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Indigenous insights on human–wildlife coexistence in southern India

Helina Jolly[1] | **Terre Satterfield**[1] | **Milind Kandlikar**[1] | **Suma TR**[2]

[1]Institute for Resources Environment and Sustainability, University of British Columbia, Vancouver, British Columbia, Canada

[2]Hume Centre for Ecology and Wildlife Biology, Kalpetta, India (Email: sumavishnudas@gmail.com)

Correspondence
Helina Jolly, Institute for Resources Environment and Sustainability, University of British Columbia, 2202 Main Mall, Vancouver, BC V6T 1Z4, Canada.
Email: helina.jolly@ubc.ca

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Abstract

As human–wildlife conflicts escalate worldwide, concepts such as tolerance and acceptance of wildlife are becoming increasingly important. Yet, contemporary conservation studies indicate a limited understanding of positive human–wildlife interactions, leading to potentially inaccurate representations of human–animal encounters. Failure to address these limitations contributes to the design and implementation of poor wildlife and landscape management plans and the dismissal of Indigenous ecological knowledge. We examined Indigenous perspectives on human–wildlife coexistence in India by drawing ethnographic evidence from Kattunayakans, a forest-dwelling Adivasi community living in the Wayanad Wildlife Sanctuary in Kerala. Through qualitative field study that involved interviews and transect walks inside the forests, we found that Kattunayakans displayed tolerance and acceptance of wild animals characterized as forms of deep coexistence that involves three central ideas: wild animals as rational conversing beings; wild animals as gods, teachers, and equals; and wild animals as relatives with shared origins practicing *dharmam*. We argue that understanding these adequately will support efforts to bring Kattunayakan perspectives into the management of India's forests and contribute to the resolution of the human–wildlife conflict more broadly.

KEYWORDS
Adivasis, coexistence, conservation, human–wildlife conflict, Indigenous peoples, South Asia

Conocimiento Originario sobre la Coexistencia entre Humanos y Fauna en el Sur de la India

Resumen

Conforme el conflicto humano-fauna escala a nivel mundial, los conceptos como la tolerancia y aceptación de la fauna son cada vez más importantes. Aun así, los estudios actuales sobre conservación muestran un conocimiento limitado de las interacciones positivas entre los humanos y la fauna, lo que lleva a representaciones potencialmente erróneas de los encuentros entre estos dos grupos. Las fallas al abordar estas limitaciones contribuyen al diseño e implementación de planes deficientes de manejo de fauna y paisajes y la desestimación del saber ecológico de los pueblos originarios. Analizamos las perspectivas de los pueblos originarios sobre la coexistencia entre las personas y la fauna en la India mediante la toma de evidencia etnográfica de los Kattunayakans, una comunidad Adivasi residente del bosque en el Santuario de Fauna Wayanad en Kerala. Realizamos un estudio cualitativo de campo con entrevistas y caminatas por transectos dentro del bosque. Con el estudio descubrimos que los Kattunayakans demostraron una tolerancia y aceptación por los animales silvestres caracterizada como maneras de coexistencia profunda que involucra tres ideas centrales: los animales silvestres son seres hablantes racionales; los animales como divinidades, maestros e iguales; y los animales silvestres como familiares practicantes del *dharmam* con orígenes compartidos. Argumentamos que el entendimiento de estas ideas centrales respaldará los esfuerzos por incorporar las

perspectivas de los Kattunayakan a la gestión forestal de la India y contribuirá a grandes rasgos a la solución del conflicto humano-fauna.

PALABRAS CLAVE
Adivasi, conflicto humano-fauna, conservación, pueblos originarios, sur de Asia

【摘要】
随着世界范围内人类与野生动物的冲突不断升级, 对野生动物的宽容和接纳等概念变得越来越重要。然而, 当代保护研究表明, 人们对人类与野生动物积极互作的认识有限, 导致可能难以准确描述人类与动物的相遇。如果不解决这些局限性, 就会导致野生动物和景观管理计划的设计和实施存在不足, 以及对本土生态知识的否定。我们利用印度喀拉拉邦瓦亚纳德野生动物保护区森林中的阿迪瓦西族Kattunayakans部落的民族志证据, 来研究印度原住民对于人类与野生动物共存的观点。通过定性的实地研究(包括访谈和在森林样带调查), 我们发现Kattunayakans部落表现出对野生动物的宽容和接纳, 其特点是深入的共存, 包括三个中心思想:野生动物是有理性的交流者;野生动物是神、老师和平等的族群;野生动物是实行 "*dharmam*"的具有共同起源的亲戚。我们认为, 充分理解以上几点有助于将Kattunayakan部落的观点引入印度的森林管理, 并更广泛地解决人类与野生动物的冲突。

关键词: 原住民, 人类与野生动物冲突, 共存, 阿迪瓦西族, 南亚, 保护

INTRODUCTION

Globally, population growth and societal demands for natural resources have driven the decline of habitat for wild animals and have generated negative encounters, affecting both local people and animals (Diaz et al., 2019; Nyhus, 2016). In places like India, wild animals have and are increasingly perceived as a nuisance and are victims of poaching, illegal wildlife trade, and retaliatory killing (Kala & Kothari, 2013; Karanth et al., 2018). Local people are negatively affected economically by crop-raiding and livestock depredation and are injured and killed (Margulies & Karanth, 2018). Hidden costs include compensation failures, psychological or social impacts, and loss of well-being (Barua et al., 2013). Conflicts involve multiple stakeholders, diverse interests, and unclear mitigation approaches (Mason et al., 2018). However, examining human–wildlife through a conflict lens only may overlook positive human encounters with wild animals (Frank et al., 2019; Nyhus, 2016). Focusing on human–wildlife interactions that reflect constructive and positive associations with animals, including coexistence, rather than negative outcomes only (Frank et al., 2019; Pooley, 2022), would provide opportunities to advance conservation targets.

