

BEYOND CONSERVATION: MULTISPECIES ANTHROPOLOGY AND MORE-THAN-HUMAN RELATIONS IN SABAH

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ABSTRACT

Multispecies anthropology has become an important approach for understanding how humans and other living beings coexist and shape shared social and ecological worlds. By moving beyond anthropocentric perspectives, the field emphasises relationality, agency, and the interconnectedness of human and nonhuman life. Sabah, Malaysian Borneo, provides a particularly valuable setting for examining these relationships because of its exceptional biological richness, cultural diversity, and rapidly changing socio-ecological landscapes. This literature review synthesises scholarship published between 2010 and 2024 to examine how multispecies anthropology has been applied in Sabah and to assess the region's contribution to wider anthropological debates. Five interconnected themes are explored: the theoretical foundations of multispecies anthropology; conservation and environmental governance; wildlife tourism and more-than-human encounters; relational livelihoods and biocultural practices; and multispecies political ecology in the context of environmental change. Particular attention is given to Indigenous ecological knowledge, especially the Tagal system, which illustrates how customary law, reciprocity, and environmental stewardship can foster more-than-human forms of governance. The review finds that existing research has been largely framed by biodiversity conservation and human–wildlife conflict, while everyday multispecies coexistence, Indigenous ontologies, urban environments, and relationships involving less visible species remain comparatively overlooked. By bringing together these diverse strands of scholarship, this review argues that Sabah should be understood not only as a biodiversity hotspot but also as an important site for advancing multispecies anthropology. It highlights how Sabah's socio-ecological landscapes contribute to broader discussions of relational governance, biocultural diversity, environmental justice, and more-than-human coexistence, while identifying key directions for future research in Southeast Asia and beyond.

Keywords: *Multispecies anthropology; Sabah; Tagal system; Indigenous ecological knowledge; more-than-human relations; human–animal relationships; community-based governance; environmental stewardship.*

1.0 Introduction

Over the past two decades, multispecies anthropology has become an influential area of anthropological inquiry, encouraging scholars to reconsider long-standing assumptions about the relationship between humans and the living world. Rather than treating animals, plants, microbes, forests, and other nonhuman entities as passive elements of the environment, this perspective examines how diverse forms of life actively participate in shaping social worlds. Drawing on developments in environmental anthropology, political ecology, science and technology studies, and Indigenous scholarship, multispecies anthropology shifts attention towards questions of relationality, agency, coexistence, and more-than-human worlds.

This perspective has gained particular relevance in regions experiencing rapid environmental and social transformation. Processes such as conservation, agricultural expansion, tourism development, and resource extraction continually reshape interactions between people and other living beings, creating new forms of cooperation, conflict, and adaptation. As a result, environmental change is increasingly understood as something that emerges through the intertwined lives of humans and nonhumans rather than through human actions alone. Multispecies anthropology therefore offers an important framework for examining how these relationships are produced, negotiated, and transformed across diverse ecological and political settings.

Sabah, located in Malaysian Borneo, provides a particularly valuable context for exploring these dynamics. The state is internationally recognised for its exceptional biodiversity and rich cultural diversity, encompassing extensive tropical forests, protected areas, Indigenous territories, agricultural landscapes, and expanding tourism destinations. These overlapping ecological and social environments create numerous opportunities to examine how humans and other species coexist and respond to ongoing environmental change. Interactions involving orangutans, Bornean elephants, macaques, marine organisms, forest ecosystems, and Indigenous communities illustrate the complexity of more-than-human relationships, while conservation initiatives, tourism, plantation development, and changing livelihoods continue to reshape these interactions. In this sense, Sabah offers more than an empirical setting for conservation research; it provides an opportunity to explore broader anthropological questions about coexistence, governance, and shared ecological futures.

Although research relating to Sabah has expanded considerably, much of the literature remains dispersed across different disciplines. Studies have examined topics such as wildlife conservation, protected-area management, ecotourism, Indigenous livelihoods, environmental governance, and human–wildlife conflict, but these discussions are often conducted independently of one another. Consequently, it is difficult to evaluate how this growing body of research collectively contributes to multispecies anthropology. Much of the existing scholarship continues to frame human–nonhuman relationships primarily through conservation

or environmental management, giving comparatively less attention to the conceptual developments that have shaped multispecies anthropology in recent years.

This review addresses that gap by examining how multispecies anthropology has been used to understand human–nonhuman relationships in Sabah and by assessing the extent to which existing scholarship moves beyond conservation-centred perspectives. Rather than providing a descriptive catalogue of previous studies, the review critically evaluates how researchers conceptualise multispecies relationships, the methodological approaches they adopt, and the theoretical insights that emerge from their work. In doing so, it positions Sabah not simply as a biodiversity hotspot, but as a significant site for advancing debates on relationality, agency, ethics, and more-than-human coexistence.

