En-gendering human-wildlife interactions in Northeast India: towards decolonized conservation

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Abstract

This article applies a feminist political ecology framework to analyze a particular case of human-wildlife interaction from northeastern India, linking it to the emerging paradigm of 'decolonized conservation.' Through the oral testimonies of local community members with regard to living close to wild Asian elephants in a forest-agriculture landscape matrix of rural Assam, this article argues that place-based conceptualizations of 'wildlife', 'forest dependency' and 'living with wildlife' are affected by gendered roles and responsibilities, gendered access to spaces and gendered interaction with wildlife. By doing so, this article argues for (i) extending the discourse on 'decolonized conservation' towards the role of gender in rethinking these place-based conceptualizations and (ii) bringing forward such 'en-gendering' into redesigning wildlife policies, as that will have the potential of ensuring feminist environmental justice as well as positive conservation outcomes.

Keywords: conservation; decolonization; Asian elephant; gender; Assam; wildlife

Résumé

Cet article applique un cadre "feminist political ecology" pour analyser un cas particulier d'interaction humain-faune dans le nord-est de l'Inde et pour le lier au paradigme emergent « conservation décolonisée ». À travers témoignages oraux des membres de la communauté locale concernant la vie à proximité des éléphants

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d'Asie sauvages dans le paysage forêt-agriculture de l'Assam rural, cet article avance que les conceptualisations basées sur le lieu de la « faune », « dépendance sur la forêt » et « vivre avec la faune » sont influencées par les rôles et responsabilités genrés, l'accès aux espaces genre et les interactions avec la faune genrées. Par conséquent, cet article argumente pour (i) étendre le discours sur la « conservation décolonisée » vers le rôle du genre en repensant ces conceptualisations basées sur le lieu, et (ii) faire avancer un tel engagement genre dans la refonte des politiques faune. Cet approche aura le potential d'assurer la justice environnementale féministe ainsi que des résultats positives pour la conservation.

Mots-clés: conservation; décolonisation; éléphant d'Asie; égalité; genre; Inde du Nord-Est; faune

Resumen

Este documento aplica un marco de política ecológica feminist para analizar und caso particular de interacción humano-vida silvestre en el noreste de la India, y enlazarlo al paradigm emergente de 'conservación descolonizada.' A través de testimonies orales de miembros de la comunidad local en cuanto a vivir cerca de los elefantes asiáticos salvajes en un paisaje bosque-agricultura de la zona rural de Assam, este artículo Avanza que conceptualizaciones basadas en el lugar de 'vida silvestre', 'dependencia del bosque' y 'vivir con fauna silvestre' están afectuadas por papeles y responsabilidades, aceso a estacios e interacciones con la vida silvestre formadas por el género. De este mode, este artículo argumenta en favor de (i) una extension del discurso sobre 'conservación descolonizada' hacia el papel del género en el replanteamiento de estas conceptualizaciones basadas en el lugar y (ii) avanzar este tipo de análisis género para reformar políticas sobre la vida silvestre: este enfoque tendrá el potencial de asegurar justicia feminist ambiental tanto como resultados positivos para la conservación.

Palabras claves: conservación; descolonización; elefante asiático; género; noreste de la India; fauna silvestre

1. Introduction

Based on the western ideas of 'wilderness' that saw the wild as alien to humans, wildlife conservation in the developing tropics and especially in the former colonies, has followed the exclusionary 'fortress' model of conservation. This model sought to create 'protected areas' with separation and control of people and wildlife (Brockington 2002). India is one country where such strict control over lives and forested landscapes emerged through British forest laws, the remnants of which are still experienced in the configurations of wildlife sanctuaries and parks through the enactment of the Wildlife Protection Act in 1972 (Gadgil and Guha 1994). The colonial institutions of forest bureaucracy continue to dictate the postcolonial governance of wildlife, vast tracts of forest lands, and life and livelihoods of people living in these lands (Kashwan 2017).

The protected area-based model of wildlife conservation has experienced widespread scrutiny, especially by political ecologists. Drawing on diverse theoretical and methodological approaches while center-staging the role of power in shaping human-environment relations, political ecology has been able to examine conservation actors, their networks of power and social endeavors, thereby unpacking the social consequences of conservation models (fortress, co-managed or otherwise). These consequences include: physical and socio-economic displacement of the marginalized (Agrawal and Redford 2009; Kabra 2013), undemocratic management of natural resources (Bixler *et al.* 2015), unequal knowledge production (Escobar 1998), the costs of living close to wildlife (Barua *et al.* 2013; Ogra 2008), and formation of socio-ecological identity (Großmann 2017). In India, political ecological analysis of protected conservation areas has shown that massive physical displacement results forest dependent communities, mainly Scheduled Tribes (Shahabuddin and Bhamidipati 2014), loss of livelihood and access to resources (Kabra and Mahalwal 2014), capitalist expansion of plantations and accumulation by dispossession (Rai *et al.* 2019), negative ecosystem changes (Soumya and Sajeev 2020), local resistance to these oppressions (Mukherjee 2009), and an increase in negative human-wildlife interactions in forest villages (Margulies and Karanth 2018).

Human-wildlife interactions have also received significant attention within political ecology scholarship. Conservation-led cartographic realignments expect that human and wildlife spaces should not overlap. However, separation is hardly maintained as wildlife transcends human spaces and vice versa due to a range of factors such as rapid land-use and land tenure changes, developmental activities, changing wildlife

behavior etc. As a result, contrary to conservationist expectations, humans and wildlife regularly interact with each other. These interactions can be positive and negative, which we have termed as 'coexistence' and 'conflict' respectively. While coexistence is desired, conflict continues to increase and often results in tangible and intangible harm to both humans and wildlife (Nyhus 2016). Political ecology scholarship has observed that 'human-wildlife conflict' is a misnomer because the conflict is actually between various groups of people who have unequal power and say in decisions over management of wildlife and landscapes (Redpath *et al.* 2013). Such incompatibility produces various kinds of encounters between wildlife and local communities located at the forest boundaries, the majority of which are negative (Redpath *et al.* 2015). These encounters have resulted in damages to crops, livestock or dwellings, human injury and death, with devastating consequences to already impoverished communities (Gulati *et al.* 2021; Treves *et al.* 2009). Political ecology scholars have shown that these consequences often have hidden costs which remain unaddressed and are not uniformly distributed across the community, with unequal impacts to social groups placed lower on the social hierarchy (Barua *et al.* 2013; Ogra, 2008). Gender is one such axis of differential experiences with wildlife.

