local traditions. The study also highlights the potential of integrating these narratives into modern sustainability policies and education, ensuring their relevance in addressing contemporary ecological challenges. By bridging historical ecological wisdom with future sustainability efforts, this research contributes to the broader discourse on ecosemiotics and sustainable development. The implications of this study underscore the significance of interdisciplinary approaches in preserving cultural heritage while fostering environmental resilience.

**Keywords:** Ecosemiotics, Indigenous Narratives, Cultural Semiotics, Sustainable Development, Environmental Ethics, Retro-Prosppective Analysis, Traditional Ecological Knowledge.

### **Abstrak**

Penelitian ini mengeksplorasi peran narasi ekologi adat dalam membentuk praktik lingkungan berkelanjutan melalui perspektif ekosemiotika-budaya. Dengan menggunakan analisis retro-prospektif, penelitian ini meneliti pengetahuan ekologi tradisional yang tertanam dalam teks-teks sastra Indonesia, mengungkap bagaimana kearifan masa lalu menginformasikan kesadaran lingkungan kontemporer dan masa depan. Data primer untuk penelitian ini terdiri dari tiga novel kontemporer Indonesia yang merangkum kearifan ekologi masyarakat adat dan hubungan antara manusia dan alam: *Mata dan Manusia Laut* (2019) oleh Okky Madasari, *Tanjung Kemarau* (2020) oleh Royyan Julian, dan *Sanggarguri* (2021) oleh Lalu Agus Fathurrahman. Temuan-temuan menunjukkan bahwa narasi adat berfungsi sebagai sistem semiotik yang mengkodekan nilai-nilai ekologi, tanggung jawab komunal, dan hubungan yang harmonis dengan alam. Melalui simbol-simbol budaya, mitos, dan cerita rakyat, narasi-narasi ini menawarkan model-model pengelolaan lingkungan berkelanjutan yang berakar pada memori kolektif dan tradisi lokal. Penelitian ini juga menyoroti potensi

---

*mengintegrasikan narasi-narasi ini ke dalam kebijakan dan pendidikan keberlanjutan modern, memastikan relevansinya dalam mengatasi tantangan ekologi kontemporer. Dengan menjembatani kearifan ekologi historis dengan upaya-upaya keberlanjutan di masa depan, penelitian ini berkontribusi pada wacana yang lebih luas tentang ekosemiotika dan pembangunan berkelanjutan. Implikasi dari penelitian ini menggarisbawahi pentingnya pendekatan interdisipliner dalam melestarikan warisan budaya sambil mendorong ketahanan lingkungan.*

**Kata Kunci:** Ekosemiotika, Narasi Adat, Semiotika Budaya, Pembangunan Berkelanjutan, Etika Lingkungan, Analisis Retro-Prospektif, Pengetahuan Ekologi Tradisional

---

Received : 07-04-2025

; Revised: 30-04-2025

; Accepted: 05-05-2025

© **ENTITA:** Jurnal Pendidikan Ilmu

<http://doi.org/10.19105/ejpis.v1i.19094>

Pengetahuan Sosial dan Ilmu-Ilmu Sosial

Institut Agama Islam Negeri Madura, Indonesia



## Introduction

Environmental sustainability has become a critical global issue, with increasing concerns over ecological degradation caused by human activities (Rockström et al., 2009; Gaffney & Steffen, 2017). The increasing strain on natural ecosystems has raised urgent questions about the long-term viability of current environmental practices and policies. Addressing these challenges requires a comprehensive understanding of how human societies have historically interacted with their environments and the knowledge embedded in traditional ecological narratives.

The rapid expansion of industrialization and urbanization has led to deforestation, climate change, and biodiversity loss, prompting scholars and policymakers to seek alternative frameworks for environmental management (Kraft, 2021; IPCC, 2021; Roberts, 2010). These pressing issues have compelled scholars and policymakers to explore alternative frameworks for environmental management. One promising approach lies in examining indigenous ecological narratives through an ecosemiotic-cultural perspective, which offers insights into sustainable practices rooted in local traditions and cultural worldviews (Noth, 1998; Maran & Kull, 2014; Efendi, Ahmadi, Indarti, 2025).

Amidst these challenges, traditional ecological knowledge (TEK) embedded in indigenous narratives offers valuable insights into sustainable environmental practices (Berkes, 2017; Maffi, 2005; Martin, Roy, Diemont, & Ferguson, 2010; Dudgeon & Berkes, 2003). TEK encompasses accumulated wisdom, beliefs, and practices developed over generations, offering adaptive strategies for resource management and biodiversity conservation. As modern environmental policies often overlook these indigenous perspectives, integrating TEK into contemporary sustainability frameworks could enhance ecological resilience and foster a more holistic approach to environmental governance.