Coexistence includes human actions, behaviors, and attitudes that support tolerance toward wild animals and acceptance of animal behaviors (Madden, 2004). The objective is to support wildlife conservation by promoting actions that alter or avoid negative interactions attributed to economic or other human needs and interests (Carter & Linnell, 2016). Human–wildlife coexistence thus emphasizes tolerance toward animals and acceptance of their behaviors (Frank et al., 2019; Madden, 2004), often facilitated through cultural understanding (Treves & Bruskotter, 2014), institutions (Brown, 2003), and perceived benefits from wildlife protection (Wardle et al., 2018). Tolerance also explains why some human societies moderate their resource competition, share habitat with wild animals, and endure losses from negative encounters (Inskip et al., 2016; Soulsbury & White, 2019). Such characterizations have produced a solution agenda focused on rendering people living in or adjacent to conservation areas as more tolerant through damage compensation schemes (Treves et al., 2009) or revenue sharing from ecotourism (Wardle et al., 2018). Although in some cases payments encourage coexistence, they do not necessarily improve individual tolerance or people's long-term willingness to live in proximity with wildlife (Chapron & López-Bao, 2020).

Historically, Indigenous people have had reciprocal relationships with wildlife, sharing natural resources and habitats and respecting each other's existence (Athreya et al., 2019; Baynes-Rock, 2013; Nijhawan et al., 2018; Snodgrass et al., 2007). Indigenous understandings of animals are shaped by culturally informed knowledge that typically coevolves and is coproduced across time (Bone, 2013). Views of animals and the logic of engagements with wildlife include ideas about shared kinship (Snodgrass et al., 2007), animal agency (Bhattacharyya & Slocombe, 2017), and relational responsibilities (Bird-David & Naveh, 2008). Despite evidence for distinct worldviews concerning wildlife, conventional wildlife management continues to use simplified notions of coexistence (predominantly attitudes and acceptance) to describe Indigenous practices of tolerance without addressing or building policies around specific examples, which might reveal widely applicable principles, practices, and engagements (Banerjee et al., 2013; Kideghesho, 2008).

Moreover, many studies characterizing coexistence focus predominantly on Indigenous communities in Canada, Australia, and New Zealand (Nadasdy, 2007; Salmón, 2000); few studies

have been conducted in Asia and Africa (see Athreya et al., 2019; Nair et al., 2021; Oommen, 2021; and Nijhawan et al., 2018). Limited understanding of how coexistence functions in these societies has led to vaguely equating coexistence with passive cohabitation or incentive-driven tolerances (Hiedanpää et al., 2016; Veríssimo et al., 2019). This tendency is compounded by researchers in the fields of ecology and biology who often view humans as primarily predators and animals as aggressor competitors. Thus, several of ongoing discourses on human–wildlife coexistence continue to focus on known examples of conflict, including studies of human interaction with elephants (Thekaekara et al., 2022), tigers (Inskip et al., 2016), and bears (Bhattacharyya & Slocombe, 2017). Also, much-existing work positions human–wildlife coexistence as a problem in need of intervention, based on incomplete definitions and generic interpretations of tolerance as the primary focus (Pooley, 2022; Schroer, 2021). Thus, deeper meanings and expressions of coexistence and its extension into an understanding of anthropogenic wilderness remain broadly unrecognized.

Indigenous insights into wildlife management have been silenced in Asia and Africa due to long histories of colonization because many forest-dwelling communities are not acknowledged as Indigenous by governments (Nikolakis & Hotte, 2020a). Inadequate understanding of Indigenous relationships with wildlife in these regions has fueled biased assumptions (such as Adivasis as illegal encroachers in forests who exploit natural resources and weaken wildlife conservation). Such assumptions have, in turn, encouraged the displacement of millions of people from their ancestral land (Agrawal & Redford, 2009). Restricted opportunities to maintain traditional livelihoods or receive adequate compensation have led to an impoverishment of many communities (Brockington & Igoe, 2006). Understanding the complexity of Indigenous-driven coexistence and its objectives is, therefore, essential ethically (especially because globally the displacement of peoples from protected areas continues) and is a basis for more appropriate wildlife management strategies. Conversely, a narrow interpretation of Indigenous practices of human–wildlife coexistence may generate many misunderstandings of how human–animal relationships function.

To advance collective knowledge and interpretation of human–wildlife coexistence in Indigenous societies, we worked with Kattunayakan communities, forest-dwelling Adavasi in India, to examine how they perceive human–wildlife interactions and to determine what coexistence means to them (including their thinking and practices that foster good relations) and how they pursue it.

METHODS

Study context

We conducted fieldwork in the Wayanad district of Kerala state in India. Wayanad, a mountainous biodiverse region in the Western Ghats, is home to many Adivasi (Indigenous people of India) communities. Like other countries with a colonial history, India's postindependence forest and wildlife policies have forcefully displaced millions of Adivasis from their ancestral forest lands as a conservation strategy (Rai et al., 2019; Kjosavik & Shanmugaratnam, 2015). In 1973, the government of India established the Wayanad Wildlife Sanctuary (WWS) under the Wildlife Protection Act of 1972. The sanctuary is an area with frequent occurrences of human–wildlife conflicts. As a designated protected area, like other wildlife parks in India, it overlooked Adivasis who had long-standing associations with the land (Kjosavik & Shanmugaratnam, 2015). From 1990 to 2003, approximately 50,000 families of forest-dwelling Adivasi communities were moved from the sanctuary to adjacent forested areas (Kaushik & Kaushik, 2006; Münster, 2015).

Displacements justified by wildlife protection significantly affected forest-dwelling communities, such as Kattunayakans. Recognized for their animistic beliefs and Dravidian dialects, Kattunayakans form a unique group of forest-dwelling Adivasis of the Western Ghats' forests (Bird-David, 2017). Their livelihood primarily depends on forest foods (mushrooms, tubers, fruits, medicinal herbs, and honey) and revenue from nontimber forest products (Kakkoth, 2005). In 2006, the Forest Rights Act was established to address historical injustices experienced by Adivasi societies. The act officially recognized forest-dwelling people as original custodians of the land and granted some legal access to forest resources (Agrawal & Redford, 2009). However, documentation required from the state meant that many Adivasi communities, such as Kattunayakans, were unable to produce the supporting evidence to establish their land claims; hence, many lost their right to land (Münster & Vishnudas, 2012). Relocated Kattunayakans remain economically poor and depend on the government for Rural Employment Guarantee programs or availability of wage labor or construction work in neighboring farms and towns.

Interviews and transect walks

In 2018, a preliminary ethnographic study was conducted in WWS from March through May. We visited several Adivasi settlements and conducted open-ended interviews (list of questions in Appendix S2) with members of several Adivasi groups to understand their experience of living in and around the sanctuary and to identify key topics of interest to them. Seven Kattunayakan settlement areas were selected: Ponkhuzhi, Anacyamp, Kuzhimoola, Alathoor, Kalamkandi, Kumuzhi, and Chukkalikunni (Figures 1 & 2). In 2019, H.J. returned to the field site and spent 4 months conducting further qualitative research that included open-ended interviews ($n = 70$) and transect walks inside the wildlife sanctuary with key community members ($n = 5$). All participants were paid an honorarium to recognize and value their expertise.

