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Conservation, Conflict, and Community Context: Insights from Indian Tiger Reserves

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CONSERVATION, CONFLICT, AND COMMUNITY CONTEXT:
INSIGHTS FROM INDIAN TIGER RESERVES

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ABSTRACT

Protected areas across the world have been established to preserve landscapes and conserve biodiversity. However, they also are crucial resources for nearby human populations who depend on them for subsistence and to fulfill social, economic, religious, and cultural needs. The contrasting ideologies of park use and conservation among diverse stakeholders (e.g. managers and local communities) make protected areas spaces of conflict. This mixed-methods study aimed to gain a deeper, more comprehensive understanding of these complex conflicts and potential solutions by focusing on the social and ecological landscapes surrounding two Indian protected areas: Dudhwa National Park (DNP in Uttar Pradesh) and Ranthambore National Park (RNP, in Rajasthan). Both parks are important tiger habitats surrounded by numerous, dense park-dependent communities.

Using a social capital framework, we assessed how intra-community relations (bonding capital among local residents) and extra-community relations (bridging capital with park managers) influence support for parks. Because both parks are tourism destinations, we also assessed communities' perceptions of wildlife tourism and local residents' beliefs about tourism impacts on their communities and parks and wildlife. And finally, as conflicts are known to impede park management and can seriously hamper relationships between stakeholders, we interviewed diverse stakeholders (e.g., local residents, park managers, NGO representations) to identify overarching sources of conflict around these parks.

Collectively, this study sought to answer growing calls for developing and implementing community-based management strategies to improve conservation

outcomes. Such efforts are particularly challenging in countries like India, where histories of exclusion and oppression impede participatory conservation efforts. Our analysis highlights the importance of social, cultural, and historical context in protected area management, and provides critical insights that should inform conservation strategies that promote community development while protecting biodiversity.

DEDICATION

To my parents, Neeti and Rajkumar; and my sister, Rati: My strength

To the tiger: My inspiration

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Five years ago, almost to the day, I sat in front of my computer drafting email after email applying to Ph.D. programs. At the time getting accepted into *any* doctoral program was a faraway dream, let alone one in a different country. I was told numerous times my efforts were futile, not worth leaving my job for, and reminded several times that maybe I didn't have what it takes. Five years later, I'm on the other side of my Ph.D. journey, in utter disbelief of how everything happened. Call it did sheer luck, hard work, perseverance, commitment, magic, unicorns…I'm thankful that it happened. And that it was at Clemson. Researching Indian tiger reserves has always been a dream of mine, and I must thank Clemson University Institute for Parks for the financial assistance towards my work in India. I'm also thankful to the Tigers United initiative for supporting my research.

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flight.

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CHAPTER ONE

INTRODUCTION

Background

Protected areas (PAs) form an important and integral component of the

international commitment to conserve biodiversity. However, the existence and

establishment of PAs often comes at a great cost to the people who live around them. PA

policies restrict local populations and impact livelihoods in several ways including

limiting their access to natural resources, obstructing cultural practices and traditions, and

removing indigenous communities from their traditional and customary lands (du Toit,

Walker, & Campbell, 2004). To reduce social conflicts, reconcile losses from the

existence of PAs, and encourage community support for PAs, there has been a growing

call for the involvement of communities in PA management (Andrade & Rhodes, 2012;

Berkes, 2009; Tessema, Lilieholm, Ashenafi, & Leader-Williams, 2010). However, these

community involvement efforts have often been unsuccessful due to short-sighted

outcomes (Brosius, Tsing, & Zerner, 1998), uneven distributions of benefits (Dahal,

Nepal, & Schuett, 2014; Sekhar, 2003), and misinterpretations of the idea of a

'community' (West & Brockington, 2006). Communities are far from the small,

integrated, homogenous entities many imagine them to be. They are complex units of

individuals and families characterized by different values, socio-economic classes, and

layered relationships which are difficult to identify (Agrawal & Gibson, 1999). Around

PAs, these diverse communities represent just one of many stakeholder groups, each with

varied socio-economic and demographic identities and different histories and relationships with their surroundings. This diverse collections of backgrounds, values, and management perspectives influence perceptions of conservation (Bennett, 2016) and, ultimately, people's attitudes and actions with respect to PAs. Considering these diverse views, perceptions, and histories, establishing common goals for PAs can be challenging and often results in conflict. This study aims to understand the nature of these stakeholder relationships, the perception of these management interventions, and the sources of conflict in diverse cultural contexts.