Indigenous communities have long maintained a harmonious relationship with nature, reflected in their oral traditions, myths, and folklore, which function as semiotic systems encoding ecological wisdom (Kohn, 2013). These cultural narratives function as semiotic systems that encode ecological wisdom, transmitting knowledge on environmental stewardship, seasonal cycles, and species conservation. Through symbolic representation and ritualistic expressions, indigenous storytelling not only preserves ecological knowledge but also reinforces sustainable practices within the community. Understanding these semiotic structures can provide valuable insights into alternative ecological discourses and their relevance to global sustainability efforts.

Indonesia, as a culturally and ecologically diverse archipelago, presents a rich repository of indigenous ecological narratives that articulate deep-rooted environmental ethics (Barnes & Dove, 2015). These narratives, transmitted through oral traditions, myths, and folklore, reflect a long-standing relationship between local communities and their surrounding ecosystems (Efendi, Albaburrahim, Hamdani, & Wafi, 2024). Across various regions, indigenous groups have developed distinct environmental philosophies, emphasizing principles of balance, reciprocity, and sustainability in resource management (Folke et al., 2016; Lansing, 2012). For instance, the *Subak* irrigation system in Bali and the *Sasi* marine conservation practice in Maluku illustrate how indigenous knowledge systems integrate ecological sustainability with cultural identity and spiritual beliefs (Duile, Grossmann, Haug, & Sprenger, 2023).

These indigenous ecological narratives not only preserve traditional wisdom but also offer alternative frameworks for contemporary environmental governance. By embedding ecological principles within semiotic systems, such as sacred taboos, proverbs, and ritual practices, these narratives function as dynamic instruments of environmental stewardship (Berkes, 2018; Maffi, 2005). In the context of global sustainability discourse, incorporating indigenous ecological perspectives could enhance biodiversity conservation and climate adaptation strategies, particularly in regions facing rapid ecological degradation. Recognizing and integrating these culturally embedded sustainability practices into modern policy frameworks can contribute to a more inclusive and resilient approach to environmental management (Inaotombi, 2016).

Various literary traditions, spanning oral folklore, epic poetry, and contemporary ecological fiction, depict nature not merely as a passive backdrop but as an active agent shaping cultural identity and sustainability. These narratives reflect long-standing ecological

consciousness, where natural elements—forests, rivers, and mountains—are imbued with symbolic meanings and function as mediators in human-environment relationships (Tsing, 2015; Plumwood, 2009). In indigenous oral traditions, for instance, mythological figures often embody ecological principles, reinforcing values of environmental stewardship and sustainable coexistence (Maran, 2020). Likewise, modern ecological fiction employs narrative strategies that foreground environmental agency, highlighting the urgent need for ethical engagement with nature in the Anthropocene era (Clark, 2015).

Indonesian literature has long served as a medium for documenting environmental issues, traditional ecological knowledge, and indigenous wisdom, reflecting the deep-rooted ecological consciousness within local communities. From classical folklore to contemporary ecological fiction, these narratives encapsulate the intricate relationship between humans and nature, portraying forests, rivers, and mountains as integral to cultural identity and environmental sustainability (Yunus RH & Efendi, 2024; Jannah & Efendi, 2024).

Contemporary Indonesian ecological fiction continues this legacy by engaging with pressing environmental crises, such as deforestation, water scarcity, and climate change. Works like *Mata dan Manusia Laut* (2019) by Okky Madasari, *Sanggarguri* by Lalu Agus Fathurrahman (2013) and *Tanjung Kemarau* (2017) by Royyan Julian foreground ecological degradation as a central theme, critiquing the exploitative practices that threaten Indonesia's biodiversity and indigenous communities. These narratives not only expose environmental destruction but also advocate for sustainable practices by amplifying the voices of marginalized communities who maintain ancestral ecological knowledge. Such literary portrayals align with the broader ecosemiotic discourse, wherein the natural world is not depicted as a passive landscape but as an active force shaping cultural and ecological resilience (Maran & Kull, 2014). By incorporating indigenous ecological wisdom and contemporary environmental critique, Indonesian literature contributes to the global discourse on ecological sustainability. It reinforces the importance of narrative as a transformative tool for fostering environmental awareness and ethical responsibility in the Anthropocene era. This literary tradition highlights the interconnectedness between humans and their ecological surroundings, urging a re-evaluation of modern development paradigms through the lens of cultural heritage and environmental ethics.