Interview participants were chosen through random sampling of households in each Kattunayakan settlement. Any willing participant in a household that was over 18 years old and had lived in the area for 15 years or more was interviewed.

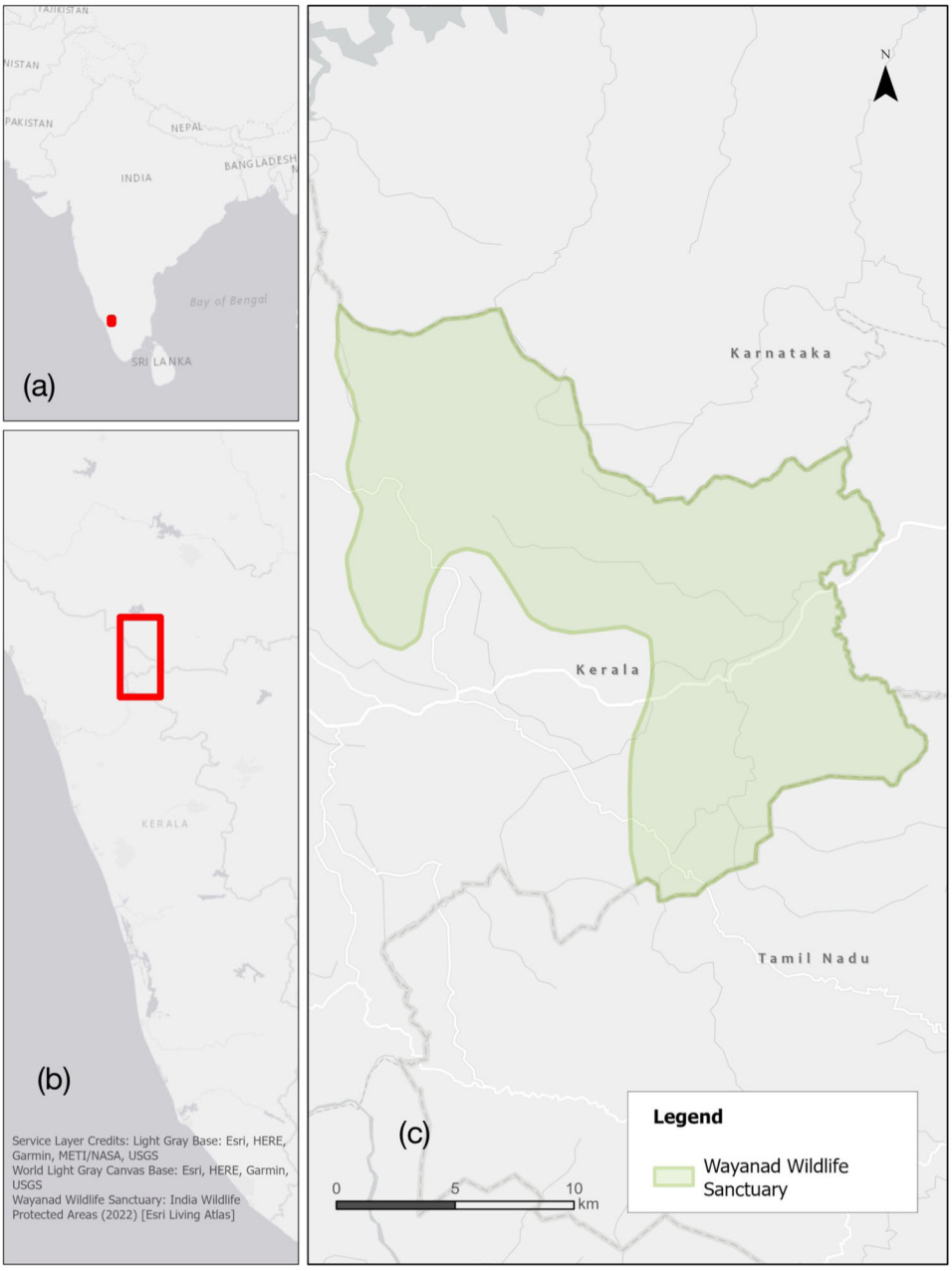

FIGURE 1 Location of (a) Wayanad Wildlife Sanctuary (WWS) in India and (b) in Kerala and (c) the location and extent of WWS

Interviews included equal representation of men and women. Each interview lasted approximately 2–3 h. Answers provided by male and female participants on the topic of wildlife interactions did not reveal perceivable differences in perspective; thus, results did not include gender-specific qualifications. Interviews were conducted with Kattunayakans at their houses in Malayalam (H.J.'s native language) and recorded in agreement with participants. Community members (2–3) who participated in the interviews volunteered to guide H.J. on walks of 3–4 h at a time (Figure 3). Five walks inside the protected area were taken. During these, places in and around the sanctuary designated as significant by community members were visited. On forest walks, H.J. also observed interactions between community members and wild animals.

The study design was approved by the University of British Columbia Behavioral Research Ethics Board (certificate H18-03104), Kerala Forest Department, and Scheduled Tribes Development Department, Kerala.

Coding

Audio recordings of interviews were transcribed and translated into English by H.J. The transcribed data were stored, managed,