Rethinking 'Community'

For many years, communities and local authorities have been figuring out ways to overcome barriers towards achieving a mutually beneficial, cooperative way of meeting managerial expectations around PAs (M. Wagner, Kreuter, Kaiser, & Wilkins, 2007). However, this is challenging in conservation contexts where communities are often depicted as "small and integrated, using locally evolved norms and rules to manage resources sustainably and equitably" (Agrawal & Gibson, 1999). Commonly, the term 'community' is attributed to a group of individuals living within a geographic area, sharing a combination of activities, social interactions, and relationships. In reality, communities are complex, heterogenous units made of individuals characterized by different values, socio-economic classes, and layered relationships that are difficult to identify (Agrawal & Gibson, 1999). These individuals possess diverse interests and unequal power in the process of decision making. A community is not a static entity; it is continuously recreated and renewed by the people participating in it (Stokowski, 2003).

Thus, as Murphree (2000) notes, implementing community-based initiatives and programs on a pre-conceived definition of 'community' is futile and misleading.

Collaborative processes that promote positive conservation attitudes - especially those involving multiple stakeholders - are complex, and numerous factors can hinder them. Social hierarchies are one important factor (Waylen, Fischer, McGowan, & Milner-Gulland, 2013). Attitudes towards conservation are also shaped by a diverse range of demographic factors such as education levels, gender, household size, and age (Kideghesho et al., 2007). There is also evidence that attitudes of locals are also being influenced by past experiences with PAs, economic status, benefit accrued from PAs, and the perceived state of relationships with both the PA and PA managers (Allendorf et al., 2006; Kaltenborn, Nyahongo, Kidegesho, & Haaland, 2008). In other words, PAs are surrounded by multiple actors with varied socio-economic and demographic identities and different histories and relationships with their surroundings. These diverse backgrounds interact to influence actors' perceptions of conservation (Bennett, 2016) and, ultimately, their support towards PAs. Therefore, identifying and maintaining a set of common values can be difficult in the context of community-based initiatives, where multiple stakeholders hold diverse views of resources and their use. Differences in views and perceptions of PA management may form the basis of conflict within different stakeholder groups (Vodouhê, Coulibaly, Adégbidi, & Sinsin, 2010).

Conflicts in the protected area context are not merely expressed disagreements among people who see incompatible goals (Peterson, Peterson., Peterson, Leong, 2013). Upon deeper inspection, conflicts are typically rooted in non-material social unmet needs,

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including status and recognition, dignity and respect, empowerment, freedom, voice and control, personal fulfillment identity, belonging and connectedness, power disparities, and social, emotional, cultural, and spiritual security (Hafner-Burton & Montgomery, 2006; Madden & McQuinn, 2014; Shaw & Williams, 1994; Sheehan & Ritchie, 2005). Additionally, many conservation conflicts are a result of complex histories and long-existing social structures where powerless groups have been marginalized and excluded (Madden & McQuinn, 2014; Sundar, 2009). Mitigation efforts implemented by local governmental and non-governmental organizations have often overlooked these complexities. Their efforts are typically transactional in nature and result in addressing conflicts superficially (Madden & McQuinn, 2014). Contemporary conflicts are often deep rooted, prolonged, interconnected, and characterized by power and status asymmetries (Miall, 2004). Thus, the social positioning of multiple stakeholders, and the resulting power dynamics that influence decision making in a conservation context are important to understand in order to maximize the success of collaborative, community-based efforts.