Gender has been found to be a critical factor in shaping patterns and nature of wild resource use and in responding to environmental changes through impacts and adaptations (Agarwal 1992; Badola and Hussain 2003; Boserup 1970; Rocheleau *et al.* 1996; Shiva 1989). Critiquing the essentialist ecofeminist argument of women being inherently closer to nature, Feminist Political Ecology (FPE) foregrounded gender in studies of hierarchical access to and control over resources, rights and responsibilities over utilizing those resources, and collective action to safeguard those resources (Rocheleau *et al.* 1996; Sundberg 2017). Understanding how regulating human-wildlife interactions impacts gender and in return, how gendered human interactions impact human-wildlife encounters, is only now emerging in FPE. Living close to wildlife has different implications for men and women in terms of impacts from and attitude towards wildlife (Espinosa 2010; Carter and Allendorf 2016; Kellert and Barry 1987; Kuriyan 2002; Ogra 2008). Feminist Political Ecology analysis shows that these implications are often asymmetrical and detrimental towards women. Negative impacts due to wildlife damage often remain more long-term and uncompensated for women (Barua *et al.* 2013; Ogra 2008, 2009), and increase gender-based violence (Chowdhury *et al.* 2015; Doubleday 2020). In order to understand a range of dimensions in human-wildlife interactions and their implications, Feminist Political Ecology should become a key analytical framework.

There is also growing concern within political ecology scholarship that in addition to examining power asymmetries, power structures entrenched in how wildlife conservation is conceptualized and operated require scrutiny (Büscher *et al.* 2017; Büscher and Fletcher 2019; Kothari 2014). In response to these concerns, several alternatives to 'fortress' conservation models have emerged. For example, Büscher and Fletcher (2019) have suggested 'convivial conservation' where a non-capitalist mode of human-nature interactions sustains human and other-than-human lives and landscapes. Baker *et al.* (2019) have argued that field ecology should center place-based knowledge frameworks to understand ecology, thereby dismantling dominant universalizing Eurocentric ways of knowing. Trisos *et al.* (2021) proposed that academic ecological practice should be reflexive towards colonial footprints in the discourse of ecology itself. All these approaches aim to foreground delinking conservation research and practice from dominant knowledge models by epistemic reconstitution of conservation itself. Such decolonial reconstitution begins with clear attention to the nature and potential of community-led knowledge and decision-making regarding landscape management, and of place-based conceptualizations of living close to wildlife. This, we think, will allow considering dynamic complexities of community work alongside ever-changing society.

In India, such 'decolonized conservation' complexities are hardly addressed by the policies and practices of wildlife conservation, which are still rooted in colonial formations. Even though a historic Act, The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, passed in 2006 and sought to rectify historic injustices towards forest dwelling local communities, its goals remain underachieved mainly due to bureaucratic resistance from the forest department and legal interventions by the pro-protected area conservation lobbies (Kumar *et al.* 2017; see also Fanari 2021). In this respect, Feminist Political Ecology analysis provides possibilities for rethinking and operationalizing 'decolonized conservation'

on the ground. Due to ongoing gender-blindness, conservation interventions such as managing 'human-wildlife conflict' focus on the community without understanding the dialectical relations between gender and the outcomes of those interventions. As a result, the exclusion of gendered experiences and participation may lead to socially unjust outcomes (Ogra 2008, 2009). Therefore, there is a need for 'en-gendering' human-wildlife interactions, and Feminist Political Ecology provides a way forward. It can help to unravel how gender impacts frame and deal with wildlife conservation issues and how these issues, in turn, affect gender outcomes.

To this effect, in this article, we attempt to analyze a particular case of 'human-wildlife interaction' through the Feminist Political Ecology framework and link it to the emerging discourse on 'decolonized conservation.' Against the backdrop of human-elephant interaction at the forest-agriculture-plantation interface in the state of Assam in northeast India, we aim to expand the linkages of gendered living and human-elephant interaction, based on original documentation of gendered experiences. Applying a Feminist Political Ecology framework, we seek to answer how living close to wild Asian elephants generates gendered risks and vulnerabilities; how such living creates gendered impacts and responses to those impacts, how everyday-living close to the elephants creates gendered knowledge of elephants, and how conservation interventions in the landscape cater to these gendered human dimensions. Lastly, we will show how this 'en-gendering' of human-elephant interaction can be a practical pathway to 'decolonized conservation.' We here define ‘en-gendering' as the process for gender sensitive understanding of nature and pattern of human-elephant interactions, and impacts from and responses to these interactions. This, we hope, will expand the discourse of 'decolonized conservation' to gender and open new dialogues between wildlife conservation and environmental justice.

2. Fieldwork and methods

Study site

This study was conducted at the Dhansiri forest division of Udalguri (26°46′ N, 92°08′ E) district in the state of Assam, India (Figure 1). The Dhansiri forest division falls within the larger Chirang-Ripu elephant reserve.[2] The landscape is a mosaic of agricultural settlements, small and large tea estates, riverine areas and forested tracts. Fieldwork was conducted at the adjoining villages and tea estates of Khalingduar reserve forest, which is the largest forested tract in the landscape with an area of approximately 70 km^2.

Being a 'reserve forest', Khalingduar is managed under the Indian Forest Act of 1927 where the main goal is forestry production and not wildlife preservation *per se*. However, conservation of elephants is done following the Wildlife Protection Act, 1972. This forest area also extends in the north to the neighboring country of Bhutan. Its documented biodiversity means conservation NGOs have advocated for its change of status to a 'wildlife sanctuary' (Ahmed *et al*., 2019). Khalingduar reserve forest as well as the adjoining large tea estates were established under the British occupation during the late 19th century. This landscape mosaic has substantial movement by Asian elephants (Elephas maximus) for six to seven months of the year. The majority of this movement occurs in the non-forested area, along the agricultural settlements and tea estates, meaning that human-elephant encounters are an everyday reality. Estimates suggest approximately 150 Asian elephants exist in this landscape (Assam Forest Department, 2009). Depletion and degradation of elephant habitat, migrating behavior of elephants and growing anthropogenic land use changes have caused intense negative human-elephant interactions in this forest division. Consequently, between 2007 and 2016, 54 elephants and 121 people died, and 8,333 houses and approximately 1,400 ha of cropland were damaged (pers. comm., DFO Dhansiri Forest Division).

[2] Elephant reserves have been delineated across elephant-bearing areas in India for effective conservation of Asian elephants at a landscape scale. However, elephant reserves, unlike tiger reserves are not recognised as a legal category of land that are controlled by the forest department. Chirang-Ripu Elephant reserve is spread across four districts in Assam, representing westernmost elephant population of the state.