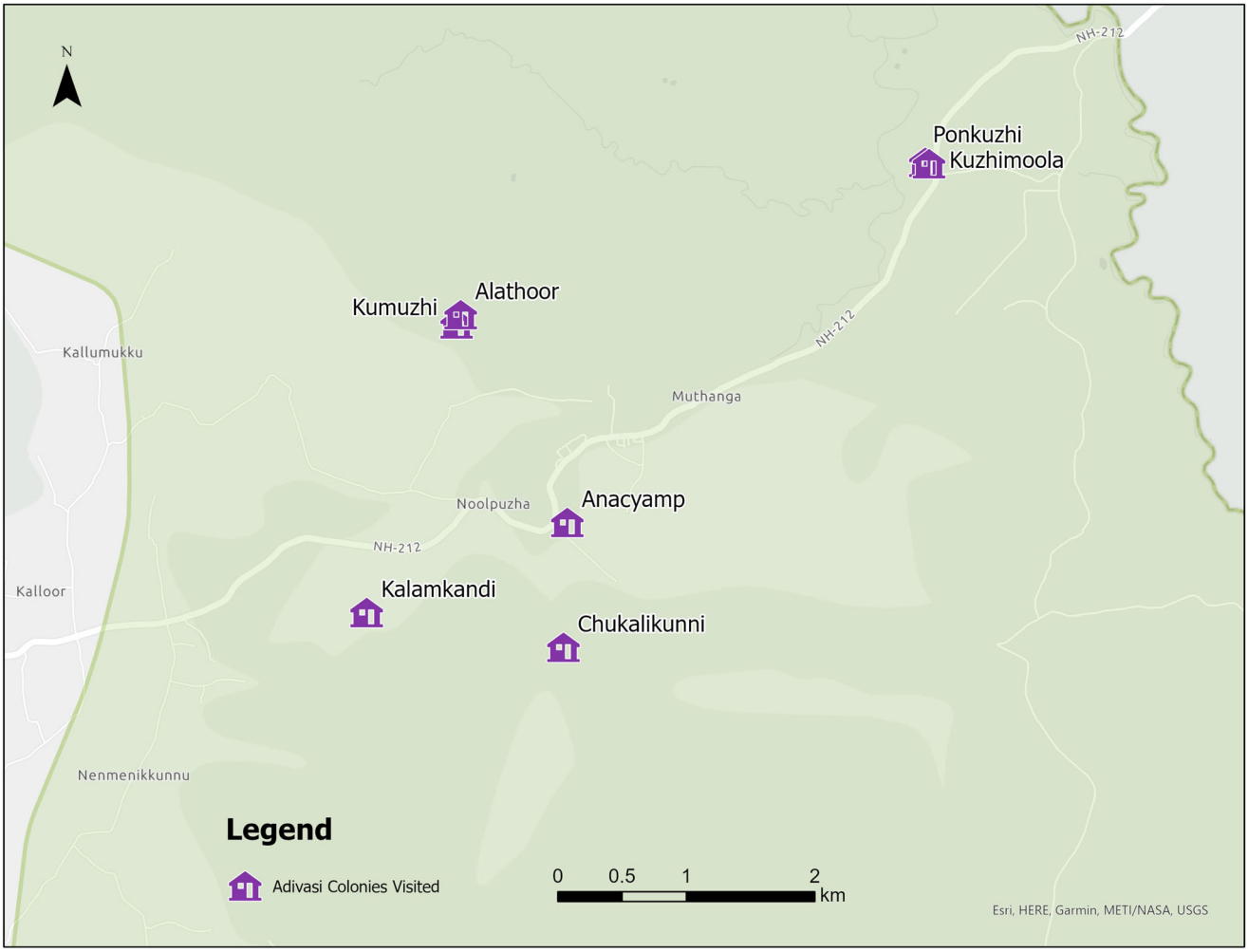

FIGURE 2 Location of Adivasi settlements in Wayanad Wildlife Sanctuary visited during the study period

FIGURE 3 Photo of wild elephants in the Wayanad Wildlife Sanctuary taken during a transect walk with the participating community members

and coded through NVIVO, and analyses involved identifying the characteristics of wildlife interactions inductively (Saldaña, 2021). Where appropriate, we used Malayalam words with explanations to avoid diminishing the value of Kattunayakan insights. H.J. conducted the primary coding (Appendices S3 & S4), reviewed these with coauthors (one of whom was a local field partner), and discussed findings with community members. The primary and secondary coding of interviews produced codes, such as *animal intelligence*, *kinship*, *animals as relatives*, and *personalities*. These codes lead to nodes, such as *animals' ability to read minds*, *decision-making abilities*, and *human familiarity with animals*, which finally lead to the three key results or themes explained below. References to Katthunayakan people addressed across our results refer to those involved in this study and from this set of villages only. We did not intend to represent all Katthunayakan because their population is large and spread throughout southern India.

RESULTS

Deep coexistence

The Kattunayakan people frequently encountered wild animals. Most of our study participants described that these encounters affected their food security (e.g., through interference with their ability to travel inside the forest areas to forage food), health (e.g., short- and long-term physical and mental impacts due to animal attacks and fear of attacks), and livelihood (e.g., increased animal interference of forest pathways when harvesting NTFPs, such as honey and wild turmeric). Yet, they continued to uphold practices and behaviors that reflected tolerance and acceptance of wild animals (as observed in several of the responses reported below). Through more casual interactions with the forest department officials in WWS, H.J. also learned that compared with other Adivasi and non-Adivasi communities in the region, Kattunayakans reported the least number of formal complaints against wild animals (Forest official, personal communication).

Kattunayakan-wildlife coexistence was tied to their perceptions and understanding of wild animals. Three primary perceptions emerged from our interviews and transect walks: animals as rational conversing personalities; animals as gods, teachers, and equals in the forest; and animals as relatives with a shared origin that practice *dharmam* (Figure 4). Each of these perceptions was associated with a set of behaviors (e.g., giving way to animals while walking inside the forest and respecting animals' personal space) and practices (e.g., sharing forest food with wild animals and speaking politely to animals) of tolerance and acceptance with regard to wildlife, which we interpreted as forms of deep coexistence (see "Discussion").

Rational conversing personalities

Foremost, Kattunyakans articulated their understanding of wild animals as logical individuals who communicate (through actions) and display distinct personalities. Animals as social actors were seen as making effective decisions on the use of forest resources. Study participants expressed their knowledge of appropriate ways to interact with humans and nonhuman animals. Respondents described the necessity of compassion for and from their nonhuman forest companions during their encounters with wild animals. According to them, animals display an innate ability to read human intentions and vice versa. Hence, they believed having good intentions and choosing the right words and speaking carefully are essential in the forest. They also emphasized that speaking well is equivalent to ensuring that words are an honest reflection of one's thoughts; that is, if animals detect honesty and truth in human language and intentions, they will not inflict harm.

Although some younger (20- to 30-year-olds) Kattunayakans dismissed the notion of engaging in a conversation with wild animals, they invariably agreed with the importance of having a *nalla manasu* (good heart) in the forest. They described this as a state of mind free from wrongful thoughts, such as scheming an attack on a wild animal, engaging in the hoarding of forest resources, or verbally abusing a fellow Kattunayakan. When asked whether animals reciprocated their requests and avoided conflicts, one respondent said:

> When we talk. Even if it is to an elephant, a tiger, a leopard, a bear, a snake or a lizard, all we do is talk to them freely and honestly. We tell them: I will not interfere with you. Please do not interfere with my way. That is all. Then they will go their way (interview 12).