Good working relationships can be developed with local communities when there are open channels of communication and comprehensive dialogue. This helps managers and conservation agencies develop measures that are in line with community expectations. According to Bowles and Gintis (2002), communities can sometimes organize themselves to perform functions that even governments and markets fail to execute. This is because they hold crucial inside information about member's behaviors, capacities, networks and needs (Gintis & Bowles, 2002). High levels of trust lubricate

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cooperation in a community and invite community members to adhere to social norms (Baland & Platteau, 1996; Pretty & Ward, 2001). Moreover, understanding, acknowledging, and incorporating social norms can reduce transaction costs and improve outcomes for collective action. Social scientists attempt to explain and quantify these relationships using the concept of social capital.

The Significance of Social Capital

Social capital embedded in participatory groups in rural communities has been central to equitable and sustainable solutions to local development problems (Pretty & Ward, 2001). As a result, it has gained recognition in the field of social science and has found wide acceptance across many other disciplines, especially natural resource management. Evidence indicates that social capital is both operational and effective in participatory and community-based initiatives. By increasing connectedness between people and engendering trust, confidence, and capacity to cooperate there have been observed successes in watershed management, irrigation management, microfinance delivery, forest management, integrated pest management, and farmers' learning groups (Pretty & Ward, 2001); and exploring perceived resilience to climate change (Smith, Anderson, & Moore, 2012), impacts of natural disasters on community health (Adeola & Picou, 2012; Hawkins & Maurer, 2010), and community access to water in developing countries (Bisung, Elliott, Schuster-Wallace, Karanja, & Bernard, 2014). As a concept, social capital has evolved over the years. It is perhaps best understood in terms of the nature of social relationships and networks, measured through trust, reciprocity, and cooperation (Christoforou & Davis, 2014; Coleman, 1988; Putnam, 1995).

Social capital and community-based initiatives.

Social capital may enhance community-based conservation efforts in several ways. Social capital enhances cohesion and trust within a community and reduces transaction costs to facilitate collective action (Pretty & Smith, 2004). Collective abilities developed through high levels of social capital can help communities achieve multiple objectives simultaneously, especially in the complex challenges associated with natural resource management (Krishna, 2002; Pretty & Smith, 2004). There are a wide range of studies which utilize this concept in natural resource management and community-based research (Dean, Fielding, Lindsay, Newton, & Ross, 2016; Mehra, 2008; Pretty, 2003; Pretty & Smith, 2004; Rastogi, Hickey, Anand, Badola, & Hussain, 2015; Tai, 2007). Further, community-based initiatives provide the setting for individuals to work collaboratively (C. L. Wagner & Fernandez-Gimenez, 2008). The very process of working together builds and maintains social capital, and it increases with use (Bourdieu, 1986; Ostrom, 1997). Rastogi et al. (2014) observe that high levels of social capital can support enabling factors of successful wildlife (tiger) conservation such as effective partnerships, support for management, increased control over poaching, and reduction in antagonistic acts against wildlife (Rastogi, Thapliyal, & Hickey, 2014). Diedrich et al. found that social capital, especially trust in leadership, greatly affected perceived benefits from PAs, which led to less conflict and more support for the protected area (Diedrich, Stoeckl, Gurney, Esparon, & Pollnac, 2017).

However, social capital also has some downsides with respect to community-based conservation. Negative social capital may potentially reinforce inequality and may

support antagonistic behavior. Further, if communities with high levels of social capital oppose conservation, they will be more likely to create significate challenges for park management through coercive noncooperation, actions that damage wildlife and natural resources (e.g., illegal resource use and retaliatory killing), and other political means (Damania et al., 2008; Rastogi et al., 2014; Saberwal, 2008).

High levels of social capital can create both unique opportunities and challenges for conservation, making understanding social capital crucial dynamics in the context of community-based conservation (Chhatre & Saberwal, 2005). Because communities are complex entities, comprised of multiple groups with diverse interests, social positions, hierarchies, and political and economic power, social capital is contextual and may have different outcomes in different places (Ballet, Sirven, & Requiers-Desjardins, 2007). To be able to understand and predict the efficacy of community-based conservation initiatives, one must understand power dynamics rooted in historical, cultural, political and social contexts that are unique to particular settings (Onyx, Edwards, & Bullen, 2007).