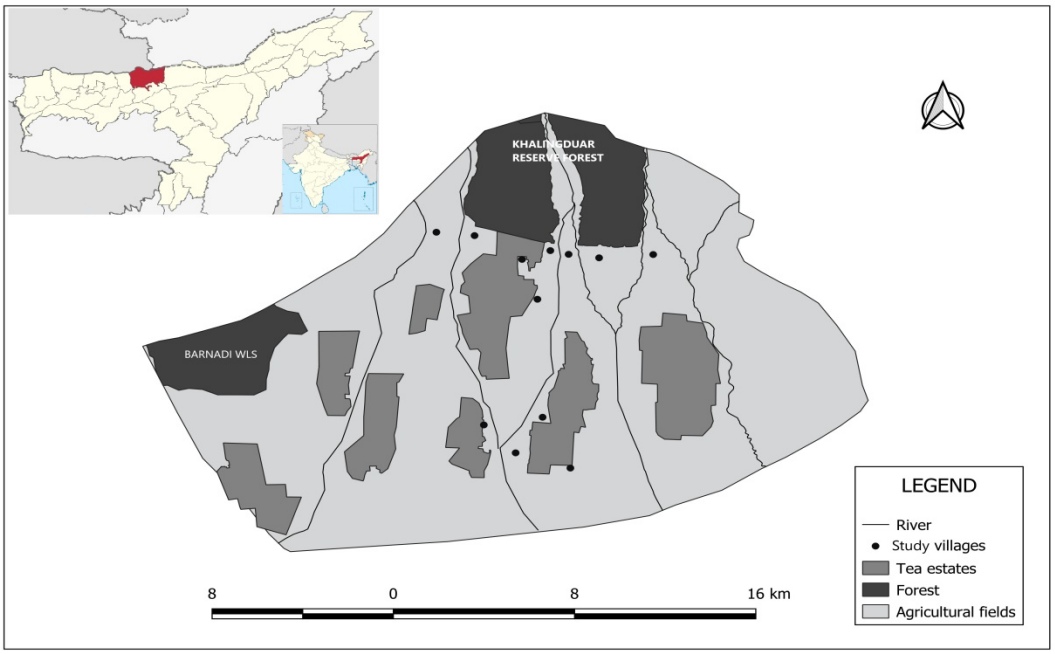

Figure 1: Dhansiri Forest Division with study villages around Khalingduar reserve forest. Source: Authors

Assam Forest Department (2009) identified Dhansiri forest division as one of the most deforested areas within the Chirang-Ripu Elephant Reserve. GIS analysis as well as respondent testimonies, forest department reports and secondary sources suggest that deforestation in the Khalingduar reserve forest increased significantly during the ethno-political Bodoland movement[3] in 1990-2000, after which people from other places migrated to the deforested area and expanded the agricultural frontier. The local community is predominantly rural and agriculture, especially summer paddy cultivation, is the major source of livelihood. The large tea estates owned by corporations play a critical role in the local economy. People belonging to multiple ethnic groups living in the villages close to the forest boundary were more involved in elephant conflicts than those further away. Being a reserve forest with less strict regulation on forest product collection, people were allowed to collect firewood by gathering twigs and broken branches, not by felling timber. Firewood is collected for household use, and sold at market.

Three main ethnic communities live in the study area: Adivasi, Bodo and Nepali. Bodos, categorized as Scheduled Tribes[4] by the state, are numerically the largest group and socio-politically dominant in the overall district (Behera 2017; Directorate of Census Operations Assam 2011). Adivasis, however, were numerically the larger group in our study area. Adivasi is an umbrella term for different linguistic groups such as Santhal, Munda, Odia, Bengali, Telugu etc., the commonality being ancestral bonds of British-era migration to the tea estates of Assam as indentured laborers (Behal 2014). Many Adivasi families have now retired from tea estates and settled in nearby villages. Adivasis[5] are not recognized as tribal or as a Scheduled Tribe in Assam, which has caused significant discontent among them (Gohain 2014). The Nepalis also migrated to this area during British occupation, primarily working as livestock graziers (Nath 2003). The

[3] For detail on the Bodoland movement, refer to Misra (2012).

[4] Scheduled Tribe (ST) is a recognised category under the Indian constitution, reserved for specific tribal communities.

[5] Adivasi, literally translates to 'original inhabitants.'

Bodos refer themselves as the original 'indigenous' group, and inter-ethnic conflict for land and livelihood has been the core issue for political instability in the area (Misra 2012). While Nepalis exclusively follow Hinduism, Adivasis have followers of Hinduism and Christianity. Bodos follow Christianity and Bathou, which is similar to Hinduism. Apart from these three major groups, Bengali and Assamese (both Hindu and Muslim) were the numerically minor communities living in the study landscape. Our study villages consisted of multi-ethnic as well as multi-religious communities. In this article, we present the findings from the community-level interactions with the forest, and the conditions affecting human-wildlife interactions.

Methods

We carried out fieldwork in 2016-2017 covering 12 villages reporting higher incidence of damage due to elephants as compared to other villages, situated in the vicinity of either the Khalingduar Reserve Forest or adjoining tea estates. We conducted a total of 65 in-depth interviews. The respondents were chosen through snowball sampling, with the common factor that each had an experience of damage due to elephants. As we wanted to understand community-level interactions with wild elephants, stratification according to class or ethnicity was not carried out. In-depth interviews with a snowball sampling design allowing us to document the rich narratives of peoples' lives with elephants, and gendered differences in experiences and strategies, which a structured survey would not have captured. This approach allowed for a deeper understanding of how people themselves interpret, report and respond to elephants. In this sense, our work is illustrative and not exhaustive evidence.

We summarized our research objectives and ethics to the respondents and asked for consent to participate in the interview. After we received informed consent, the interviews were conducted in Assamese or Bengali covering the following issues: socio-demography of the household, nature and pattern of human-elephant interaction incidences, impacts from negative interactions with elephants, coping and adaptation strategies, experience with the compensation process, and attitude towards elephants and elephant conservation authorities. The interviews were 60-90 minutes long. We audio-recorded the interviews with the permission of the respondents and stored the recordings anonymously, on a password-protected personal computer. All the quotes used in this article have been anonymized and we used pseudo-names instead of real names.

In addition to interviews, participant observation around situations of conflict handling, villager-forest department interactions, and regular village life was useful to understand gendered mobilities, norms and work patterns. Before commencing participant observation, we made ourselves familiar with the setting and obtained consent from the particular individual or group. We documented our observations in a field diary.

The recorded interviews were duly transcribed and translated to English. The narratives were then manually coded according to patterns of interaction, impacts from interaction, coping with living with elephants, long-term adaptation strategies, perception and attitude towards elephants, and experiences with forest departments. These codes were then further disaggregated by gender and the results compared and contrasted.