The review synthesises scholarship published between 2010 and 2024 and is organised around five interconnected themes: the theoretical foundations of multispecies anthropology; conservation and environmental governance; wildlife tourism and more-than-human encounters; relational livelihoods and biocultural practices; and multispecies political ecology in the context of environmental change. By bringing these diverse strands of literature together, the review develops an integrated understanding of Sabah's contribution to multispecies anthropology while identifying important conceptual, methodological, and empirical directions for future research. Rather than treating Sabah solely as a conservation landscape, it argues that the state's complex socio-ecological systems offer valuable insights into the ways humans and other living beings continually negotiate shared worlds.

2.0 Theoretical Foundations of Multispecies Anthropology

Multispecies anthropology emerged as an important development within contemporary anthropology in response to growing recognition that human societies cannot be understood independently of the many forms of life with which they coexist. Influenced by environmental anthropology, science and technology studies (STS), political ecology, posthumanism, and Indigenous scholarship, the field challenges conventional anthropocentric perspectives by examining how humans, animals, plants, fungi, microbes, and landscapes collectively shape social worlds (Kirksey & Helmreich, 2010; Haraway, 2008; Ogden, Hall, & Tanita, 2013). Instead of viewing nonhuman beings as passive components of the environment or symbolic representations within human culture, multispecies anthropology explores how interactions among diverse species give rise to ecological, cultural, political, and economic relationships. In doing so, it broadens anthropological inquiry by recognising that social life is produced through the continuous entanglement of human and nonhuman worlds.

2.1 Relationality and Entanglement

Relationality lies at the core of multispecies anthropology. Rather than assuming that humans exist as autonomous actors interacting with an external environment, the field emphasises that

all forms of life emerge through ongoing relationships of dependence, collaboration, and mutual influence. Kirksey and Helmreich (2010) describe multispecies ethnography as an approach that follows the lives of organisms whose histories become intertwined with those of humans. Likewise, Haraway (2008) argues that species are continually constituted through their relationships with others rather than existing as fixed or isolated entities. Tsing's (2015) work similarly illustrates how ecological systems, livelihoods, and economies develop through collaborations among humans and nonhumans, particularly in landscapes shaped by environmental disturbance and capitalist expansion.

Together, these perspectives challenge the long-standing separation between nature and culture by demonstrating that ecological and social processes are fundamentally interconnected. As Ogden et al. (2013) suggest, multispecies ethnography shifts anthropological attention away from bounded human societies towards dynamic assemblages in which people, animals, plants, and material environments continuously influence one another. Relationality therefore serves not simply as a descriptive concept but as a central analytical framework for understanding how shared worlds are created and sustained.

2.2 More-than-Human Agency

A second defining feature of multispecies anthropology is its reconceptualisation of agency. Traditional social science has generally located agency within human intention and decision-making, while nonhuman organisms have often been regarded as passive objects of human action. Multispecies scholars challenge this distinction by arguing that many forms of life actively shape ecological and social processes through their own capacities, behaviours, and interactions (Haraway, 2008; van Dooren, Kirksey, & Münster, 2016). Agency, from this perspective, is distributed across relationships rather than residing exclusively with humans.

This approach has important implications for understanding environmental change. Fuentes (2010), for example, demonstrates how interactions among macaques, humans, pathogens, and altered landscapes generate new ecological relationships that cannot be explained solely through human behaviour. Kohn (2013) extends this argument further by proposing that forests themselves participate in processes of meaning-making through the interactions of diverse organisms. Such perspectives do not attribute human qualities to nonhuman beings; instead, they recognise that different species contribute to shared social and ecological worlds through their own distinctive ways of acting and responding.

2.3 Ethics, Care, and Coexistence

Expanding anthropology beyond the human also reshapes ethical inquiry. Questions of responsibility, care, vulnerability, and justice are no longer confined to human societies but extend across species boundaries (Haraway, 2008; van Dooren et al., 2016). This shift is especially relevant in landscapes where conservation, agriculture, tourism, and development generate competing demands on shared environments. Rather than focusing exclusively on

how humans manage nature, multispecies anthropology asks how diverse forms of life negotiate coexistence under changing ecological and political conditions.

These debates encourage researchers to think beyond resource management and biodiversity protection by considering the ethical relationships that emerge through everyday interactions between humans and other living beings. Such an approach is particularly valuable in biodiversity-rich regions like Sabah, where conservation policies influence not only local livelihoods but also the futures of elephants, orangutans, river ecosystems, marine organisms, and countless other species.

2.4 Implications for Sabah

The theoretical perspectives discussed above provide a useful framework for understanding multispecies relationships in Sabah. Instead of viewing the state solely as a biodiversity hotspot or a site for conservation interventions, multispecies anthropology draws attention to the interconnected relationships among forests, rivers, wildlife, Indigenous communities, government agencies, tourism operators, plantation economies, and customary institutions. These diverse actors do not exist independently of one another; they continually shape and respond to changing ecological, political, and social conditions.

Seen from this perspective, Sabah represents more than a regional case study. Its rich ecological diversity, Indigenous knowledge systems, conservation initiatives, expanding tourism sector, and rapidly changing landscapes offer valuable opportunities to examine how more-than-human relationships are negotiated in practice. As the following sections demonstrate, research conducted in Sabah contributes not only to our understanding of biodiversity conservation but also to broader debates on relationality, agency, ethics, environmental governance, and the possibilities of coexistence in an increasingly interconnected world.