The Importance of Context

PAs in many countries across the world share narratives of exclusion and prohibition on land and resource use. This is often coupled with a colonial past, making conservation issues complex and controversial. Conservation measures in these scenarios do not only have to work towards addressing biodiversity goals; they must also be cognizant of local participants who are poor, resource-deprived, politically weak and isolated, and have been historically marginalized for years (Brockington, 2004; Lele,

Wilshusen, Brockington, Seidler, & Bawa, 2010). Evidence from colonized countries demonstrates that colonial legacies not only transformed political relations, economies, ethnicities, and social structures, but also transformed nature, created new landscapes and ecologies, and forged new relationships between people and wildlife (Adams & Mulligan, 2003; Beinart, 1989; Brockington, 2004; Shiva & Bandyopadhyay, 1989).

Today, numerous social groups interact within PAs, and each group holds varying views of the PA and how it should be managed (Ghimire & Pimbert, 2013). Apart from the local community members, these groups may include government officials, park managers, politicians, conservationists, tourism and commercial business owners, landowners, and others. All these groups have varying levels of power and influence in the decision-making process and seek different benefits from the PA. In most cases, the local community bears the primary costs of conservation and stands to gain the least (Agrawal & Gupta, 2005; Lovett, Adhikari, Falco, & Lovett, 2004). Despite possessing this common quality, which separates local communities from other stakeholders, these communities are far from homogenous and may be stratified by age, gender, religion, wealth, economic status, livelihood, social status, and power (Ghimire & Pimbert, 2013).

Research shows that social structures can affect attitudes and behaviors that are relevant to conservation. Waylen et al. (2010) observed that, in a community comprising of high and low castes, interactions between caste groups and resource access affected involvement in conservation activities and influenced people's potential responses to future conservation interventions (Waylen, Fischer, Mcgowan, Thirgood, & Milner-Gulland, 2010). Those who are socially and politically elite are better equipped and

positioned to participate in natural resource management (Dasgupta & Beard, 2007). Social stratification related to wealth, gender and education also influenced participation and outcomes of participatory processes (Dahal et al., 2014; Mukherjee, Ray, & Bhattacharya, 2016; Thapa Karki, 2013).

A number of studies also advocate for focusing on the link between nature and culture in indigenous communities. Many local belief systems confer protection on wild species through social taboos or social norms (Jones et al., 2008; Kideghesho et al., 2007). Attempts at altering or changing these belief systems can potentially backfire and negatively affect biodiversity. Using the case of Sclater's monkey and its relationship with communities in Nigeria, Baker et al. (2014) illustrate why there is great value in understanding local cultural context for effective species and site protection (Baker, Olubode, Tanimola, & Garshelis, 2014).

Efforts to compensate for the costs of conservation and to mitigate PA-related conflicts often overlook complexities in communities that result from convoluted histories and long-existing social and power structures (Coleman, 2000). These efforts are often transactional in nature. This means they deal with problems superficially (Madden & McQuinn, 2014) or focus on changing local behaviors and belief systems, which can be hapless and counterproductive (Manfredo et al., 2017). Community context - including histories of exclusion, socio-cultural marginalization, and power – is therefore important to consider while implementing community-based programs. A popular tool, wildlife tourism, has been widely used to economically strengthen, empower, involve, and educate marginalized communities near protected areas.

The Role of Wildlife Tourism

In areas characterized by charismatic and endangered wildlife, tourism has often been used as a medium to provide opportunities and benefits to locals who bear the cost of conservation. Wildlife tourism, defined as tourism undertaken to view or encounter wildlife (Newsome, Moore, & Dowling, 2002), is viewed as a viable option for a number of reasons. Impacts of wildlife tourism can be broadly categorized into those that directly or indirectly influence the local economy and livelihoods, and those that impact other socio-cultural, and environmental aspects of the community. Wildlife tourism aims to benefit local communities by providing alternative livelihoods that are compatible with conservation efforts (Negi & Nautiyal, 2003). Further, it also has the potential of employing marginalized groups such as women and encourage locals to become local entrepreneurs. Economic stability at a local scale provided by tourism can potentially alleviate poverty (Ferraro & Hanauer, 2011). Tourism in PAs can help in creating local incentives for conservation and ecological maintenance (Jamal & Stronza, 2009). It can also help in empowering locals to be less dependent on natural resources and create a constituency for conservation (Karanth & DeFries, 2011). Tourism can also help developing remote areas and improving infrastructure and access to better medical and educational facilities.