We also accessed documents maintained by the Dhansiri Forest Division, related to the compensation claims filed by victims of damages by elephants. These documents helped us to understand extent of damages in different villages and their spatio-temporal patterns.

3. Results

Profile of the respondents

Respondent profiles are provided to understand the social context. Out of the 65 respondents, 45% identified themselves as female between the ages of 21-76. Of these women, 76% were married and the rest were widowed. Some 59% had formal school education and 35% were Bodo and 38% Adivasi, while the remaining belonged to Nepali and Bengali community. The majority were Christian (55%), 38% Hindu, and

7% Muslim. Farming was the main primary occupation (38%), and 31% had daily wage-based work as their secondary occupation.

Among the male respondents falling in the age category of 18-62, a greater percentage, 89%, were married; 53% had formal school education; 42% self-reported to be Adivasis, 17% as Bodo and 17% as Nepali, while the remaining identified as others (Bengali and Assamese). Men were 67% Hindu, 28% Christian and 5% followed Islam. Some 56% farmed with 28% having wage-based labor as a secondary occupation.

At the household level, the average family size was found to be 5-6, but the average land holding less than 1 hectare. Only 28% had farming as a major income source, 20% mainly relied on waged labor, and 11% on migration-based remittances. The majority (66%) reared livestock, mainly dairy cows with and average of 4-5 animals per household. The main fuel resource (94%) was firewood.

Living with elephants: Conditions and contexts of confrontational coexistence

The respondents were unanimous in the view that living close to roving wild elephants is dangerous and that this is shown by human mortality and asset damage. The compensation records maintained by the forest department show that crop and house damage, and also human mortality, had a temporal variation, with incidences peaking in the monsoon and post-monsoon months of June-October, overlapping with the paddy rice farming season. Most human mortality (71%) occurring between 2012 and 2016, happened within village premises. Most of the deaths for men happen in the agricultural fields or on the roads while chasing crop-raiding elephants. Women are more commonly killed in the house when elephants, after being chased, enter and crushed the occupants. Indirect impacts included increased workload and expenditure to overcome losses; mobility restrictions, and compromised mental health. These indirect impacts are often long term and unacknowledged by conventional coping strategies. The strategies to reduce such negative impacts are short-term and mostly confrontational in nature. People guard crops at night, using spotlights and crackers and make noise to chase off elephants.

In this landscape of perpetual 'conflict' between humans and elephants, options are few. More confrontation resulted in more damage. What shapes such confrontational coexistence? For the purpose of understanding differences in perceptions of men and women, and conditions that lead to these differences, and how these different knowledges shape living close to elephants, the next sub-sections focus on four themes: risks and vulnerabilities, impacts and responses, knowledge formation, and conservation intervention.

Gendered risks and vulnerabilities

To understand if and how risks and vulnerabilities related to negative human-elephant interactions are shaped by gendered use of spaces, it is critical to understand elephant and human movement. Asian elephants traverse forests, tea plantations, agricultural lands, settlements, riverbanks and roads, and this movement increases during the paddy farming season (May to December). Even though the Khalingduar reserve forest provides the largest habitat for elephants, they use the tea plantations as extended refuges. They raid croplands in villages close to forest and tea plantations. In post-crop harvest months, male lone elephants even enter settlements to break into kitchens and food stores. Roads facilitate their overlapping presence with humans.

Gendered norms, roles and responsibilities in this multicultural landscape differ between men and women (see Figures 2 and 3). The gendered division of labor has spatial implications. Subsistence agriculture, marginal livestock grazing, non-farm daily wage-based work and household work all have gendered divisions of labor. Women are more involved in household work and collecting resources for household needs, such as drinking water and firewood. The major source of drinking water comes from riverine environments and secondary streams. Firewood is mostly collected from the reserve forest. So, women have to frequent these spaces on a daily basis, often more than once a day.

On the other hand, livestock grazing is done solely by men. Grazing is usually on the fallow lands or riparian areas, and seldom in the forests. Given the cultural restrictions on women's mobility to carry out

wage-based work independently in places far from their own villages, men dominate non-farm-based daily wage work outside their villages, often in nearby towns, spending a considerable time there. The local tea plantations provide year-round employment and more women were employed there, working all day. Village agricultural work is done by men and women, involvement differing by gender. Men are completely responsible for preparing the land and women are more involved in sowing, weeding and harvesting. Due to crop depredation by elephants, men guard the semi-mature crops at night during the last phase of the agricultural season (October- November).