3.0 Multispecies Conservation and Environmental Governance in Sabah

Conservation has long been one of the primary contexts through which relationships between humans and other species have been examined in Sabah. The state's exceptional biodiversity, extensive protected-area network, and rapid land-use change have attracted sustained scholarly attention, particularly to interactions among wildlife, Indigenous communities, conservation organisations, tourism operators, plantation industries, and government agencies. Much of this research has traditionally been situated within conservation biology, environmental governance, and political ecology. More recently, however, multispecies anthropology has offered a broader perspective by showing that conservation is not simply a human-driven process but one that emerges through the ongoing interactions of multiple forms of life (Brosius, 1999; Dressler et al., 2010; van Dooren et al., 2016).

Protected areas, for example, are more than administrative spaces established to preserve biodiversity. They are dynamic socio-ecological landscapes where ecological processes,

governance arrangements, local livelihoods, and the behaviour of wildlife continually shape one another. The movements of orangutans, Bornean elephants, hornbills, macaques, marine turtles, and many other species influence conservation planning, while management interventions simultaneously affect how both people and wildlife inhabit these landscapes. Understanding conservation in Sabah therefore requires attention to these reciprocal relationships rather than viewing biodiversity protection as a purely technical exercise.

3.1 Human–Wildlife Relations Beyond Conflict

Research on human–wildlife interactions in Sabah has focused largely on orangutans and Bornean elephants, often framing these relationships in terms of habitat fragmentation, biodiversity conservation, and human–wildlife conflict (Ancrenaz et al., 2007; Alfred et al., 2010; Evans et al., 2018). While these issues remain important, multispecies anthropology suggests that such encounters are more complex than conflict alone. They reflect ongoing negotiations over shared landscapes that are continually reshaped by agricultural expansion, conservation policies, tourism, and the behaviour of wildlife itself.

Elephants moving through oil palm plantations, orangutans adapting to fragmented forests, and macaques occupying peri-urban environments illustrate that animals are not passive victims of environmental change. Their movements influence conservation priorities, land-use planning, tourism practices, and public perceptions of environmental responsibility. At the same time, human communities adjust farming practices, management strategies, and everyday routines in response to wildlife presence. These reciprocal adaptations highlight the relational character of coexistence and challenge approaches that portray conservation as a process directed solely by human decision-making.

3.2 Conservation Governance as a Multispecies Process

Environmental governance in Sabah involves a wide range of actors, including government agencies, Indigenous communities, conservation organisations, researchers, private industries, and local residents. Political ecology has long demonstrated that conservation is shaped by competing interests, unequal power relations, and diverse knowledge systems (Brosius, 1999; Dressler et al., 2010). Multispecies anthropology extends this analysis by recognising that governance is also influenced by the ecological dynamics of the species and environments it seeks to manage.

Conservation planning, for instance, often responds to elephant migration routes, orangutan nesting behaviour, watershed processes, and patterns of forest regeneration. Ecological systems therefore play an active role in shaping management decisions rather than serving merely as the objects of policy. Indigenous ecological knowledge further enriches this process by offering relational understandings of forests, rivers, wildlife, and ancestral territories that emphasise reciprocity and shared responsibility. Seen in this way, governance becomes an ongoing

negotiation among human institutions, ecological processes, and the many forms of life that inhabit Sabah's landscapes.

3.3 Indigenous Stewardship and the Tagal System

One of Sabah's most distinctive contributions to multispecies scholarship lies in Indigenous systems of environmental stewardship, particularly the Tagal system. Practised mainly by Kadazan-Dusun and Murut communities, Tagal regulates river use through customary agreements that temporarily prohibit fishing in designated areas, allowing fish populations and aquatic ecosystems to recover. Although it is frequently discussed within the literature on fisheries management and community-based conservation, the system also provides a compelling example of more-than-human governance.

The strength of Tagal lies in its recognition that rivers, fish populations, aquatic habitats, and human communities are mutually dependent. Ecological sustainability is achieved not only through regulation but also through customary law, collective responsibility, and reciprocal relationships with the river environment (Majid Cooke, 2003; Bessho, 2015; Foo et al., 2016). Rather than treating rivers as resources to be exploited, Tagal reflects an understanding of environmental stewardship grounded in restraint, care, and long-term coexistence. Although previous studies have highlighted its effectiveness as a community-based conservation strategy, comparatively little attention has been given to its broader theoretical significance for multispecies anthropology. Examining Tagal through this lens reveals how Indigenous institutions can contribute to wider discussions of relational ethics, environmental governance, and more-than-human coexistence.

3.4 Synthesis

The conservation literature demonstrates that biodiversity protection in Sabah is shaped by far more than scientific management or government policy. Conservation emerges through the continual interaction of wildlife, Indigenous communities, local livelihoods, ecological processes, conservation organisations, and state institutions. These relationships illustrate that humans and other species actively influence one another within changing socio-ecological landscapes.

At the same time, the existing literature remains heavily centred on conservation outcomes, biodiversity management, and conflict mitigation. Everyday forms of coexistence, Indigenous ontologies, relational ethics, and the diverse ways nonhuman beings participate in social life beyond protected areas have received much less attention. Expanding research into these areas would not only deepen understanding of Sabah's complex socio-ecological systems but also strengthen its contribution to broader debates in multispecies anthropology.