When asked whether animals will listen to them when they make this request, he answered with explicit reference to the animal's agency.

> No, they won't listen immediately. They will also think about our request. Then they will make their decision. Our tone of voice is the most critical part of the request. Understand that you are talking to a powerful animal in the forest. If you speak in the wrong tone, then you will get it [punishment] from them. After you speak angrily to them, then you cannot walk in the forest peacefully. Even outside the forest, we talk calmly to people, don't we? It is the same for wild animals. We have to speak with love and patience. Then they [wild animals] will listen (interview 12).

Community members also emphasized the importance of submissive body posture and a respectful tone of voice, reflecting humility during animal encounters. Considering Kattunayakans are rarely aggressive with wild animals, living convivially and without confrontations is by far the expected behavior among the community members.

Here, *living convivially* means living compassionately and companionably. When asked to explain wild animals, Kattunayakans described them as nonhuman persons with the ability to

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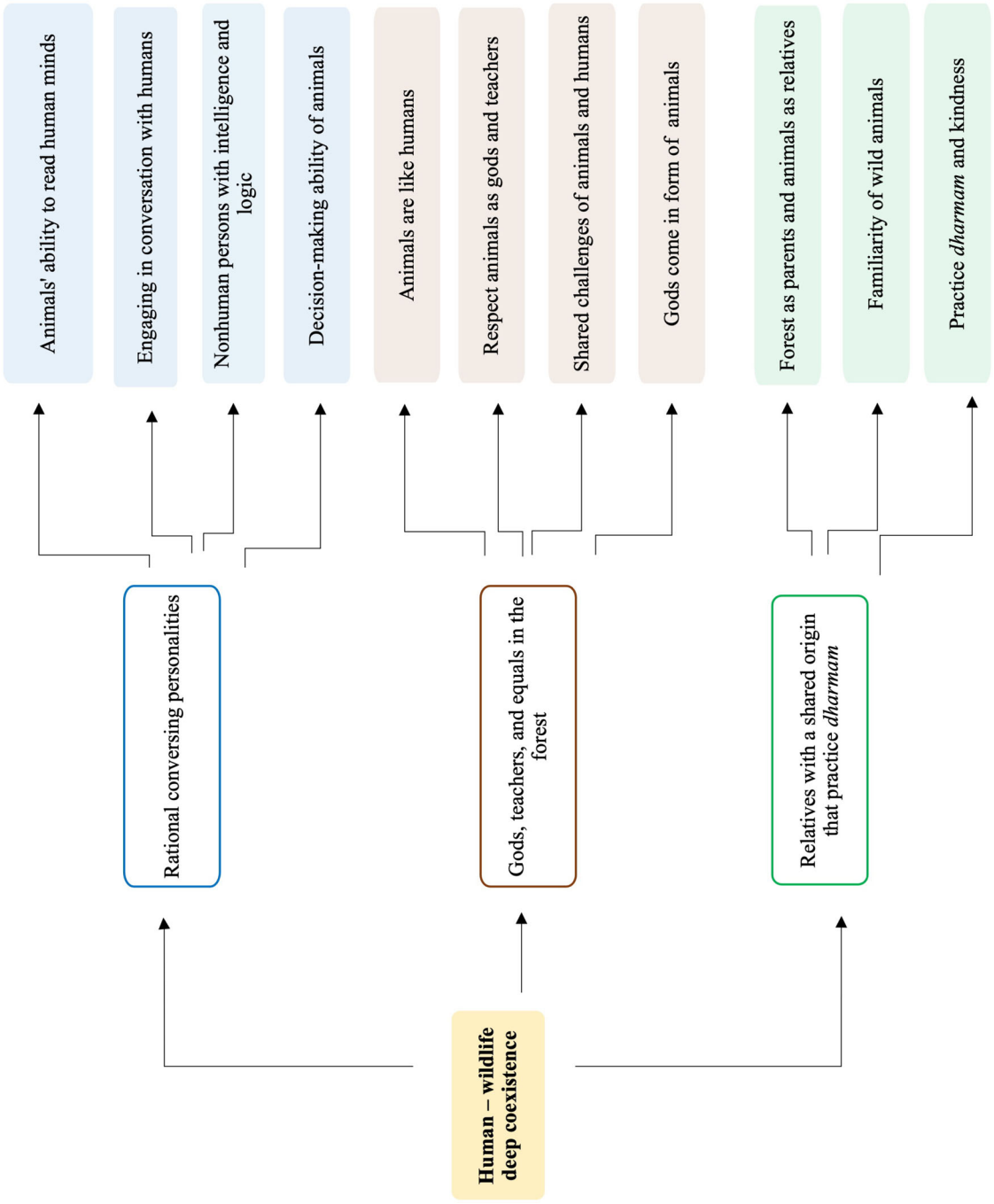

FIGURE 4 Summary of Kattunayakan ideas on human–wildlife coexistence represented under three key themes: rational conversing personalities; gods, teachers, and equals in the forest; and relatives with a shared origin that practice dharmam

think, evaluate, respond, and hold a significant position in the Kattunayakan socioecological order. Terms used in these descriptions included *budhi* (intelligence) and *vivaram* (logic) and *shari* (rights), which imply they have rational decision-making abilities. Speaking about elephants' decisions on migrating outside the forest to neighboring plantations and farmlands, a septuagenarian Kattunayakan man explained:

> If it was a human doing that [taking jackfruits from your farm], will you go and attack them? Sometimes, you have to wait and patiently watch what happens next. Animals are *bhudiulla jeevikal* (intelligent beings); they will also do things that are based on their shari and *sathyam* (truth) (interview 30).

According to respondents, animal moral sensibilities and intelligence are said to guide their behavior as opposed to more conventional notions of instinct. This outlook included behavior that may not have a favorable result for community members. In interviews, it was clear that Kattunayakans, in this case, believed that encountering a wild animal in the forest might involve a consequential decision: "Animals can either decide to kill us or make some sound and leave without hurting people" (interview 20). Also implied is that respondents did not feel accountable for an animal's fate, actions, or associated consequences. That is, they did not perceive wildlife protection as their responsibility. Kattunayakan participants in this study described animals as thinking beings that act based on their needs and experiences—primarily focused on protecting themselves in the same way rational people do. Young respondents employed as forest watchers by the forest department were the exception to this belief. They spoke of the human role in protecting wildlife, thereby deviating from the opinions of their contemporaries. All study participants agreed unequivocally that wild animals are rational beings with intentionality.