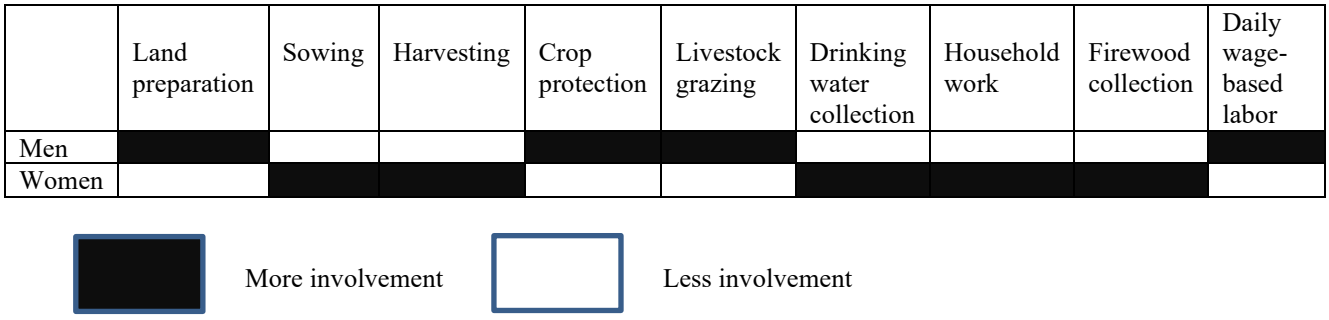

Figure 2 Gendered division of labor at the study site. Source: Authors

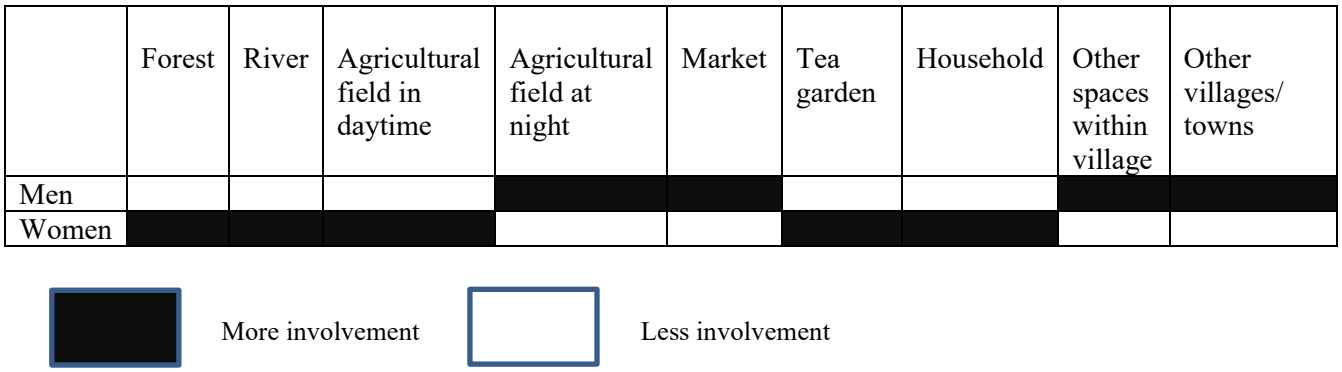

Figure 3: Gendered space and time utilization at the study site. Source: Authors.

Due to the spatial division of labor, men and women experience elephant damage differently. Women's chances of encountering elephants are higher, in the forest, riverbanks and tea plantations, because elephants frequently move through, rest and feed in these environments. July-November sees women involved in agricultural work, sowing and harvesting as well as plucking tea on the estates. Crop raiding also occurs in these months, overlapping with women's activities. Respondents mentioned multiple instances when women had to flee approaching elephant herds, only to return later to retrieve the water or firewood they had gathered. However, surprisingly, there have been very few incidences of death or injury of women in these spaces. Clearly knowledge of the threat posed by elephants is well developed, but more research is needed into women and elephant behavior, and their actual encounters inside and outside the forest.

Men encounter elephants in close proximity while guarding crops. They have to ensure that elephants are chased away before too much damage results. Unlike women, men's mobility is unrestricted even at night. They use the roads to travel and to return home, and this is when accidental encounters with elephants frequently happen. Also, men can choose long distance labor migration, away from the risky elephant landscape of the region. Women, however, are expected to stay at home or work closer to home. Mary, a 28-year-old Adivasi woman whose husband was a migrant laborer in Guwahati, explained the conditions that leave her with no choice but to avoid encounters with elephants. She said:

> I could not go with my husband as I have to take care of my children here. If my children and I go to the city, then where will we live? Here, I can at least take care of my children's education. Sometimes I go to work in the tea estate. Other than that, I cannot go anywhere else. If I go somewhere, who will bring water and firewood for the family? [October, 2016]

Gendered impacts yield gendered responses

If gendered mobility and use of space lead to different impacts for men and women, do such gendered impacts also evoke gendered responses? In order to meet households' needs and to reduce encounters with elephants, women sometimes make several short-duration visits to forest or rivers, which involved 10-15 km of daily walking with headloads. Disruption of work at tea plantations due to the presence of elephants forces women laborers to work beyond working hours to maintain the same output desired by plantation managers. Due to male migration to urban centers, several families in this landscape had become de-facto women-headed. Without any choice of opting out, women have to continue using the elephant-dominated spaces to carry on domestic and productive work. The continued use of such spaces also takes a toll on their mental health with increased levels of fear and anxiety. Uma, a 43-year-old Nepali woman whose husband and eldest son migrated to a nearby city for work, explained:

> I have to always stay alert about any kind of sound at night. I get tense by thinking whether the elephants have come or not. Every year, every day I think about it. I somehow get through the daytime but the night becomes unbearable. [October, 2016]

Many women respondents consoled themselves by referring to their *bhagyo* [destiny] for living a life full of misery, anxiety and fear. They also pointed towards *Bhogoban-or ichha* [God's will] for their *bhagyo*. They thought that this could be the only way of life in this place and there was no alternative to continued coexistance with elephants. Such references illustrate their own individual and collective emotional coping mechanisms (in the absence of any professional or institutional intervention to address stress and trauma resulting from such human-wildlife encounters).

Men who guard crops all night, can experience close aggressive encounters with elephants and often suffer mental trauma after witnessing gruesome deaths or injuries of their friends and relatives. Crop guarding, chasing off elephants, and migration for work form part of the expectation that men should provide physical and financial protection to the household. Nuruddin, a 36-year-old man and a Bengali Muslim farmer [November, 2016], explained:

> In this season, we can neither sleep in the morning nor at night. In the morning, we have to harvest paddy and bring it to the house. In the night, we have to guard it. This will continue for at least two months. People get really sick. If you can't sleep, you will get sickness; jaundice or a cough and cold. Fever continues for a week.

Gendered expectations also lead to gendered coping responses to conflict-related stress. Only a few women from the Adivasi and Bodo community reported drinking alcohol. No women respondent reported that they use alcohol to cope with the everyday reality of living close to elephants. In contrast, male respondents

from different ethnic communities reported drinking socially, but also for coping with the trauma of life-threatening encounters with elephants. Lakhiram, 29-year-old Bodo male farmer, explains how alcohol becomes a coping strategy:

> Some men who go for guarding in the night also consume alcohol to stay awake or to pass time. Sometimes the alcohol becomes the medicine. It gives us the courage to fight the elephants. All go to work in the morning. Everybody does hard work. When we come back, we get freshened up, and take dinner and take alcohol to bring down the exhaustion. Anyways, we are not getting any sleep either in the morning or in the night. Somehow we have to manage. [October, 2016]

While the short-term management strategies against negative human-elephant interactions, such as crop guarding, and use of noise and crackers or spotlights is exclusively men's work, long-term adaptation strategies involve men and women differently. For instance, respondents reported that over time, a majority of subsistence farmers had left agriculture and taken up non-farm-based wage labor as the only source of income. Adivasi women living in the villages nearer to the tea estates reported that even though they left the estate workforce in order to start a 'village life' with agriculture, crop damage due to elephants forced them to go back to those estates and work as casual laborers. Unlike Adivasi women, few Bodo and Nepali women reported this same movement due to the threat from elephants. A few households with greater landholding and secure finances, mostly Bodos, had invested in turning their agricultural plots into small tea gardens, which was costly and time consuming. Among the majority, male adults were encouraged to find work, however menial, in urban centers. While men searched for higher paying jobs, women continue to manage care and household work along with productive work at the tea estates or on remaining farmland.