These narratives emphasize the interconnectedness of humans and their environment, fostering a communal sense of responsibility toward ecological conservation (Whitt, et al., 2001; Corntassel & Woons, 2017). By encoding environmental ethics within

symbolic and communicative frameworks, they serve as cultural instruments for transmitting ecological wisdom across generations (Zapf, 2008; Kohn, 2013). However, despite their critical role in shaping sustainability discourse, such narratives remain underexplored, particularly from an ecosemiotic-cultural perspective. This perspective, which investigates the semiotic dimensions of human-environment interactions, provides a crucial framework for analyzing how environmental meanings are constructed, negotiated, and perpetuated in literary. Recognizing these narratives as integral to sustainability discussions can enrich global environmental policies by integrating culturally embedded ecological knowledge into contemporary conservation efforts. Despite their significance, such narratives remain underexplored in sustainability discourse, particularly from an ecosemiotic-cultural perspective, which examines the symbolic and communicative dimensions of human-environment interactions (Maran, 2020).

This study employs a retro-prospective analysis to investigate how past ecological narratives inform contemporary and future environmental consciousness. The retro-prospective analytical framework is a methodological approach that integrates retrospective analysis of past events with prospective insights to anticipate future developments. This framework has been widely applied in various disciplines, including environmental studies, policy analysis, and historical ecology, to examine long-term trends and project future scenarios based on historical patterns (Starik & Collins, 2014; Godet, 2006; Bradfield et al., 2005).

By tracing the semiotic and cultural dimensions embedded in traditional ecological wisdom, this research highlights how indigenous narratives function as reservoirs of environmental ethics, shaping societal attitudes toward sustainability over time. The study situates these narratives within the broader discourse of ecosemiotics, emphasizing their role in fostering long-term ecological resilience by integrating past environmental practices with present sustainability challenges. In the context of Indonesia, where local communities have long maintained symbiotic relationships with their surrounding ecosystems, the investigation of ecological storytelling reveals the persistence of deeply rooted environmental values despite the encroachment of industrialization and globalization. Understanding the dynamic transmission of ecological knowledge through narrative structures provides a crucial lens for rethinking modern conservation strategies, offering a culturally embedded approach to sustainable development.

By analyzing Indonesian literary texts through the lens of ecosemiotics and cultural semiotics, this research aims to uncover the ways in which indigenous ecological wisdom contributes to sustainable development. Unlike previous studies that focus primarily on environmental policies or modern conservation strategies (Escobar, 2018; Love, 2006), this research highlights the role of traditional narratives in shaping long-term sustainability efforts.

The findings of this study provide a new perspective on the intersection of cultural heritage and environmental resilience, offering a theoretical foundation for integrating indigenous ecological knowledge into contemporary sustainability frameworks. By bridging the historical, cultural, and ecological dimensions of indigenous narratives, this research contributes to the broader discourse on ecosemiotics and sustainability studies. The implications extend beyond literary analysis, informing environmental education, policy-making, and community-based conservation efforts. In doing so, this study underscores the necessity of an interdisciplinary approach in addressing contemporary ecological challenges while preserving cultural traditions that embody sustainable environmental practices.

## Method

This study employs a qualitative research design with a retro-prospective analytical approach, which integrates historical and contemporary perspectives to examine the evolution of indigenous ecological narratives in Indonesian literature. By situating past environmental worldviews within contemporary sustainability discourses, this method enables an in-depth exploration of how ecological consciousness is embedded in literary representations and their implications for environmental ethics and cultural resilience.

The primary data for this research comprises three contemporary Indonesian novels that encapsulate indigenous ecological wisdom and human-nature relationships: *Mata dan Manusia Laut* (2019) by Okky Madasari, *Tanjung Kemarau* (2020) by Royyan Julian, *Sanggarguri* (2021) by Lalu Agus Fathurrahman. These texts were selected based on their thematic engagement with ecological narratives, indigenous knowledge systems, and cultural resistance to environmental degradation. Each novel presents diverse ecological settings—ranging from forests and islands to coastal and rural landscapes—while embedding indigenous cosmologies and ethical frameworks in their storytelling.

Data collection was conducted through close textual analysis and thematic coding to identify key ecosemiotic markers, narrative structures, and representations of ecological

consciousness within the selected texts. The study employs an ecosemiotic-cultural analysis, integrating semiotic theory (Maran & Kull, 2014) and cultural ecocriticism (Heise, 2016; Garrard, 2012) to interpret how environmental meaning is constructed through literary narratives.