4.0 More-than-Human Tourism, Encounter, and Wildlife Commodification

Tourism provides one of the most visible arenas in which humans and other species interact in Sabah. Internationally recognised destinations such as the Kinabatangan floodplain, Sepilok Orangutan Rehabilitation Centre, Turtle Islands Park, and the Lower Kinabatangan Wildlife Sanctuary attract thousands of visitors each year seeking encounters with orangutans, Bornean elephants, proboscis monkeys, marine turtles, hornbills, and other iconic wildlife. Much of the existing tourism literature has focused on visitor experiences, economic benefits, and conservation outcomes. Multispecies anthropology, however, shifts attention towards the encounters themselves, examining how humans, animals, infrastructures, and landscapes collectively shape these experiences (Haraway, 2008; Kirksey & Helmreich, 2010; van Dooren et al., 2016). Wildlife is therefore understood not simply as an attraction but as an active participant whose behaviour influences tourism practices, conservation strategies, and local livelihoods.

4.1 Wildlife Tourism as Relational Encounter

Research on wildlife tourism in Sabah consistently shows that encounters with animals can influence visitors' attitudes towards biodiversity conservation and environmental stewardship (Higginbottom, 2004; Ballantyne, Packer, & Hughes, 2009). While these studies often emphasise educational or economic outcomes, multispecies anthropology highlights the relational nature of these encounters. Experiences are not produced solely by tourism operators or visitor expectations but also depend on the actions of the animals themselves.

Orangutans, for example, determine much of the visitor experience through their movements, feeding behaviour, nesting patterns, and varying degrees of habituation to humans. Similarly, sightings of Bornean elephants along the Kinabatangan River are shaped by seasonal ecological conditions and the behaviour of elephant herds rather than by tourism planning alone. Wildlife encounters therefore emerge through the interaction of multiple actors, both human and nonhuman, making tourism a shared social and ecological process rather than a one-sided act of observation.

4.2 Representation, Charisma, and Conservation

Multispecies scholarship has also drawn attention to the unequal visibility of different species within conservation and tourism. Lorimer (2007) argues that charismatic animals often become symbolic representatives of biodiversity, attracting disproportionate scientific, political, and financial attention. Sabah reflects this pattern clearly. Orangutans, pygmy elephants, and marine turtles dominate conservation campaigns and tourism marketing, while less conspicuous organisms such as insects, reptiles, fungi, freshwater species, and microorganisms rarely occupy comparable positions in public discourse.

These selective representations shape both conservation priorities and public understandings of biodiversity. Iconic wildlife often serves as a powerful emotional connection between visitors and conservation initiatives, encouraging public support for environmental protection. At the same time, this emphasis can obscure the ecological relationships that sustain these

flagship species, reinforcing a simplified view of biodiversity centred on a relatively small number of charismatic animals. A multispecies perspective instead encourages recognition of the broader ecological communities upon which these celebrated species ultimately depend.

4.3 Ethics of Encounter and More-than-Human Care

Encounters between tourists and wildlife inevitably raise questions about ethics, responsibility, and care. Visitor behaviour, photography, feeding practices, rehabilitation programmes, and wildlife viewing protocols all have consequences for animal welfare and ecological integrity. Multispecies anthropology broadens these discussions by asking not only how tourism benefits conservation but also how relationships between humans and other species are shaped through everyday practices of interaction.

Haraway (2008) describes ethical relationships as processes of "becoming with," emphasising mutual responsibility rather than human dominance. Likewise, van Dooren et al. (2016) advocate an ethics of attentiveness that acknowledges the vulnerabilities and capacities of multiple forms of life. These perspectives encourage a more critical understanding of wildlife tourism, one that extends beyond economic indicators or visitor satisfaction to consider how encounters cultivate—or undermine—long-term relationships of care.

The Sepilok Orangutan Rehabilitation Centre illustrates these complexities particularly well. As a rehabilitation facility, conservation institution, educational site, and major tourist destination, Sepilok occupies multiple roles simultaneously. These overlapping functions demonstrate how conservation, tourism, public education, and animal welfare are closely intertwined, creating spaces where humans and orangutans continually negotiate new forms of coexistence.

4.4 Tourism, Local Communities, and Shared Landscapes

Wildlife tourism also reshapes relationships between local communities and the environments in which they live. Revenue generated through ecotourism can strengthen support for conservation by providing alternative sources of income, while also introducing new regulations, land-use changes, and forms of external governance. Indigenous and rural communities frequently act as intermediaries between tourists, conservation organisations, wildlife, and government agencies, balancing economic opportunities with environmental responsibilities.

Viewing tourism through a multispecies lens reveals that it is far more than an economic activity. It is an evolving social and ecological process in which people, wildlife, institutions, and landscapes continually influence one another. The success of tourism therefore depends not only on visitor demand but also on the health of ecosystems, the behaviour of wildlife, and the capacity of local communities to sustain these interconnected relationships.