During the transect walks, H.J. observed that although wild animal encounters were not necessarily passive, most respondents reported using specific behaviors to deal with wild animals—avoidance of disturbing, troubling, or interfering actions—and understood wild animals as individual personalities with distinct temperaments, intelligence, and subjective emotions.

> There is a difference between *nalla* (good) elephants and others. The good ones will not harm us, but the others that are *shalyam* (trouble) disturb humans and bring damage (interview 20).

Conflict with an elephant was never translated as meaning other elephants in the forest would behave similarly. Hence, respondents thought animals were always discrete beings who might be good or troublesome and who could only be understood through their specific behavior. Misbehavior or a particular conflict between a human and an animal was invariably seen as isolated incidents.

Gods, teachers, and equals

Extending the recognition of animals as social actors, respondents perceived wild animals as their equals, which reflected respondents' respect for animals and acceptance of an animal's equal right to physical space. This was most often expressed as nonconfrontational respect for every animal's personal space, however, colloquial that might sound. It was common to hear study participants explain incidents such as bear attacks by saying, "[people] did not realize they were in the bear's area," "the animal felt threatened," and "it was not the bear's mistake; it was ours." Such comments are consistent with the assumption that negative animal encounters can be avoided if the individual is aware of the bear in the area or vice versa. What appeared to determine the ease with which respondents shared the landscape with wildlife was their inherent belief that animals are deserving members of the forest community.

> We like wild animals of the forest more than humans outside the forest. We have been living with these animals for such a long time. For us, we want animals in the forest. We do not want them to be captured and taken away. If we see animals every day, there is another set of happiness. We have to go and see everything in the forest. We believe animals are also part of the forest just like us (interview 9).

Discussions about respect and equality were not limited to prominent and charismatic animals; they extended to small animals, such as bees, mouse deer (*Moschiola meminna*), and wild boar (*Sus scrofa*). Respect and equality were demonstrated through permission seeking and praying to animals during hunting and foraging. These actions did not preclude fear. Participants expressed that their relationships with wildlife engendered fear and acceptance of their fellow nonhumans in the landscape. They spoke of their concerns in the same breath as the normality of living with them.

> We are afraid of elephants, [but]…that does not mean we cannot live with them. Yesterday, when I was walking to my aunt's house, on the way, I found an elephant herd, there was also a tusker. It looked at me [laughing]; we looked at each other and continued walking. It didn't do anything (interview 15).

During transect walks in the wildlife sanctuary, community members noted that wild animals are gods and teachers. They ascribed reverence to their forest codwellers.

> When we see one, we will bow and remember our gods in our hearts. Move away from their path, and we both go our ways (interview 29).

When asked to describe face-to-face encounters with wild animals, a majority of study participants gave answers that reflected similar feelings and understandings.

Reverence for animals according to the respondents was also reflected in behaviors, such as bowing to animals and displaying trustful submission. A honey gatherer explained:

> We can't believe humans inside the forest, but we can trust an elephant. An elephant is a *valiya* (big or elder) *aallu* (person), so they may hurt us, but they will never *chatikila* (cheat). Having elephants in the forest is not a problem for us. Elephants are our *daiva* (God), and we pray to them. If we go into the forest believing that even if we don't see elephants, they will make noise to alert us, so we will know they are around. Then, we can move on a different path without confronting them (interview 35).

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Respondents explained the Kattunayakan belief that *hethan* (a deceased elder who is god like) assumes animal form to communicate with them and that disrespectful behaviors toward animals may lead to negative consequences and conflicts if that potential animal-god is not offered the appropriate deference. However, they cautioned that not all animals are gods; only some elephants are recognized as *valiya* (important) individuals. When asked to describe valiya, respondents mentioned that valiya does not always mean just physically big; sometimes, it also references a socially significant person. Kattunayakans in this case said they followed similar respectful behaviors on meeting with other animals, such as snakes and bears (i.e., norms were not restricted to large, charismatic mammals).

Study participants also regarded knowledge about landscapes as derived from their fellow nonhuman beings. Unlike gods, animals were not directly referred to as teachers, but the lessons respondents gained from animals were implicitly valued and acknowledged in Kattunayakan society. During one of the transect walks, a Kattunayakan member pointed to the importance of the Karimaruthu tree (*Terminalia elliptica*) in elephants' diets. A small dose of the juice from its sap cures stomach ailment, a prescription learned from elephants and enabled by elephant activities.

> Most of the wild foods that elephants eat are medicines. We cannot eat a lot of what they eat. Maybe a small portion. Also, taking these medicines from the trees that are already eaten by elephants makes our job of gathering them easier since they would break the hard bark and chew and soften it. We can only consume a tiny portion of it. Elephants are physically big, and we are small (interview 24).

Study participants also reported having learned about forest landscapes from the animals. They said the presence of wild animals in certain forest areas indicates the large availability of forest products, such as honey, fruits, and tubers. The forest without animals was considered barren and lacking in food resources. They perceived the presence of wild animals in the forest as an indicator of the forest's health. Without animals, a forest was considered unproductive.

> If we enter a forest without animals, then we don't like it. In those forests, there won't be anything. Plantation forests such as teak and eucalyptus are different from the real forest. Inside these places, you won't find anything like honey bees, …deer, bears. We do not prefer going to teak forests (interview 5).

Relatives with a shared origin that practice dharmam

Respondents regularly refer to the forest as *acchan-amma* (father-mother) and believed that all animals originated there. They claimed a cultural and biological relationship wherein wild animals which occupy the forest are direct relatives. *Wayal* (marshy wetlands) are culturally significant. They considered these to be *petta amma* (birth mother), treated them with reverence, and perceived them as sacred. They said every animal inevitably goes to wayal at least once a day; thus, highlighting the importance of wayal as a landscape feature that symbolizes the shared origins of forest beings (including wild animals and Kattunayakans).

> Wayal is like petta amma in the forest. So, all animals will visit her to drink water or get their food. It is like mother calling out and dragging their children into water… That is what we observe in wayal. Wherever in the forest animals are, they will, we believe [laughing], reach there (interview 18).