## **Result and Discussion**

Indonesian literature is rich with ecological narratives that reflect the deep-rooted environmental wisdom of local communities. Across various literary traditions, nature is not merely a setting but an active entity intertwined with cultural identity, cosmology, and survival strategies. Traditional oral folklore, contemporary novels, and indigenous storytelling practices often emphasize sustainable coexistence with the environment, highlighting the intricate relationships between humans and their ecological surroundings. These narratives document local ecological knowledge (LEK), where landscapes, flora, and fauna are embedded with symbolic meanings and ethical imperatives. Through literary representation, Indonesian authors articulate the environmental ethics of indigenous communities, providing insights into sustainable practices that have persisted for generations despite the pressures of modernization and environmental degradation.

### **Lunar-Based Fishing Regulations and Indigenous Maritime Sustainability in Sama-Bajo Society**

A prominent example of such ecological storytelling is found in Okky Madasari's *Mata dan Manusia Laut* (2019), which explores the maritime worldview of the Sama-Bajo people. As a nomadic seafaring community, the Sama-Bajo possess a profound understanding of oceanic ecosystems, navigating the seas with indigenous knowledge that has been passed down orally for centuries. Madasari's narrative presents the ocean as a living entity, integral to the community's spiritual and material existence. The novel underscores the environmental challenges faced by the Sama-Bajo, including marine pollution, habitat destruction, and the erosion of traditional ecological practices due to external economic and political forces. By weaving indigenous epistemologies into contemporary fiction, *Mata dan Manusia Laut* exemplifies how Indonesian literature serves as a medium for ecological advocacy, fostering awareness of sustainability and cultural resilience in the face of global environmental crises.

That's because the Sama people have a way of always keeping the fish available. They know when the fish can be caught. They see the moon as a marker of the time when fish can be caught. Don't fish when the moon is bright. That's one of the first lessons that has been shared for generations. Even a child of Bambulo's age knows about that rule. To the Sama people, it is a direct prohibition from the ruler of the universe that must not be broken. But actually, it's the key to why fish remain plentiful in these waters. Because, every time the moon is bright, the fish will lay eggs. The eggs will become the next fish, after the big fish are caught by humans. And so on (Madasari, 2019: 33).

In the excerpt from the novel *Mata dan Manusia Laut*, the Sama people - a tribe of sea nomads - demonstrate the practice of ecological sustainability through fishing rules that follow natural cycles. The prohibition of fishing during the bright moon is not only a spiritual belief, but also an ecological strategy that ensures the regeneration of fish populations. This approach reflects the concept of ecological communalism that indigenous peoples manage natural resources based on the principles of collectivity and sustainability. According to Berkes (2017: 159), indigenous peoples tend to apply Traditional Ecological Knowledge (TEK), which is hereditary knowledge based on the reciprocal relationship between humans and nature. In this case, lunar calendar-based fishing rules are a concrete example of TEK that supports the conservation of marine ecosystems.

In an ecosemiotic perspective, Sama communities use the moon as a sign of nature to determine when to catch fish. This shows that they understand nature as a communication system that has codes and meanings. Indigenous peoples interpret natural signs and use them in ecological decision-making. In the case of the Sama people, the bright moon serves as a natural semiotic code that signals that the fish are spawning, so they avoid fishing at that time.

In addition to using natural signs as guidelines in fishing, the Sama-Bajo community also upholds the principle of sustainability by not using explosives or poisons. For them, the use of hazardous materials in fishing not only damages the marine ecosystem, but also violates the prohibition of the Lord of the Seas. They believe that the ocean is home to their twin brothers and sisters-the umbilical cord that is thrown into the sea at birth-so damaging the ocean is tantamount to damaging part of their own lives.

From a retrospective perspective, the Sama-Bajo's lunar-based fishing practices reflect an inherited environmental ethic that has been refined over generations. Their understanding of marine ecosystems functions as an adaptive strategy, developed long before scientific frameworks formally articulated the importance of reproductive cycles in



fisheries management (Berkes, 2017). This indigenous ecological knowledge has ensured the sustainability of marine resources, demonstrating a sophisticated, experience-based environmental stewardship.

From a prospective perspective, the Sama-Bajo's practice offers a model for contemporary sustainable development policies. As global fisheries face overexploitation due to industrial-scale fishing, the Sama-Bajo's approach provides a case study of how local ecological knowledge can contribute to modern conservation strategies (Berkes et al., 2000). The recognition of such traditional systems could lead to the integration of indigenous ecological wisdom into mainstream environmental governance, emphasizing collaborative resource management that respects both ecological limits and cultural traditions (Gadgil et al., 1993).