Although a number of benefits have been associated with tourism, many factors can negatively impact its efficacy. One significant limitation of tourism has been the lack of involvement of local communities. There have been many instances where tourism in a community has flourished, but locals are merely spectators who have no involvement or

influence in any process (Karanth & DeFries, 2011). Distant companies and their stakeholders often collect most of the profits and fail to equitably share this revenue with local communities. Studies have shown that local residents who do benefit from tourism are a small portion of the population, and benefits have been highly skewed, creating socio-economic disparities at the local level (Afenyo & Amuquandoh, 2015; Bajracharya, Furley, & Newton, 2005; Banerjee, 2012; Karanth & DeFries, 2011; Nyaupane & Thapa, 2004; Rastogi et al., 2015). Furthermore, jobs available for the locals are not equitably accessible by or available to all (Coria & Calfucura, 2012; Kiss, 2004; Scheyvens & Scheyvens, 2015), for many locals lack the skills required to be a part of the tourism industry. Thus, even when successful wildlife tourism enterprises exist, the poor and excluded continue to remain completely ignored.

Despite these challenges, tourism is still considered a viable alternative livelihood option for many resource-dependent communities (Karanth & Nepal, 2012). While it may be viewed as a vehicle for achieving conservation goals, linking economic benefits to conservation is difficult where wildlife is highly endangered, pressure on biomass resources is high, and stakeholders are many (Sekhar, 2003). Wildlife tourism has also been observed to introduce more stakeholders into an already crowded arena, exacerbating unequal economic benefits and increasing socio-economic disparities (Karanth & DeFries, 2011). These added stakeholders and unplanned and rapid changes due to tourism can risk driving potentially supportive stakeholders against conservation objectives (Rastogi et al., 2015). Therefore, the formation of partnerships between PA stakeholders and tourism industries are encouraged to promote sustainable outcomes.

Despite potential opportunities associated with tourism, little is known about the extent to which benefits from tourism (both economic and non-economic) influence local support for PAs. India, with its diverse and complex historical and socio-cultural context, provides an ideal location to explore the influence of wildlife tourism on social capital and local support for conservation.

India: A Complex History of People and Parks

Calling India diverse is an understatement. This diversity is not only limited to its rich biodiversity, with 8 %of the world's living life-forms in a network of 515 PAs; it is also socially and culturally diverse, with a growing population inhabiting 36 states and union territories, speaking over 150 languages, and following more than nine religious faiths. India is an agrarian country, with nearly half of the population engaged in agricultural or forest-based livelihoods (India Census Bureau, 2011). India, therefore, faces numerous challenges in balancing the needs of this growing population and simultaneously conserving its natural resources. The country's colonial past, that plundered it of its natural resources, resulted in the top-down, restrictive conservation policies that are seen today. Before the British colonial powers took charge of India's natural and economical assets, India had a significant share in the world's produce-exporting spices, textiles, and iron weapons (Bindra, 2017). Yet, at the time of independence, India was one of the poorest counties of the world (Morris, 1983). India's complex social composition and rich colonial history have significantly influenced present-day conservation outcomes.