In another interview, a female respondent viewed wild animals as kin and used *bandhukal* (relatives) to describe them. Similarly, in conversations on transect walks, participants often referred to animals as *swantha ala* (our own people), and they referenced wild animals as relatives whom they met frequently in the forest, thereby justifying their tolerance toward wild animals. Study participants also said they harbored no ill-will toward animals. Although the perception of wild animals as relatives does not obscure the everyday challenges of living with them, respondents were vocal about the difficulty of living well with forest relatives when navigating the shared landscapes. Yet, they agreed that they do not benefit from harming animals precisely because they are perceived as kin. So, upsetting or hurting wild animals was similar to distressing one's own people. We observed that community members shared similar sentiments toward their practice of subsistence hunting. They did not perceive hunting as a practice causing harm to animals because hunting was perceived less as a purposive and conniving action that caters to recreation and more as a gift from animals to humans, perceived as necessary, serious, respectful, and as a mutually agreed-on engagement between prey and predator.

> You see, look at the forest now. It is so thick with high grass. Even then, we go and stay inside the forest. We are not scared of wild animals. We have been here for ages; still, no elephant has ever harmed anyone in the forest. Elephants are like our mothers and fathers. Elephants live inside the forest; we also live inside the forest. They are like our bandhukal (interview 10).

Interview respondents expressed consideration toward wild animals, but did not demonstrate an explicit concern or care for them. They articulated kindness through all animals' moral responsibility to give dharmam (alms) to one another. *Dharmam* is a common word used for alms (given to the poor) in southern India. The practice of giving alms recognizes the limitations and strengths of people; individuals with means are expected to give to the poor. According to respondents, the practice of dharmam is visible in the way animals in the forest share resources with each other. A woman from the Ponkuzhi colony described

the practice of dharmam between Kattunayakans and bears. A Kattunayakan woman and study participant explained that her people recognize that bears do not have the skills to climb a tall tree and gather *kombu thenu* (big wild honey), so the community members often share some parts of the harvest with bears as dharmam.

> In the night when we go to collect honey, sometimes we find bears waiting under the tree. Both of us love honey [laughing]. Both bears and Kattunayakans love to eat bee larvae and comb with larvae. After we gather honey, we drop parts of the comb to the ground for them or leave behind some honey and larvae at the base of the tree so that the bears get to eat (interview 42).

Because Kattunyakans see sharing of forest resources with animals as their moral responsibility, participants did not express distress about sharing their food or other forest resources with wild animals. Although some participants used the term *dharmam*, others explained the concept of limitations, strengths, and shared responsibility without using the term. Providing dharmam, they reported, is not exclusive to humans, but rather it is a moral responsibility of all living beings in the forest. Participants also said they held every animal accountable to this principle. Thus, the nonaggressive stance of Kattunayakans toward an elephant in their backyard eating their crops and fruits makes sense. The lack of food availability in the forest was reported by participants as having made, for example, an elephant's action of raiding food in human settlements an expected behavior from a hungry animal; thus, in this context, Kattunayakan willingness to share food was equivalent to giving alms to the poor.

Participants also indicated this clearly when they explained tolerance and acceptance of such animal behaviors; such behaviors were expected and not something that warrants reward or incentive.

> Even if humans, dogs, or chicken, everyone should do their sacred duty- giving dharmam. Whatever we eat, it should be shared with others (interview 29).

Participants similarly described how tigers understood human limitations in gathering meat and compared it with their own capability to hunt. Thus, respondents did not express guilt about taking leftovers from a tiger's hunt because they viewed it as sharing food (i.e., the tiger practicing dharmam). Participants also acknowledged the reduced availability of food in the forest and inadequate animal skill sets (such as a bear's inability to climb trees). They believed that in many ways, animals also acknowledge human limitations (e.g., the tiger recognizing human limitations with regard to hunting skill).

> We sometimes take the meat from the leftover of the tiger's hunt. We would get it without the tiger noticing. After the hunt, the tiger doesn't eat immediately. They let the meat decompose a bit before eating. We will not take the full hunt but rather leave behind some for the animal. They also have to eat, right? We do this, not because of our love for animals, but we need to be considerate. They worked hard to gather it, and they are hungry too. If we take everything for ourselves, it is unfair on the tiger (interview 29).

DISCUSSION

Our results suggest that to seek a more in-depth understanding of human–wildlife coexistence, one needs to comprehend deeply how Indigenous people engage with wild animals. Kattunayakan knowledge of wild animals has much in common with other Indigenous worldviews, such as the sharing of knowledge and resources, observing respect, and acknowledging animals as rational beings or persons. Coexistence defined as a function of tolerance (which implies benign condescension or lack of power or agency to do anything about pejorative interactions) and acceptance (as indexed simply by positive attitudes and behaviors) (Hiedanpää et al., 2016; Nyhus, 2016) is thus misplaced when juxtaposed with Kattunayakan understandings. When inappropriately understood, these human–wildlife relationships may be seen as a temporary engagement that deserves constant incentivization and (as is more common) the displacement of communities from their ancestral lands. Hence, misunderstanding Indigenous-driven coexistence can deeply undermine local peoples' engagements with their lands and some of the fundamental interactions of the place are overlooked (such as the prohibition on subsistence hunting or traditional burning practices). There is a need to reconceptualize human–wildlife coexistence in Indigenous societies and to engage with forms of deep coexistence, as described here.

Fundamentally, this might involve rejecting anthropocentric notions of the intrinsic value of all living beings and instead moving toward an understanding of animal beings as rational thinkers in their own right (Edelblutte et al., 2022; Safina, 2015; Lestel et al., 2014) and as relations and agents giving and receiving alms as part of that coexistence (Salmón, 2000; Snodgrass et al., 2007). Our results suggest that understanding deep coexistence can help foster the kinds of reciprocity and responsiveness that animals and humans (particularly Indigenous people like Kattunayakans) exercise toward one another in their shared territories. This may lead to its improved visibility in conventional wildlife management and enable the continuity of respectful space and resource sharing because some level of rebuilding shared territory is likely essential to future landscapes (Buscher & Fletcher, 2020).