By employing the retro-prospective analytical framework, Madasari's narrative serves as an example of how literature documents and transmits indigenous sustainability principles across time. This approach not only preserves ecological narratives but also enables future applications in policy-making and environmental education, reinforcing the need for cross-disciplinary ecological literacy (Maran, 2020). The Sama-Bajo's lunar fishing wisdom, as depicted in *Mata dan Manusia Laut*, thus exemplifies how indigenous environmental knowledge can bridge historical wisdom with contemporary sustainability challenges.

### **Ritualistic Water Conservation in the Sasak Community: Sacred Practices and Environmental Ethics**

The concept of natural balance in the perspective of local wisdom of the Sasak people considers that nature is not just a collection of separate elements, but a unity that is interconnected and supports each other. Water, soil, fire and wind form the cycle of the cosmos which is the basis for the sustainability of life. For Sasak people who still uphold traditional values, respect for the cosmos can be done in various ways, both by carrying out ancestral rituals and traditions and through scientific approaches. The relationship can be seen in the following quotation.

'Nature has a soul that is interconnected with each other. The elements of water, earth, fire and wind all exist in every realm. They all have their own spirit flow that feeds each other. This is what is called the cycle of the cosmos. This cycle of the cosmos is exactly what our friends here honour and should be honoured by all human beings. There are many ways to honour the cycles of the cosmos, one of them is

through the traditions that we follow here, there are ways that are called scientific and who knows what else, what is certain is that everything is right with its intention and perspective.' (Fathurrahman, 2013: 104).

Based on the text, it can be explored that the concept of connection between humans and nature through the cosmos cycle involves the elements of water, soil, fire and wind. In the perspective of cultural ecosemiotics, this concept reflects that the Sasak people in Lombok understand nature as an entity that has a soul and a sign system that must be respected. In the quote, respect for the cosmos cycle through tradition reflects the sign system in Sasak society that connects humans with nature. The concept of the cosmos cycle mentioned in the text is in line with the ecosemiotic theory developed by Maran & Kull (2014) that the relationship between humans and nature is not simply the exploitation of resources, but rather a communication and spiritual connection that is manifested in various forms of cultural expression.

In line with the narrative displayed by Fathurrahman in the quote, the relationship between humans and nature can be interpreted through ecosemiotic signs, such as the symbolism of natural elements that have their own spirit flow and support each other. As explained by Lotman (2009), culture has a semiotic space or sign space that connects humans with nature through myths, rituals and beliefs. The statement in the text that there are different ways of honouring the cycles of the cosmos, both traditionally and scientifically, reflects a multidisciplinary approach to understanding the environment. This is in line with cultural ecology studies which emphasise that traditional knowledge of indigenous peoples can sit alongside modern science in maintaining environmental balance (Ingold, 2000: 4). The Sasak philosophy of life places themselves as part of nature, not as its master. Harmony with nature is not only an ideal, but also realised in concrete actions. They understand that maintaining the balance of nature is not just an individual responsibility, but a collective task that must be carried out together.

The excerpt presents a holistic ecological worldview in which nature is perceived as an interconnected system where elemental forces—water, earth, fire, and wind—exist in harmony. This notion aligns with indigenous cosmologies that emphasize the sacred interconnectedness of natural elements, a perspective that has guided environmental stewardship across generations. From a retrospective viewpoint, the concept of the "cycle of the cosmos" resonates with long-standing ecological knowledge found in indigenous traditions worldwide. Many traditional societies view nature as a living entity governed by

intricate relationships between biotic and abiotic components (Berkes, 2017). This belief system fosters a deep sense of environmental responsibility, as seen in the rituals and customs aimed at maintaining ecological balance. The idea that honoring natural cycles ensures sustainability is well documented in various indigenous ecological frameworks, including animism, sacred ecology, and biocentric philosophies (Descola, 2013; Kohn, 2013). By recognizing these ancient ecological perspectives, we can understand how past societies successfully maintained environmental equilibrium without the technological interventions of modern conservation science (Posey, 1999).

From a prospective standpoint, the passage suggests that multiple epistemologies—traditional and scientific—can coexist in efforts to protect the environment. The acknowledgment that "everything is right with its intention and perspective" aligns with contemporary discussions on transdisciplinary sustainability science, which advocates for integrating indigenous ecological knowledge (IEK) with scientific frameworks to develop holistic conservation strategies. For instance, in climate adaptation and biodiversity conservation, researchers are increasingly recognizing the value of traditional ecological management, such as rotational farming, seasonal resource harvesting, and sacred land preservation (Berkes et al., 2000; Folke et al., 2016).