4.5 Synthesis

Research on tourism in Sabah demonstrates that wildlife encounters are dynamic and relational rather than passive experiences of observing nature. They emerge through the interactions of animals, visitors, local communities, tourism infrastructures, ecological conditions, and conservation policies. Together, these studies illustrate how tourism can reshape understandings of agency, care, representation, and coexistence across species boundaries.

Despite these contributions, the literature remains strongly centred on charismatic mammals and protected landscapes. Comparatively little attention has been paid to everyday encounters involving domestic animals, urban wildlife, agricultural environments, freshwater ecosystems, insects, or other less visible organisms. Broadening the scope of future research would provide a more comprehensive understanding of how multispecies relationships are embedded in the diverse social and ecological landscapes of Sabah.

5.0 Relational Livelihoods and Biocultural Practices

Multispecies relationships in Sabah extend well beyond conservation initiatives and wildlife tourism. They are deeply embedded in the everyday livelihoods of Indigenous and rural communities whose lives have long been intertwined with forests, rivers, agricultural landscapes, and coastal ecosystems. These environments are not simply sources of economic production; they are places where relationships between humans and other living beings are continually negotiated through work, knowledge, and cultural practice. From the perspective of multispecies anthropology, livelihoods are therefore understood as relational processes through which people, animals, plants, rivers, and landscapes collectively shape one another over time (Ingold, 2000; Tsing, 2015; Kohn, 2013).

This perspective challenges conventional development approaches that separate society from nature. Instead, it highlights how ecological knowledge, environmental stewardship, and cultural identity emerge through sustained engagement with diverse forms of life. Such relationships remain especially significant in Sabah, where Indigenous communities continue to draw upon locally grounded knowledge systems to adapt to changing ecological and socio-economic conditions.

5.1 Indigenous Ecological Knowledge and More-than-Human Worlds

A recurring theme in the literature is the central role of Indigenous ecological knowledge in shaping relationships between people and the environments they inhabit. Communities such as the Kadazan-Dusun, Murut, Rungus, Bajau, and Orang Sungai have developed detailed understandings of forests, rivers, wildlife, and agricultural systems through generations of lived experience (Majid Cooke, 2003; Wadley & Colfer, 2004). This knowledge extends beyond practical resource management. It reflects broader ways of understanding the world in which

humans are regarded as participants within larger ecological communities rather than as separate from them.

Activities such as hunting, fishing, shifting cultivation, forest gathering, and river management are guided by customary rules, seasonal rhythms, and reciprocal obligations that regulate relationships among humans, animals, plants, and landscapes. Ingold's (2000, 2011) concept of dwelling provides a useful framework for interpreting these practices, emphasising that knowledge develops through lived engagement with environments rather than detached observation. Kohn's (2013) argument that forests actively participate in shaping human thought and experience similarly resonates with Indigenous understandings found throughout Sabah, where ecological relationships are grounded in everyday practice rather than abstract theory.

5.2 Agriculture, Oil Palm, and Changing Multispecies Landscapes

Agricultural expansion, particularly the growth of oil palm cultivation, has fundamentally transformed Sabah's socio-ecological landscapes. Forest conversion has altered habitat connectivity, wildlife movements, river systems, and the livelihoods of many rural communities (Abram et al., 2014; Ancrenaz et al., 2015). These changes cannot be understood solely in terms of economic development or environmental degradation. They also represent a reorganisation of relationships among humans, elephants, orangutans, crops, soils, rivers, insects, and plantation infrastructures.

As wildlife adapts to fragmented habitats and increasingly enters agricultural landscapes, new forms of coexistence and conflict emerge. Farming communities modify cultivation practices in response to elephant movements, while conservation initiatives attempt to balance biodiversity protection with agricultural production. Oil palm plantations therefore become more than sites of commodity production; they are evolving multispecies landscapes where ecological and social relationships are continually renegotiated under conditions of rapid environmental change.

5.3 Rivers, Fisheries, and the Tagal System

River systems provide one of the clearest examples of multispecies livelihoods in Sabah. They support fisheries, agriculture, transportation, cultural practices, and community identities while sustaining diverse aquatic species and ecological processes. Managing these environments therefore involves balancing the needs of human communities with the health of river ecosystems and the species that depend on them.

The Indigenous Tagal system offers a particularly compelling example of this relational approach. Practised mainly by Kadazan-Dusun and Murut communities, Tagal regulates access to rivers through customary agreements that temporarily prohibit harvesting in designated stretches of river, allowing fish populations and aquatic habitats to recover (Majid Cooke, 2003; Bessho, 2015; Foo et al., 2016). Compliance is maintained largely through customary

authority, collective participation, and shared ethical commitments rather than external enforcement.

Although Tagal has often been presented as a successful model of community-based fisheries management, its significance extends beyond conservation practice. The system demonstrates how governance can emerge through reciprocal relationships among rivers, fish, customary institutions, and local communities. Rivers are understood not simply as natural resources but as living environments that require care, restraint, and long-term stewardship. Likewise, fish are valued not only as economic resources but also as integral participants in ecological and social relationships that sustain community wellbeing. Viewed from this perspective, Tagal represents a form of more-than-human governance grounded in reciprocity and coexistence, offering important theoretical insights for multispecies anthropology.