Complexities of castes

Indian society is comprised of tens of thousands of endogamous communities, a majority of which are Hindu caste groups. This social system observes a division of labor which is hereditary and hierarchical (Shah, 2004). Society is broadly divided into an upper and lower stratum. The upper three strata comprising of *Brahmins* (priests), *Kshatriyas* (warriors) and *Vaishyas* (traders), enjoy certain privileges in terms of resource control and consumption. The lower two strata: *Shudra* (a group comprising of peasants, herders, fisherfolk, and skilled artisan groups) and *Ati-Shudras* or outcastes or (former) untouchables, made up the majority of the population and subsisted as 'ecosystem people' (Aggarwal, 1971; Gadgil & Guha, 1995; Shah, 2004). These caste groups often resemble tribal groups in their self-governing capacities, but do not exhibit territorial exclusivity, as many castes overlap. Different castes are often linked together in a web of mutually supportive relationships (Gadgil & Guha, 1993). However, these relationships are far from egalitarian, as Indian society is sharply stratified. Higher castes are more favored and possess more power over lower castes. Many marginalized groups living near PAs are associated to the lower strata of society. And when the conservation of charismatic mega-fauna conflicts with needs of these ecosystem people, these marginalized human populations are often the ones that suffer.

The social impacts of PAs in India

Designating forest land and demarking PAs may be viewed as a positive step for biodiversity conservation. However, the declaration of PAs in India did not ensure the protection of the rights of local communities who historically resided there (Sarin, 2005). Many areas were declared forest lands without surveys, thus turning resident

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communities into encroachers (Damayanti, 2008; Rastogi, Hickey, Badola, & Hussain, 2012). These policies led to large scale relocations and restrictions imposed on communities regarding resource use (Rastogi et al., 2012). Denying access to newly formed PAs impinged on the surrounding local communities, who frequented the forest for collecting timber for building, fuelwood, fodder and honey (Torri, 2011).

Approximately 600,000 people have been displaced out of PAs in India since their establishment (Torri, 2011). Displacement and relocation often proves to be a traumatic experience for these 'conservation refugees' (Geisler, 2003; Redford & Agrawal, 2007). A study by Torri (2011) highlighted the plights of communities around Sariska Tiger Reserve. Under the threat of being displaced and removed from their homes, community members were reportedly abused by forest officers. There were also reported instances of violence and corruption on the part of forest officers, who in some cases only paid part of the compensation offered by the government. The communities who continued living within the reserve were deprived of any infrastructure or social services. Furthermore, in a few instances, forest officers displaced the villagers to areas with poor soil quality and rented the parcels of land allocated for relocation by the government to rich local landowners (Torri, 2011). Anecdotal evidence suggests similar practices are routine in other parts of India as well.

Additionally, forest managers often view local communities as "ignorant, primitive, under-developed and economically irrational" (Torri, 2011). Consequently, many forest officers believe they are aware of 'what's best for the villagers' (Torri, 2011). Another study of forest officer's perception of local communities unveiled their

support for a "fines and fences," coercive approach to restrict local access. The study went on to highlight forest officer's justification of using coercive methods, citing that otherwise the reserve would be "wiped clean of wildlife in a month's time" (Kashwan, 2016).

Coercive measures, restrictions, and shortsighted planning of relocations result in numerous conflicts between government authorities (e.g., forest officers) and local communities, and these conflicts have only intensified over the years (Rangarajan & Shahabuddin, 2006). How local communities perceive conservation measures is extremely important, for these perceptions ultimately dictate the success of conservation efforts. Distrust and disconnect, coupled with a lack of dialogue between authorities and local communities, can increase conflicts and negatively impact engagement in conservation measures (Torri, 2011). This reinforces a need for mutual trust among the multiple stakeholders that share, use, and manage PA landscapes. Understanding the benefits and costs of conservation to communities, the nature of stakeholder relationships and social capital around PAs and identifying underlying causes of conflict that impede collaboration between different stakeholders is a key component of successful conservation in India.