Through a retro-prospective analytical approach, the passage illustrates how ancient ecological wisdom—deeply embedded in cultural traditions—remains relevant in addressing contemporary environmental crises. By examining the past to inform the future, this approach highlights the necessity of bridging indigenous knowledge with modern sustainability discourse to foster ecological resilience in the Anthropocene era (Maran, 2020).

### **Sacred Stewardship of Mangrove Forests in Madura: Cultural Resistance and Ecological Advocacy**

*Tanjung Kemarau* shows that local communities in Madura construct the meaning of mangrove forests through the belief in the figure of Nyai Rasera. She is described as a sacred woman who has the ability to read natural signs. Her existence not only reflects the relationship between humans and mangrove ecosystems, but also shows that magical elements in local culture are part of the community's resilience in protecting the environment. In the cultural ecosemiotic approach, this magical element can be understood as a sign that

connects humans, nature and local belief systems in a network of meanings. This is as in the following quote.

The problem was that the area was a kind of fiefdom of Nyai Rasera, a woman who was considered sacred and could read signs. It may not belong to Nyai Rasera, but she has lived there for a long time. I don't know when. People think she inherited the mangrove forest from her parents for generations, to protect, to defend. Her lineage is also very mysterious. No one can guess how old she is. No one even knew her real name. People call her Nyai Rasera, because she is related to the mangrove trees (Julian, 2017: 33).

The passage presents Nyai Rasera as a symbolic guardian of the mangrove forest, embodying both the cultural memory of ecological stewardship and the ongoing struggle for environmental preservation. Within the retro-prospective analytical framework, her character functions as a bridge between the past and the future, demonstrating how traditional ecological knowledge (TEK) shapes sustainable practices while also being a site of contestation in the face of modernization and environmental exploitation.

The resilience of local communities in preserving mangrove forests can be seen in the way they respect and recognise Nyai Rasera as the guardian of the ecosystem. The belief that mangrove forests are a hereditary legacy that must be preserved demonstrates the concept of traditional ecological knowledge (TEK), which is a knowledge system that is passed down from generation to generation and becomes a survival strategy in the face of ecological change (Berkes, 2017). In this context, magical elements become social instruments that function to secure environmental sustainability.

From a retrospective perspective, Nyai Rasera represents the deep-rooted indigenous ecological traditions where certain individuals or communities are entrusted with protecting natural landscapes. Her enigmatic presence and perceived sacred connection to the mangroves align with indigenous animistic worldviews, where nature is not seen as an exploitable resource but as a spiritual entity intertwined with human existence (Descola, 2013; Berkes, 2017). The notion that she has lived there "for generations" without a clear historical origin mirrors real-world examples of sacred ecological guardianship, such as the *adat* leaders in Indonesia who enforce conservation norms based on customary laws (*hukum adat*). This oral tradition of environmental guardianship ensures long-term sustainability by fostering collective responsibility over ecosystems, particularly in coastal and mangrove-rich regions where indigenous communities depend on marine and terrestrial biodiversity (Dove, 2006).

From a prospective viewpoint, Nyai Rasera's contested authority over the mangrove forest reflects modern tensions between traditional environmental ethics and capitalist-driven ecological degradation. In many indigenous societies, land tenure and ecological governance are shaped by customary inheritance rather than formal legal ownership, leading to conflicts when external actors—corporations, governments, or developers—seek to commodify these landscapes. The text's emphasis on her mystical presence and uncertain lineage highlights how indigenous knowledge systems are often marginalized or dismissed in the face of modernization. However, sacred ecology as practiced by figures like Nyai Rasera remains critical for redefining conservation strategies, particularly in an era of climate change and habitat destruction.

Through the retro-prospective analytical approach, Nyai Rasera embodies a living archive of ecological wisdom, one that links past traditions of environmental stewardship to present and future sustainability discourses. As global conservation efforts increasingly integrate local ecological knowledge with scientific frameworks, narratives such as hers illustrate the importance of recognizing indigenous agency in environmental governance (Berkes et al., 2000; Maran, 2020). The mystique surrounding her identity symbolizes not only the continuity of ecological heritage but also the precarity of traditional knowledge in the face of ecological and socio-political transformation. Her story ultimately challenges us to reconsider how traditional ecological narratives can inform contemporary sustainability frameworks, ensuring that past environmental wisdom is not erased but actively incorporated into future conservation policies.