5.4 Biocultural Diversity and Community Resilience

The concept of biocultural diversity provides another useful lens for understanding multispecies relationships in Sabah. Biodiversity and cultural diversity have evolved together through long-term interactions between people and their environments (Maffi, 2005). Languages, customary institutions, food systems, medicinal knowledge, and spiritual beliefs are closely connected to particular species, landscapes, and ecological processes.

Despite increasing pressures associated with urbanisation, agricultural intensification, conservation interventions, and climate change, these relationships continue to shape community resilience across Sabah. Understanding resilience through a multispecies framework shifts attention away from protecting individual species in isolation and towards sustaining the ecological and cultural relationships that enable both human and nonhuman communities to flourish over time.

5.5 Synthesis

Research on livelihoods and biocultural practices demonstrates that multispecies relationships in Sabah are woven into the routines of everyday life rather than being confined to protected areas or conservation programmes. Forests, rivers, farms, villages, and coastal environments all function as spaces where humans and other living beings continually negotiate coexistence through work, customary practice, and environmental stewardship.

This body of scholarship also highlights an important theoretical contribution. Sabah's significance lies not only in its remarkable biodiversity but also in Indigenous knowledge systems that understand humans as part of broader ecological communities. Practices such as the Tagal system illustrate how customary governance, reciprocal ethics, and long-standing environmental relationships can enrich multispecies anthropology by offering alternative ways of thinking about coexistence and stewardship. At present, however, much of this research remains situated within rural development, natural resource management, or community-based conservation. Greater engagement with multispecies anthropology would help connect these

empirical studies to wider debates on relationality, agency, and more-than-human worlds, further strengthening Sabah's contribution to contemporary anthropological scholarship.

6.0 Multispecies Political Ecology and Environmental Change

Multispecies relationships are shaped not only through ecological interactions but also by the broader political and economic forces that transform landscapes over time. In Sabah, agricultural expansion, infrastructure development, extractive industries, tourism, conservation initiatives, and climate change have fundamentally altered the conditions under which humans and other living beings coexist. Understanding these changes requires attention to the complex interplay between ecological processes, governance, economic development, and historical patterns of land use. Political ecology has long argued that environmental change is inseparable from questions of power, access, and inequality (Bryant & Bailey, 1997; Robbins, 2012). Multispecies anthropology extends this perspective by recognising that these transformations affect, and are influenced by, a wide range of human and nonhuman actors. Landscapes therefore emerge as dynamic assemblages in which forests, rivers, wildlife, infrastructures, institutions, and local communities continually shape one another.

6.1 Land-Use Change and Fragmented Landscapes

Sabah provides a striking example of how rapid environmental change reshapes multispecies relationships. Over recent decades, large areas of forest have been converted for oil palm cultivation, logging, settlement, and infrastructure development, transforming one of Southeast Asia's most biologically diverse regions (Gaveau et al., 2014; Abram et al., 2014). These changes have disrupted habitat connectivity, altered river systems, affected wildlife movements, and reshaped the livelihoods of rural communities.

From a multispecies perspective, fragmentation is more than the physical loss of habitat. It creates new patterns of interaction among humans, elephants, orangutans, rivers, crops, roads, and plantation infrastructures. Wildlife increasingly navigates agricultural landscapes, while farming communities modify cultivation practices and land management in response to conservation policies and animal movements. These evolving relationships demonstrate that fragmented landscapes are not static spaces of environmental decline but dynamic environments where ecological and social processes are continually renegotiated.

6.2 Conservation, Development, and Competing Environmental Futures

Balancing biodiversity conservation with economic development remains one of the defining challenges of environmental governance in Sabah. Protected forests coexist alongside oil palm plantations, tourism enterprises, hydroelectric projects, and expanding transport infrastructure, reflecting competing visions of how the state's natural resources should be managed.

Previous studies have shown that these competing priorities influence not only human livelihoods but also the distribution, movement, and survival of wildlife populations (Brosius, 1999; Dressler et al., 2010). A multispecies perspective broadens this discussion by asking how different forms of life become differently valued, protected, displaced, or neglected within changing political and economic systems. Conservation is therefore understood not as a fixed policy objective but as an ongoing negotiation involving governments, Indigenous communities, conservation organisations, private industries, tourists, and the many species that inhabit Sabah's landscapes. This perspective highlights that decisions about development and environmental protection inevitably produce uneven consequences across both human and nonhuman communities.

6.3 Climate Change and Ecological Uncertainty

Climate change introduces further complexity into these relationships. Shifting rainfall patterns, rising temperatures, extreme weather events, and changing river dynamics affect forests, agriculture, fisheries, coastal ecosystems, wildlife populations, and local livelihoods throughout Sabah. Although much of the regional literature has concentrated on ecological impacts and adaptation strategies, multispecies anthropology encourages a more relational interpretation of these changes.