Statement of Purpose

Conservation in India, like in other parts of the world, is contentious and complex. The Indian protected area landscape is characterized by dense, culturally diverse, socially stratified, forest-dependent communities who face wildlife-related conflicts, resource

alienation and economic hardships due to cultural and social marginalization. All of this

exists against a backdrop of a rich colonial history of exclusion and exploitation

(Cederlof & Rangarajan, 2009; Sahay & Walsham, 1997). Marginalized communities

who often depend on PAs for sustenance often have to bear the costs of conservation,

where restrictive policies have a direct impact on local livelihoods (Ghate, 2003; West,

Igoe, & Brockington, 2006). Conservation attitudes of local communities and other

stakeholder groups (e.g., forests officials), embedded in complex histories of exclusion,

make PAs hotbeds of conflict especially in places where wildlife tourism exists yet

benefits are inequitably distributed. All these factors could have negative consequences

for conservation and understanding them is therefore critical for biodiversity conservation

goals to be achieved. Therefore, in this study we aim:

1. to explore how social capital, manifested through social relationships within

   communities and between external stakeholders (e.g., forest managers) influence

   support for PA management.

2. to explore local awareness of wildlife tourism and community beliefs about

   tourism's impacts and how this might influence support for PAs in diverse contexts.

3. to explore diverse stakeholder perspectives regarding resource use and management

   to identify the underlying causes of conflict and how they may hinder collaborative

   processes.

Dissertation Format

This dissertation follows the independent article format and consists of five chapters. Outlines for each chapter are provided below, including the indicated publication outlet. Chapters two, three, and four will be formatted as research articles, each with their own introduction, methods, results and discussion sections.

1. The first chapter is this Introduction. This chapter provides background information, outlines a review of the literature that helped shape this dissertation, and identifies the purpose of the study.

2. The second chapter is a research article investigating connections between social capital and conservation in two Indian PAs (Dudhwa National Park in Uttar Pradesh and Ranthambore National Park in Rajasthan) that are geographically and culturally distinct. We use social capital variables for within community (bonding capital) and extra-community relations (bridging capital) to investigate its connections with conservation, and how this relationship differs in diverse contexts. Through a quantitative comparative case study design, chapter two addresses the following questions:

   - What is the relationship between bonding social capital and support for the local protected area?

   - What is the relationship between bridging social capital and support for the local protected area?

   - How do these relationships vary in different protected area contexts?

We intend to submit this article to the journal *Society and Natural Resources*.

3. The third chapter is a research article addressing community awareness of wildlife tourism and perceptions of tourism impacts in high and low tourism contexts (Ranthambore National Park and Dudhwa National Park). This study, while examining differences across two parks, also focuses on within park differences by comparing responses in tourism proximate communities to those that are farther from tourism regions. Chapter four addresses the following questions:

   • Are communities aware of wildlife tourism?

   • What are beliefs about wildlife tourism's impacts (both positive and negative) on local communities?

   • What are beliefs about wildlife tourism's impacts (both positive and negative) on parks and wildlife?

We intend to submit this article to *The Journal of Sustainable Tourism*.

4. The fourth chapter is a research article that identifies and addresses sources of conflict around Indian PAs. This qualitative comparative case study focuses on data collected from several stakeholders (e.g. local community members, leaders, forest managers) through semi-structured interviews across Dudhwa National Park (Uttar Pradesh) and Ranthambore National Park (Rajasthan). The investigation is guided by the following questions:

   • What are the overarching sources of conflict in PAs?

   • Do they manifest uniquely in diverse park contexts?

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- What underpins this conflict allowing it to persist?

We intend to submit this article to the journal *Human Ecology* or *World Development.*

5. The fifth chapter summarizes the findings from the previous three chapters. It highlights key implications and proposes specific recommendations for both research and practice.

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CHAPTER TWO

IT TAKES A (UNITED) VILLAGE:
THE CRITICAL INFLUENCE OF SOCIAL CAPITAL ON CONSERVATION IN
INDIA

Abstract

Protected areas (PAs) require support from the communities who live in close

proximity to them for the short-term efficacy and long-term sustainability of

conservation. To ensure continued support for PAs and conservation policies,

community-based approaches to natural resource management have been widely

advocated. Though important, collaborative processes in protected areas are often

challenging because stakeholders do not have the capacity, or social capital, to effectively

participate in decision-making and co-management efforts. Higher levels of social capital

are thought to improve community-based processes and socio-ecological outcomes;

however, this has been inadequately explored in multi-stakeholder contexts, where

relationships between stakeholders are unequal and embedded in conflict. This

quantitative study uses a social capital framework, to investigate the relationship between

bonding (intra- community relationships) and bridging social capital (extra-community

relationships), composed of both cognitive and structural social capital, and how it

influences support for PA/conservation. We use a comparative case study design to

assess how these relationships differ in Indian PAs that are geographically and culturally

distinct. Our quantitative study of two parks in India: Dudhwa National Park, Uttar