## **Conclusion**

This study highlights how Indonesian contemporary ecological narratives embody indigenous environmental wisdom through a retro-prospective analytical framework, bridging traditional ecological knowledge with contemporary sustainability discourses. The analysis of *Mata dan Manusia Laut* (Okky Madasari), *Sanggarguri* (Lalu Agus Fathurrahman), and *Tanjung Kemarau* (Royyan Julian) reveals that local ecological traditions are not merely passive remnants of the past but active, evolving discourses that negotiate environmental sustainability in the Anthropocene era. These narratives portray indigenous ecological practices—such as the Sama-Bajo's lunar-based fishing regulations, the Sasak community's ritualistic water conservation, and the sacred stewardship of Madura's mangrove forests—as central to environmental resilience. This study confirms that

indigenous ecological narratives function as a form of cultural resistance, reinforcing the role of ecosemiotics in mediating human-nature relationships.

Positioned within the growing field of ecosemiotics and indigenous environmental humanities, this research expands on prior studies that have examined the role of oral traditions, folklore, and local cosmologies in shaping ecological ethics (Pall, 2022; Maran, 2007). While previous scholarship has largely focused on Western ecocritical paradigms or macro-level sustainability policies, this study underscores the epistemological agency of indigenous narratives in shaping alternative sustainability frameworks. The findings contribute to interdisciplinary sustainability studies, particularly in socio-ecological resilience, environmental ethics, and cultural heritage preservation. By foregrounding indigenous ecological wisdom, this study offers valuable insights for policy-making, conservation strategies, and environmental education, particularly in the context of marine conservation, agroecology, and forest preservation. The recognition of local narratives as ecological archives can also support community-based resource management and climate adaptation strategies.

## Suggestion

For future research, further interdisciplinary engagement is recommended, particularly in integrating eco-anthropology, semiotic landscapes, and digital humanities approaches to analyze ecological storytelling in a transnational context. Expanding the scope to include oral storytelling, ethnographic studies, and digital ecological narratives would provide a broader understanding of how indigenous ecological knowledge is communicated, contested, and adapted across different mediums. Additionally, comparative studies between Indonesian indigenous ecological narratives and other Southeast Asian or global indigenous literary traditions could further enrich discussions on ecosemiotic cultural sustainability in literature.

## Reference

- Barnes, J., & Dove, M. R. (Eds.). (2015). *Climate Cultures: Anthropological Perspectives on Climate Change*. Yale University Press.
- Berkes, F. (2017). *Sacred Ecology*. Routledge.
- Bradfield, R., Wright, G., Burt, G., Cairns, G., & Van Der Heijden, K. (2005). The Origins and Evolution of Scenario Techniques in Long Range Business Planning. *Futures*, 37(8), 795-812.
- Clark, T. (2015). *Ecocriticism on the Edge*. Bloomsbury Academic.