Climate change does not affect humans and nonhumans separately. Instead, it reshapes the relationships that connect people, plants, animals, rivers, pathogens, and infrastructures. Communities respond by adjusting farming practices, diversifying livelihoods, and modifying resource management strategies, while wildlife alters migration routes, habitat use, and feeding behaviour. These parallel responses illustrate that adaptation is a shared ecological process involving multiple forms of life that continually adjust to changing environmental conditions.

6.4 Indigenous Communities, Justice, and More-than-Human Governance

Questions of environmental justice have become increasingly important within multispecies scholarship. Traditional approaches have focused primarily on how environmental benefits and burdens are distributed among human populations. Multispecies anthropology broadens this discussion by considering how responsibility, care, and justice might also extend to nonhuman beings and the ecosystems upon which all species depend (van Dooren et al., 2016).

In Sabah, Indigenous communities occupy a central position within these debates because their customary territories, livelihoods, and cultural practices remain closely connected to forests, rivers, wildlife, and agricultural landscapes. The Tagal system provides a clear example of how environmental governance can be grounded in reciprocal relationships rather than solely in regulatory frameworks. By recognising rivers, fish, and local communities as interconnected participants in environmental stewardship, Tagal demonstrates that Indigenous governance offers more than an alternative conservation strategy. It provides a different way of understanding responsibility, coexistence, and environmental care. Recognising Indigenous knowledge in this way challenges the assumption that environmental expertise resides

exclusively within scientific institutions or state agencies and instead highlights the value of locally grounded approaches to multispecies governance.

6.5 Synthesis

Taken together, the literature shows that multispecies relationships in Sabah are inseparable from broader political, economic, and environmental transformations. Agricultural expansion, conservation policies, tourism, climate change, and land-use change continually reorganise relationships among humans, wildlife, forests, rivers, and other living beings, generating new opportunities for coexistence while also producing conflict, displacement, and ecological uncertainty.

These studies demonstrate that Sabah contributes to multispecies anthropology in ways that extend beyond biodiversity conservation alone. They reveal how governance, development, environmental justice, and ecological change are deeply intertwined with the lives of both human and nonhuman communities. At the same time, important areas remain underexplored. Urban multispecies relationships, coastal and marine environments, microbial ecologies, and the everyday politics of coexistence outside protected areas have received comparatively little attention. Addressing these gaps would broaden the theoretical contribution of Sabah scholarship and deepen its engagement with contemporary debates in multispecies anthropology and political ecology.

7.0 Research Gaps and Future Directions

The literature reviewed in this paper demonstrates that research conducted in Sabah has made important contributions to understanding conservation, environmental governance, wildlife tourism, Indigenous livelihoods, and human–wildlife interactions. Collectively, these studies reveal that relationships between humans and other living beings are historically situated, socially negotiated, and deeply embedded within changing ecological landscapes. Nevertheless, significant conceptual and empirical gaps remain. Much of the existing scholarship continues to be shaped by conservation-oriented perspectives, limiting the extent to which Sabah has been recognised as a site for advancing broader debates in multispecies anthropology. Addressing these limitations would not only enrich future research in Sabah but also strengthen the field's understanding of more-than-human coexistence across diverse socio-ecological contexts.

7.1 Moving Beyond Conservation-Centred Perspectives

A defining feature of the existing literature is its strong emphasis on biodiversity conservation, protected areas, and human–wildlife conflict. While these themes have generated valuable insights into environmental governance and species protection, they also concentrate attention on exceptional landscapes and a relatively narrow range of interactions between humans and wildlife. Everyday multispecies relationships occurring within villages, urban neighbourhoods,

agricultural landscapes, domestic spaces, rivers, and coastal communities remain comparatively overlooked.

Future research should therefore shift greater attention towards the ordinary encounters that shape daily life. Examining relationships with domestic animals, insects, fish, plants, fungi, microbes, and other less visible organisms would provide a more comprehensive understanding of how multispecies worlds are continually produced through routine social practices rather than solely through conservation initiatives. Such an approach would broaden the analytical scope of multispecies anthropology and reveal forms of coexistence that often remain hidden within conservation-centred research.

7.2 Broadening the Range of Species Studied

Existing scholarship focuses predominantly on orangutans, Bornean elephants, proboscis monkeys, and marine turtles because of their ecological significance and their prominence within conservation and tourism. While this attention is understandable, it reflects what Lorimer (2007) describes as the politics of charismatic species, where a limited number of highly visible animals receive disproportionate scientific and public attention.

A more inclusive approach would recognise that ecological communities depend upon complex relationships involving many other organisms, including insects, fungi, freshwater species, reptiles, microorganisms, and plant communities. These less conspicuous species play essential ecological roles but remain largely absent from anthropological discussions of Sabah. Expanding research beyond charismatic wildlife would produce a richer and more balanced understanding of multispecies life while challenging existing assumptions about which forms of life are considered worthy of scholarly attention.

7.3 Indigenous Ontologies and More-than-Human Governance

Although Indigenous ecological knowledge is widely acknowledged throughout the literature, comparatively few studies engage with Indigenous ontologies as theoretical contributions to multispecies anthropology. Practices such as the Tagal system are commonly presented as successful examples of community-based resource management or environmental stewardship. Their broader implications for understanding relationality, agency, ethics, and governance, however, remain underexplored.