Given that men and women both perform specific roles to address negative human-elephant interactions, are these actions equally recognized by the local community? The answer is no. The visible responses such as active crop guarding are considered legitimate. When asked about possible local responses to reduce elephant-related impacts, most of the respondents regardless of gender said that the situation was akin to *juddho* [war] and other than resorting to *ladai* [battle] with the elephants, there was no way to lessen their impacts. Since only men went to fight the elephants, their role in *ladai* has greater recognition, and was seen as a credible response. Women's efforts are seen as a silent service in the *juddho*. None of the respondents mentioned the roles performed by women in potential conflict-reduction or peace-making measures.

Men also seem to control decisions about restructuring livelihood strategies. Men with higher decision-making power and accessibility to social resources can decide that home finances should be restructured, by leaving farming and by migrating to urban centers. However, women's care-giving and domestic work remains unrecognized, and livelihood restructuring does not necessarily change the status quo for them. Their need to frequent spaces shared with elephants remains unchanged, or is made worse by male absences combined with cultural restrictions on their own mobility.

Short-term coping strategies such as guarding crops are still considered men's work, based on the gendered assumption that protecting the farm and household and chasing elephants are 'masculine tasks' considered ill-suited for women, who are considered a 'no-contest' opposite an elephant. Tapas, a 28-year-old man who regularly went to drive out elephants in the night, even from others' farm plots, emphasized:

> How can women go and fight with the elephants? They are *kamjor* [weak]. They are of *norom mon* [soft hearted]. They will not be able to even scream in front of the elephant. What if they get a heart attack in front of the elephants! This is no work for women. If in the presence of men, women have to go out to defend the household, then it is a matter of *govir lojja* [great shame]. [October, 2016]

So, if men fought and stood guard against elephants, what did women do? Women stayed at home and exchanged information about elephants' presence and movement in the village, thus alerting neighbors. However, respondents maintained that in this *ladai* [battle] with elephants, alerting or informing each other was not considered as an active form of guarding. Hence, while men were expected to chase and fight the elephant, and their courage to do so was acknowledged, women were expected to take care of the household and were considered most productive when they did so.

Gendered human-elephant interactions shape and are shaped by gendered knowledge

Gendered negotiation of living close to elephants in this landscape has led to specific knowledge formation about elephants and their behaviors. Elephants are revered to be godly creatures and people often refer to them as *Thakur* (God), *Baba* (Father) or *Maharaj* (King) instead of *Haathi* (Elephant). Despite their spatial coexistence with elephants, women hardly hold elephants to be aggressive, killing creatures. According to them, their respect towards the elephant had made them considerate of women's presence in the forest. Rai, a Nepali female respondent, 38, who regularly went to the forest to collect firewood and had a family of 5 in January, 2017, shared her experience:

> When we need firewood, we form a group of 3-4 women and go to *jungal* [forest]. If we see elephants roaming at a distance, we first pray that we should not be harmed as we have not committed any sin. We then enter and collect whatever broken twigs are there lying on the ground. We can see the elephants constantly looking at us and giving us blessings. They are very intelligent beings… Elephants know who has committed sin. They do not spare them. They come to the sinner's place and break their houses. I have not committed any sin, so elephants have never broken my house.

While women across ethnic groups who interacted with elephants in the forest considered them to be calmer, in contrast, men, who had been responsible for guarding crops for a long time, thought that elephants have generally become more aggressive over time, fearless and more willing to take strategic risks. Dani, an 48-year-old Adivasi man who by November 2016 had been guarding crops for thirty years, shared his experience of crop guarding:

> Earlier, the elephant used to be fearful of us (humans, in general). It only came to our field, but never damaged anything. Even if we just clapped, they would run away. Now they have changed. Even though we have fire in our hands, they come running straight towards the fire. It is only when more people are gathered and burn some noisy crackers that they move away.

Men and women empathized with elephants' problems through analogies that mirrored their own lives and material realities. Most of the respondents equated their poverty with elephants' deprivation, primarily regarding food. Women often equated elephants' vulnerabilities with their own. For instance, in October 2016, Nilima, a 36-year-old Assamese woman who refused to hold elephants responsible for her husband's death, connected the unmet need for food at home with the risk-taking, devious behavior of elephants:

> Elephants have nothing to eat. If I do not get to eat, I will go and *churi* [steal] food. Similar is the case with elephants. If they get enough food in the forest, why would they come (to the village)?

Unlike women who projected their food-poverty with the elephants' deprivation, men, who often work in urban centers, compare elephants with migrant workers. Mukto, a 42-year-old Assamese man interviewed in September 2016 who once migrated to a city for work, saw elephants as migrants compelled by circumstances to venture out for survival just like people:

> Elephants' lives are not different from ours. We have similar requirements. They come here for food only, just like we go to Gujarat or Mumbai to work. They do not have anything to eat in the forest. So, they come daily to the village, search for food and return to the forest.

While women's knowledge and perception of elephant behavior primarily stems from the material realities of their gendered activities, men have a different social network. Within these networks, they exchange news of crop raiding, death or injuries. In interviews, men highlighted their foraging or risk-taking behaviors. In contrast, women also talked of elephant behaviors related to mother-calf interaction and foraging. They mentioned incidents such as calves running around their mothers and the mothers using their trunks to protect their calves, or elephants standing on two legs to reach ripe jackfruit trees and swaying the paddy stems in their trunks before putting them into their mouths.

Complexities of male-centric conservation interventions

The biggest institutional stakeholder in terms of handling human-elephant interaction in this area is the forest department of Dhansiri division. Forest management is based on laws established in colonial times (Indian Forest Act, 1927) and after independence (Wildlife Protection Act, 1972), based on a conceptual separation of the local community from the forest. This has led to different expectations about how the HEC should be managed.

Local people at our study site, even though dependent on the forest for material resources such as firewood and water, believed that "the elephant is a forest department's animal" and "the department should take elephants back" in order to reduce encounters and damage. However, the Dhansiri forest division, which is the sole authority to manage forest and HEC related issues, saw cash compensation to surrounding communities as the primary intervention they could achieve.

The compensation to the victims of crop or housing damage and injury and mortality have been irregular, however. Compensation records suggested that in 2010, the Dhansiri Forest Division released *ex-gratia*[6] and other compensation worth Indian National Rupee (INR) 589,000 (~US$ 7,853) across 249 families, for the damages incurred between 2002 and 2009. In 2016, INR 3,558,800 (~US$ 47,450) was allocated for 1,072 families, for the period 2012-2014. In 2016-17, while the compensation amount for human death was INR 100,000 (~US$ 1,333), that for crop and asset loss was only around INR 1,000-5,000 (~US$ 13-67)[7].