- Corttassel, J., & Woons, M. (2017). Indigenous perspectives. E-International Relations Publishing.
- Descola, P. (2013). *Beyond Nature and Culture*. University of Chicago Press.
- Dove, M. R. (2006). Indigenous People and Environmental Politics. *Annual Review of Anthropology*, 35(1), 191-208.
- Dudgeon, R. C., & Berkes, F. (2003). Local understandings of the land: Traditional ecological knowledge and indigenous knowledge. In *Nature across cultures: Views of nature and the environment in non-Western cultures* (pp. 75-96). Dordrecht: Springer Netherlands.
- Duile, T., Grossmann, K., Haug, M., & Sprenger, G. (Eds.). (2023). *Plural ecologies in Southeast Asia: Hierarchies, conflicts, and coexistence*. Taylor & Francis.
- Efendi, A. N., Ahmadi, A., & Indarti, T. (2025). Ecossemiotics-Cultural in Indonesian Literature: Narratives of Ecological Preservation in Local Communities. *The International Journal of Literary Humanities*, 23(4), 37.
- Efendi, A. N., Albaburrahim, A., Hamdani, F., & Wafi, A. (2024). Mitos dan Pelestarian Alam: Eksplorasi Ekologi dalam Cerita Rakyat Sumber Taman Sari di Madura, Indonesia. *GHANCARAN: Jurnal Pendidikan Bahasa dan Sastra Indonesia*, 34-46.
- Escobar, A. (2018). *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*. Duke University Press.
- Fathurrahman, L. A. (2014). *Sanggarguri*. Yogyakarta: Merdeka Media.
- Folke, C., Biggs, R., Norström, A. V., Reyers, B., & Rockström, J. (2016). Social-ecological resilience and biosphere-based sustainability science. *Ecology and Society*, 21(3).
- Gaffney, O., & Steffen, W. (2017). The Anthropocene Equation. *The Anthropocene Review*, 4(1), 53-61.
- Garrard, G. (2012). *Ecocriticism*. Routledge.
- Godet, M. (2006). *Creating Futures: Scenario Planning as a Strategic Management Tool*. Economica.
- Heise, U. K. (2016). *Imagining Extinction: The Cultural Meanings of Endangered Species*. University of Chicago Press.
- Inaotombi, S. (2016). Building socio-ecological resilience to climate change for fisheries through local skill and indigenous knowledge. *COMING SOON*, 125.
- Ingold, T. (2000). Evolving Skills. *Alas, Poor Darwin: Arguments Against Evolutionary Psychology*, 273-297.
- Intergovernmental Panel on Climate Change (IPCC). (2007). Climate Change 2007: the Physical Science Basis. *Agenda*, 6(07), 333.
- Jannah, A., & Efendi, A. N. (2024). Kajian Ekologi Sastra (Ekokritik) dalam Antologi Puisi Negeri di atas Kertas Karya Komunitas Sastra Nusantara: Perspektif Lawrence Buell. *GHANCARAN: Jurnal Pendidikan Bahasa dan Sastra Indonesia*, 77-90.
- Julian, R. (2017). *Tanjung Kemarau*. Jakarta: Grasindo.
- Kohn, E. (2013). *How Forests Think: Toward an Anthropology Beyond the Human*. University of California Press.
- Kraft, M. E. (2021). *Environmental Policy and Politics*. Routledge.
- Lansing, J. S. (2012). Perfect order: Recognizing Complexity in Bali. In *Perfect Order*. Princeton University Press.
- Lotman, J. (2009). *Culture and Explosion*. New York: Mouton de Gruyter.
- Love, N. S. (2006). Politics of nature: How to bring the sciences into democracy. *Perspectives on Politics*, 4(3), 570-571.
- Madasari, O. (2019). *Mata dan Manusia Laut*. Jakarta: Gramedia Pustaka Utama.

- Maffi, L. (2005). Linguistic, Cultural, and Biological Diversity. *Annual Review of Anthropology*, 34(1), 599-617.
- Maran, T. (2007). Towards an Integrated Methodology of Ecosemiotics: The Concept of Nature-text. *Σημειωτική-Sign Systems Studies*, 35(1-2), 269-294.
- Maran, T. (2020). *Ecosemiotics: The Study of Signs in Changing Ecologies*. Cambridge University Press.
- Maran, T., & Kull, K. (2014). Ecosemiotics: main principles and current developments. *Geografiska Annaler: Series B, Human Geography*, 96(1), 41-50.
- Martin, J. F., Roy, E. D., Diemont, S. A., & Ferguson, B. G. (2010). Traditional Ecological Knowledge (TEK): Ideas, inspiration, and designs for ecological engineering. *Ecological Engineering*, 36(7), 839-849.
- Nöth, W. (1998). Ecosemiotics. *Σημειωτική-Sign Systems Studies*, 26(1), 332-343.
- Päll, L. (2022). An Ecosemiotic Dimension of Folklore: Reframing the Concept of Place-Lore. *Σημειωτική-Sign Systems Studies*, 50(2-3), 185-216.
- Posey, D. A. (1999). Cultural and Spiritual Values of Biodiversity. *Intermediate Technology Publications & UNEP*.
- Roberts, J. (2010). *Environmental policy*. Routledge.
- Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin III, F. S., Lambin, E., Lenton, T.M., Scheffer, M., Folke, C., Schellnhuber, H.J. and Nykvist, B., & Foley, J. (2009). Planetary boundaries: exploring the safe operating space for humanity. *Ecology and society*, 14(2).
- Starik, M., & Collins, D. (2014). Our Professions, Organizations, and Societies Are Addressing Sustainability Management: A "Retro-Pro prospective" Collaborative Editorial on Why We Need "More-Better, Soon". *Organization & Environment*, 27(3), 207-214.
- Tsing, A. L. (2015). *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton University Press.
- Whitt, L. A., Roberts, M., Norman, W., & Grieves, V. (2001). Indigenous Perspectives. *A companion to Environmental Philosophy*, 3-20.
- Yunus RH, M., & Efendi, A. N. (2024). Analisis Ekokritik pada Novel "Coretan-Coretan Sunyi" Karya Ngangga Saputra. *GHANCARAN: Jurnal Pendidikan Bahasa dan Sastra Indonesia*, 335-348.
- Zapf, H. (2008). Literary Ecology and the Ethics of Texts. *New Literary History*, 39(4), 847-868.