Several human–animal kinship studies in Indigenous contexts have also characterized animals as rational beings with agency and intentionality (Bhattacharyya & Slocombe, 2017; Bird-David & Naveh, 2008). Our findings complement such work and support the idea that the deep coexistence expressed by Kattunayakans recognizes that animals possess the autonomy to make their own decisions. Kattunayakans assume that animals act based on their intelligence, not instinct, because

they hold budhi (intelligence) and vivaram (logic), and act based on their moral sensibilities of shari (truth). This by no means indicates that human–animal interactions are considered trivial affairs, rather they are handled earnestly and conscientiously. Hence, coexistence might well mean that a wild animal attacking out of fear should be observed as normal and expected behavior from an intelligent individual. Deep coexistence also extends to a view of animals as kin and recognizes that harming or distressing an animal is hurting their own people within an extended ecological family (Salmòn, 2000). These two attributes of deep coexistence also possibly explain the nonaggressive stance that Kattunayakans take toward animals (validated by the low number of complaints they register against wildlife [Forest official, personal communication]). Such understandings explain that not all humans are competing for physical and natural resource space in forests (here, protected areas). This brings forward an argument against long-debunked fortress conservation that remains the predominant conservation approach in India and beyond, and it raises the possibility of creating shared landscapes in Indigenous areas globally.

Although conservation discourses often position wildlife protection as an outcome of pursuing coexistence between humans and wild animals (Frank et al., 2019; Nyhus, 2016; Woodroffe et al., 2005), the conditions of such results are often speculative. Kattunayakan practices of tolerance do not involve the protection of wild animals as its outcome and are not based on altruism or an ecologically noble stance (Nadasdy, 2007). Instead, community members spoke extensively about their behavioral protocols, which extended to listening for presence, avoiding unnecessary interference and troubling of animals, recognizing qualities they have, and finding the absence of wild animals more troubling than their presence. Deep coexistence may be intentional, but conservation as its outcome is merely coincidental. This supports the observation that Indigenous practices of subsistence hunting can occur in parallel and without compromising or eroding a community's outlook toward wild animals (Dunn et al., 2012). Instead, however, Indigenous coexistence practices have been the basis of legal battles over what *coexistence* and *subsistence* mean (Talbot, 2016). Coexistence motivates Kattunayakan–wildlife interactions and is fundamental to every aspect of this relationship, including subsistence hunting and foraging.

We argue that the relationship between deep coexistence and custodial hunting when further explored may lead to novel ways and practices that support land and wildlife management, assist in the continued coproduction of wild landscapes, and produce a more practical take on subsistence hunting (Nijhawan & Mihu, 2020).

Based on this way of understanding, deep coexistence also questions human centrality in mediating the outcome of human–wildlife interactions (Frank et al., 2019; Madden, 2004). It deviates from the outlook of tolerance toward wild animals as a byproduct of local people's emotional dispositions (Jacobs & Vaske, 2019), perception of loss (Goodale et al., 2015), and positive experiences (Dorresteijin et al., 2016). Instead, it describes wild animals as equal partakers, as shown in studies of elephants in Botswana (Songhurst et al., 2016) and leopards in India (Dhee et al., 2019). Kattunayakans recognize that animals also practice risk avoidance, reduce resource-use overlap, and moderate conflict by avoiding human settlements. Although the sheer act of factoring in animal judgments in human–wildlife encounters is likely considered too radical by most, it is essential to challenge the notion that cash incentives alone will encourage coexistence, as opposed to possibilities for living close to wildlife. As observed by Pooley (2022) and Schroer (2021), what might conservation come to look like should animals be seen as having knowledge about landscapes, being members of coconstitutive communities, and being individuals with distinct personalities and life experiences. This also implies that how humans experience, engage, and relate to wild animals is determined by the distinct ways in which humans and animals mutually conceive each other.

Displacement of human populations from their ancestral settlements has likely undone viable human–wildlife coexistence as much as the reverse. Besides, resentment of conservation and failed resettlement has led to ineffective conservation (Domínguez & Luoma, 2020; Kjosavik & Shanmugaratnam, 2015). Drawing encouragement from theories of human–animal coexistence, or what Tsing (2012) refers to as unruly edges (i.e., spaces where species interdependence exists), deep coexistence might also explain tolerance toward wild animals as an interspecies relationship that is convivial without ignoring the realities of fear and conflict. Dharmam, in this context, is similarly not a variant of love or care for animals; it is the ability of animals (including Kattunayakan humans) to relate to each other and know well their limitations.

Conservation and human–wildlife encounters remain focused on conflict studies, with references to positive encounters overlooked given inconsistent definitions and conceptualizations (Bhatia et al., 2019; Knox et al., 2020). Our study contributes three key insights on Indigenous understanding of human–animal relationships, which, if studied further, have implications for wildlife conservation and management. First, by questioning the centrality of humans in mediating human–wildlife interactions, coexistence as we described it is based on the assumption that understanding animal perceptions of humans is as vital as human perceptions of animals. Second, by acknowledging animals as individuals rather than herds, deep coexistence views individual animal behavior as key and recognizes the reality of conflict and fear for both humans and animals. Third, by recognizing that both humans and wild animals have shared rights to resources and responsibilities, coexistence in the Kattunayakan example elaborated here explains how their practices of tolerance acknowledge the limitations and strengths of humans and their other nonhuman relatives. Every human–wildlife interaction is not a conflict by definition, despite the all-too-common tendency for wildlife managers to assume as much. A key implication of our findings is that a view of human–wildlife interactions that presumes fear, discomfort, agitation, intolerance, and a lack of acceptance, respect, and consideration is a central basis by which fortress conservation continues. Hence, existing wildlife management approaches require some reworking and rethinking; coexistence

is potentially a core operating principle. Positive stories of human–animal associations are a start but by no means a solution. Distorted representation of these relationships might augment the misinterpretation that human–wildlife interactions inevitably gravitate toward conflict. This we fear will encourage the displacement of vulnerable communities as failed experiments in coexistence. Romantic notions of ecological nobility also run deep, leaving coexisting worlds excessively vulnerable to claims of one extreme or the other. Although recognizing Indigenous-driven human–wildlife existence in modern conservation studies is still a work in progress and relatively new in many parts of the world, it might well bring solutions to conservation puzzles and improve engagement with Indigenous peoples. The legitimacy and long-term success of conservation necessitate prioritizing local people and wildlife (Chua et al., 2020). These might in turn become the basis for how wise movement and existence within a shared territory are communicated and governed. It might also explain the success of Indigenous land management worldwide (Garnett et al., 2018).

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ORCID

Helina Jolly https://orcid.org/0000-0003-0942-3096

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Additional supporting information can be found online in the Supporting Information section at the end of this article.

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