Future research could move beyond evaluating the effectiveness of Indigenous conservation practices by examining how customary philosophies, spiritual relationships with place, and local understandings of reciprocity offer alternative ways of conceptualising more-than-human worlds. Such an approach would position Indigenous communities not simply as providers of local knowledge but as contributors to anthropological theory, recognising Indigenous knowledge systems as sources of conceptual innovation rather than solely empirical evidence.

7.4 Expanding Urban and Coastal Multispecies Research

Research on multispecies relationships in Sabah has concentrated primarily on forests, protected areas, and rural communities. By comparison, urban environments, peri-urban settlements, coastal villages, wetlands, fisheries, and marine ecosystems have received relatively little attention despite their growing ecological and social importance.

These settings present valuable opportunities to examine how multispecies relationships evolve under conditions of rapid urbanisation, coastal development, environmental degradation, and changing livelihoods. Urban wildlife, domestic animals, fisheries, aquaculture, and marine conservation all offer new avenues for investigating coexistence beyond the forest landscapes that currently dominate the literature. Broadening research into these environments would provide a more representative understanding of Sabah's diverse socio-ecological systems and the many ways in which humans and other species negotiate shared spaces.

7.5 Strengthening Dialogue Between Multispecies Anthropology and Political Ecology

Future scholarship would also benefit from closer integration between multispecies anthropology and political ecology. Political ecology has provided important insights into questions of power, governance, environmental justice, and unequal access to natural resources, while multispecies anthropology has drawn attention to relationality, agency, care, and coexistence across species boundaries. Bringing these perspectives together would allow researchers to examine environmental change as simultaneously ecological, political, cultural, and ethical.

Such an interdisciplinary approach is particularly relevant in Sabah, where biodiversity conservation, Indigenous land rights, agricultural expansion, tourism development, climate change, and environmental governance are closely intertwined. Integrating these fields would generate a more comprehensive understanding of how human and nonhuman lives are shaped by both ecological processes and broader structures of power, offering new directions for research within Southeast Asia and beyond.

7.6 Synthesis

The future of multispecies research in Sabah lies not simply in documenting additional examples of biodiversity or conservation practice, but in expanding the conceptual questions that guide research. Greater attention to everyday coexistence, overlooked species, Indigenous ontologies, urban and coastal environments, and interdisciplinary engagement with political ecology would significantly strengthen Sabah's contribution to contemporary multispecies anthropology.

Viewed collectively, these priorities suggest that Sabah has the potential to serve as more than an important empirical field site. Its diverse socio-ecological landscapes provide opportunities to rethink fundamental questions of relationality, governance, environmental justice, and coexistence in ways that are relevant far beyond Borneo. Future research that builds on these

strengths will not only deepen understanding of Sabah itself but also contribute to the continued development of multispecies anthropology as a field.

8.0 Conclusion

This review has examined how multispecies anthropology has been applied to understand human–nonhuman relationships in Sabah, with particular attention to conservation, environmental governance, wildlife tourism, Indigenous livelihoods, and environmental change. Although much of the existing scholarship has been framed through biodiversity conservation and human–wildlife conflict, the literature also demonstrates that Sabah provides a far richer context for exploring how humans and other living beings shape shared social and ecological worlds. Viewed collectively, these studies show that multispecies relationships are not confined to protected areas or conservation programmes but are embedded in everyday practices, customary institutions, and the diverse socio-ecological landscapes that characterise the state.

A central finding of this review is that Sabah contributes to multispecies anthropology in ways that extend beyond its internationally recognised biodiversity. Conservation emerges not simply as a process of environmental management but as a relational practice shaped by the interactions of wildlife, Indigenous communities, state institutions, and changing ecological conditions. Likewise, Indigenous systems such as the Tagal system illustrate how customary law, reciprocity, and environmental stewardship can inform more-than-human approaches to governance, offering valuable theoretical insights into coexistence, care, and relational ethics. The review also highlights how livelihoods, tourism, and environmental change continually reorganise relationships among humans, animals, plants, rivers, forests, and wider ecological systems, reinforcing the importance of understanding these processes as interconnected rather than separate domains of inquiry.

At the same time, the review identifies several areas where further research is needed. Existing scholarship remains heavily focused on conservation landscapes and a relatively small number of charismatic species, while everyday multispecies interactions, urban and coastal environments, microbial ecologies, and Indigenous ontologies remain comparatively underexplored. Addressing these gaps would broaden the empirical scope of research and deepen the theoretical contribution of Sabah to contemporary multispecies anthropology.

Rather than viewing Sabah solely as a biodiversity hotspot or a collection of conservation case studies, this review argues that it should be recognised as an important site for advancing debates on relationality, agency, governance, environmental justice, and more-than-human coexistence. By bringing together diverse strands of scholarship within a single conceptual framework, the review demonstrates that Sabah offers valuable insights into how humans and other living beings negotiate shared futures in landscapes undergoing rapid ecological and social transformation. As environmental challenges continue to intensify across Southeast Asia

and beyond, these perspectives will become increasingly important for understanding the complex relationships that sustain both human societies and the wider communities of life with which they are inseparably connected.

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