The majority of our respondents criticized the forest department on two grounds: inadequate compensation and restriction on firewood extraction from the forest. However, while men highlighted compensation problems, women emphasized their ongoing difficulties securing firewood. This different reporting was based on gendered interaction with conservation interventions. One said:

> There is no point in applying for compensation. I have to visit the forest office so many times to submit photos and documents. If I do that, I will lose my *hajira* [daily wage]. How will I buy anything for my house? Also, if I submit my documents, I do not know when I will get the money. For that, every month I have to go to their office and ask. There is no point.

Women have poor knowledge about compensation, and less banking literacy. Men hold titled documents and were often dealing with different offices and technical information. When we asked women respondents about the compensation process, most of them stated that they did not know, and requested that

[6] For *ex-gratia* payments, the forest department may provide immediate monetary assistance on a case-by case basis to the victims of human-elephant conflict out of their moral obligation as managers of the forest and therefore, elephants. Compensation is time-consuming.

[7] 1 US was 75 Indian National Rupee at the time of data collection.

we ask their husband or brother or son. Moreover, the local knowledge networks and platforms, where such technical information is shared, are often male-dominated. If men suffered permanent or temporary ailments due to encounters with elephants, the task of income generation falls on women, which adds to their existing domestic and reproductive work. In case of death or injury of women, the responsibility of domestic work often transfers to their daughters, hampering their education and aspirations.

The second criticism of the forest department concerned restrictions on firewood collection. This was mainly voiced by women who live close to the reserve forest and entered it for firewood collection, leading to frequent interactions with forest guards. Madhuri, a 35-year-old Nepali woman living close to the forest boundary, complained:

> When we go to collect firewood, they do not allow us. Without firewood, how would we survive? The forest guards only allow us to collect dry wood which has fallen on the ground. We have to go repeatedly, almost 4-5 times a week. Other than the forest, where would we get the firewood? They confiscate our cycles and axes. They do not return them. We have to secretly bring more firewood; we cannot survive otherwise. [December, 2016]

Male respondents have limited interaction with forest guards and hardly talked about the issue to us. Even though illegal timber extraction is rampant, our respondents stressed that men from other towns and villages far away from the forest were responsible. Women were more vocal about the forest department's insensitivity, especially regarding their need to enter space shared with elephants. Anima, a 40-year-old Bodo woman revealed her interaction with forest staff:

> The ranger told me that in this elephant land, the damage incidences will continue like this. He said that we do all the wrong things when elephants come. He told us that we should not run, we should not shout. He said because we do such things the elephant gets angry, and that if we keep quiet the elephant will do nothing. I asked him – what if the elephant breaks into his house? Won't his wife and children shout? It is such a huge animal! It does not come merely to walk. It enters houses, eats up paddy and breaks houses. How can we then keep quiet? We have to shout so that it does not kill people. [January, 2017]

Restrictions on firewood collection hardly served the purpose of forest conservation or reducing elephant conflict, since timber collection deemed illegal continued, and incidences of elephant damage have increased. Women firewood collectors, being the most visible people to frequent forests, were considered to be the main threat to elephant conservation by the forest department. Department officials did not consider the gendered care-work they are obligated to undertake: women, instead of being treated as victims, were considered as threats. Thus, the complexities of male-centric conservation interventions create interesting conservation dilemmas.

4. Discussion

This study, through the oral testimonies of those affected by human-elephant interactions, shows that gender interacts with living close to wild elephants in the forest-agriculture-plantation matrix. The existing gender hierarchies in our study area are molded and often reinforced by the impacts from and responses to material and emotional damage by elephants.

We found that gendered risks of living close to elephants are produced by gendered roles, responsibilities and the use of space, including firewood collection and guarding crops at night. Rural forested areas are particularly prone to generate such risks, be it for the women at Uttarakhand (Ogra 2008) or Sundarban (Chowdhury et al. 2015) in India, or in Africa (Gore and Kahler 2012; Khumalo and Young 2015; Kamau 2017). While elephants continue to be present in the landscape with increased aggression perceived by men, these risks produce specific gendered vulnerabilities. These are normalized through provisioning and

care expected and performed by men and women at the household level. Similar productions of gendered risks and vulnerabilities have been regularly reported where labor patterns intersect with hazards such as floods (Sultana 2010), earthquakes (Horton 2012), hurricanes (Cupples 2007) or even inequality in urban water access (Truelove 2011).

Deeply compounded vulnerabilities emerge through diminished life qualities and life chances due to decreased mobility, livelihood opportunities or autonomy, inadequate finances, and increased anxiety and the trauma created by continued usage of elephants' spaces. Evocation of fate, alcoholism, or traditional close-encounter-based measures to drive away elephants are performed as gendered modes of coping. Elephant drives reduce direct impacts like crop or building damage, but the intangible impacts of diminished food supply or poor health (physical and mental) remain uncompensated, especially for women with insecure financial and social capital. Women in this landscape face social hardship, stigmatization and compounded suffering similar to those reported among 'tiger-widows' in Sundarban (Chowdhury *et al*. 2015), flood victims in Bangladesh (Sultana 2011), or forest dependent women in Uttarakhand (Ogra 2008, 2009) and Rajasthan (Doubleday 2020).

We found that despite gendered risks, vulnerabilities, impacts and coping mechanisms, the 'conflict' management responses remained predominantly male-oriented. Driving elephants out of the fields was identified by male respondents as the only possible redressal of the 'elephant problem.' Men's exclusive involvement in these drives, led by community members and the forest department personnel, point towards the inherent perceived masculinity of 'solutions.' Providing physical and financial security to the household by either driving away the elephants or reducing reliance on agriculture through migration are considered to be men's tasks. Women's reproductive work in the household during elephant incursions or their efforts in the non-elephant season are unacknowledged. Thus, gendered responses to living close to elephants are again normalized through gendered roles/norms. Dominant conservation interventions 'solving' human-elephant 'conflict' focus on the techno-fix, keeping elephants out of villages through erecting barriers or strengthening anti-depredation squads (Nelson *et al*. 2003; Shaffer *et al*. 2019). Our field observations and informal communications with various conservationists suggest that these activities are also male-centered. In these masculine interventions, women's risks and vulnerabilities are not centrally considered. Gogoi (2018) in a similar context showed that the emotional coping strategies of women can enhance social capital and reduce perceived losses. Along with the male-centered techno-fixes, thus, giving more attention to reducing women's specific risks and vulnerabilities should improve conservation outcomes.

Both the compensation process and the forest governance regime do not favor women, given asymmetries in power, access to capital, and knowledge. While men can find time to visit the forest office, often to filing compensation claims, women cannot. But even poor men who were daily wage laborers experience wage losses. Women have to depend on men in their kinship networks for banking and compensation claims, and they are vulnerable to regular harassment from forest guards. The compensation system for damage by wildlife in India (Johnson *et al*. 2018) and globally (Ravenelle and Nyhus 2017) only covers direct damage, not the intangible forms we have described above (Ogra 2008; Barua *et al*. 2013).

Men and women in the study landscape were found to have an affective relationship with elephants. Allegories of elephants being wanderers, like humans seeking food or work, mean men and women inscribe their own gendered identities and resultant vulnerabilities onto the elephants as a form of anthropomorphism. Through the elephants, men and women describe their lives in the broader political-economic structure of livelihood, migration and development. By doing so they create an emotional coping mechanism for the overall crises they experience. Such anthropomorphism has been found to promote people's self-belief in coping with environmental crisis (Tam 2014) and pro-conservation behavior (Tam *et al*. 2013; Williams *et al*. 2021). Understanding the linkages between anthropomorphism, emotion, action and power in the context of living with elephants requires further research. This, we think, could become an important area for empirical study in the emerging field of 'emotional political ecologies' (Gonzalez-Hidalgo & Zografos 2019; Sultana 2015).

Depending upon the patterns of encounters with elephants and gender relations in the landscape, we found that distinct knowledge about elephants and elephant behaviors is formed by men and women. Women

observe and report on certain behaviors that men do not, possibly because of women's proximal encounters and identification with elephants in non-combative situations. But we do not have enough evidence about whether men and women interpret elephant behavior in the same situations differently. While the literature often suggests that women know less about animal behavior (Carter and Allendorf 2016), we found that women have "situated knowledge" (Haraway 1988; Lang 2011) of elephant behaviors, grounded in their specific situational contexts. In fact, these situated knowledges also shape people's "situated legitimacy" about their actions and responses (Connelly *et al*. 2006).

5. 'En-gendering' conservation and decolonization

The empirical body of work focusing on the role of gender in shaping human-wildlife interaction is small, but growing. Our case study provides illustrative, but not exhaustive, evidence for 'en-gendering' the practice and study of human-wildlife interactions.

We have used Feminist Political Ecology and 'en-gendering' as a central lens in the context of people living close to wildlife, such as Asian elephants, in a multipurpose landscape. We have shown that existing gender-based hierarchies related to patterns of labor, spatial relations and livelihood create gendered risks, vulnerabilities and impacts, as well as adaptations, coping strategies, and knowledge formations. In our analysis, we focused on illustrating these variations for men and women. Nonetheless class, ethnicity or caste are still determinants of risk and vulnerability to elephant attacks. This, in our view, makes a case for empirical studies using multilevel en-gendering and intersectionality to understand how class, ethnicity and other social hierarchies affect the production of gendered experiences of living close to elephants.

Our study shows a mismatch between gendered place-based understanding and popular measures for managing human-elephant interaction. We find that gendered impacts, responses and knowledge formation in the context of human-elephant interaction in Assam are not treated as legitimate actionable points in conservation interventions offering damage compensation, restrictions, or techno-fixes. Conservation policy, practice and research need to integrate 'en-gendering' to understand how gendered attitudes, behavior and participation can play out in producing specific patterns of human-wildlife encounters. Conservationists have started paying attention to how gender as an outcome affects human attitudes and behavior to wildlife and conservation, but this needs to extend towards treating the political ecology of gender as a socio-ecological process enmeshed in historical and current material and affective relations to land, both public and private.

Foregrounding gendered voices in conservation research and practice should be the next step in 'en-gendering.' Conservation interventions are often carried out by people who do not have first-hand experience of negative impacts from wildlife, and yet they become 'experts' and 'conservationists' of that landscape. While their perspectives dictate the research priorities and questions, voices from the local community and especially gendered voices are unheard and gendered experiences remain invisible. Conservation research and practice with respect to managing human-wildlife encounters is still male-dominated with limited participation of women in decision making bodies. In conservation projects, women's participation is often restricted to their specific livelihood work. In the absence of specific gendered voices in assessing impacts and formulating responses, participation does not necessarily change the gendered status quo when living close to dangerous wildlife. It is time that women's voices are heard, with in-situ analysis of communities so that researchers understand their lived realities. In conservation practice, conditions have to be created for people becoming implementers and decision makers according to their gendered experiences and impacts, rather than passive beneficiaries. Women are good active decision makers and implementers, and efficient managers of natural resources (Agarwal 2001, 2009, 2010; Leisher *et al.* 2016).

It will be exciting to witness how gendered participation engages with reducing negative impacts from human-wildlife conflict. The next step is to rethink the nature of conservation itself by engaging with the gendered epistemologies of specific ways of living with specific wild lives. With the caveat that further research is required, we have shown that, based upon gendered knowledge formations, people in the forest-edge landscape have a specific understanding of what an elephant is, what an elephant can do and what is needed to live with an elephant. With these conceptualizations, the place-based understanding of the elephant departs from biology-centered conservation studies. The latter has always dominated over the former, with the

argument that such place-based situational understandings are merely anecdotal, and, thus, un-scientific. In this case, people in constant interaction with elephants through their entangles lives, have made efforts to understand them over many decades. Conservation sciences need to rethink the importance of place-based knowledge, given its potential to break down the colonial hangover of mental separation between human and nature (Büscher & Fletcher 2019).

The goal of 'en-gendering' conservation involves environmental justice, transformative changes and equity. 'En-gendering' conservation essentially foregrounds feminist environmental justice as an expression of decolonized conservation research and practice by engaging with gendered epistemologies, integrating gendered voices and experiences as analytical axes, and transforming the gendered status quo to enhance positive human-wildlife interactions. Here, conservation shifts from a 'view from nowhere' to become embedded and embodied in 'thinking' and 'doing' (Haraway 1988; Shapin 1998) and with a gendered "standpoint" (Harding 2004). For instance, women respondents mentioned the mother elephant's aggressive body language towards humans while protecting her calf. Various governmental and non-governmental agencies publish awareness-building material including public guidelines during encounters with elephants. Gendered knowledge can contribute to inform these efforts. Women's close observation of elephant's body language could help to differentiate combative situations from non-combative ones. By contrast, men's "situated knowledge" such as those related to patterns of risk-taking behavior of elephants during crop raiding or incursion into villages can be used for mitigation techniques which discourage them from taking such risks. By embracing gendered voices, lived realities and epistemologies and engaging with everyday gendered interactions between humans and wildlife, 'en-gendering' can lead to a kind of everyday environmentalism which moves beyond the conceptualization of nature as capital to be exploited, and contextualizes it as a common resource to be sustained and celebrated.

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