Pradesh (n=114) and Ranthambore National Park, Rajasthan (n=193) found that across

both parks, cognitive (e.g., trust, cooperation) and structural elements (e.g., inclusion, empowerment) of bonding social capital influenced support for parks in different ways. We also discovered that bridging social capital, or positive relationships with park managers, helped to leverage high levels of existing bonding capital and channel it towards conservation efforts. Through this study we underscore the need for investing in both cognitive and structural components of social capital for successful collaborative relationships.

Key words: Social capital; Protected Areas; India; Community-based Conservation; Collaboration

Introduction

Background

  Despite several adverse social impacts from their establishment (Anand &

Radhakrishna, 2017; Anthony, 2007; García-Frapolli, Ramos-Fernández, Galicia, &

Serrano, 2009; Jim & Xu, 2002; Wegge, Yadav, & Lamichhane, 2016), protected areas

(PAs) require the support of communities for the short-term efficacy and long-term

sustainability of conservation (Edgar et al., 2014; Gelcich & Donlan, 2015; Lele,

Wilshusen, Brockington, Seidler, & Bawa, 2010; Pretty & Smith, 2004; Rohe, Aswani,

Schlüter, & Ferse, 2017; Voyer, Gladstone, & Goodall, 2014). To ensure continued

support for PAs and conservation policies, community-based approaches to natural

resource management have been widely advocated (Andrade & Rhodes, 2012; Davies &

White, 2012; Mbaiwa & Kreuter, 2011; Measham & Lumbasi, 2013).

  In the conservation literature, many terms (e.g., involvement, inclusion,

partnership, participation, co-management, collaboration) have been used to describe

natural resource management by and/or in conjunction with local communities (Reed,

2008). The overarching aim of these collaborative processes is to devolve power to local

communities, integrate positive social programs such as ecotourism, while

simultaneously achieving conservation goals (Fischer, Wakjira, Tibebe, & Tefera

Ashenafi, 2014; Jones, 2007; Koontz & Thomas, 2006; Schultz, Duit, & Folke, 2011;

Waylen et al., 2010). For example, a study in a Namibian conservancy found that

improving local livelihoods through job creation and income sharing improved rural

participation in conservation and increased wildlife numbers (Mufune, 2015). Similar

positive outcomes occur by encouraging public participation in all stages of the

conservation process including information gathering, consultation, decision making,

initiating action, and evaluation (Campbell & Vainio, 2003; Gruber, 2010).

Though important, collaborative processes in protected areas are often

challenging because stakeholders do not have the capacity, or social capital, to effectively

participate in decision-making and co-management efforts. Higher levels of social capital

are thought to improve community-based processes and socio-ecological outcomes

(Berkes, 2009; Bodin, Crona, Bodin, & Crona, 2008; Pretty, 2003), however few studies

have explored the relationship between the social capital of local communities and

support for protected areas. Therefore, this study explores different dimensions of social

capital and its influence on support for PAs within a complex and contentious

conservation context: Indian tiger reserves.

Social Capital and its Dimensions

Social capital refers to the ability and resources of individuals or groups of

individuals to build and maintain relationships between different actors; it references the

forces that prompt communities to work together, obey certain common rules, and

cooperate with other actors outside their social circles (Bourdieu, 1986; Carlile, Rate, &

Portes, 1998; Coleman, 1988; Ostrom & Ahn, 2008; Putnam, 1995). Broadly, social

capital refers to the "features of social organization such as networks, norms, and social

trust that facilitate coordination and cooperation for mutual benefit" (Putnam, 1995, p.

67). It has also been described as the aggregate of shared resources (actual or potential)

which are linked to possession of a durable network of relationships (Bourdieu, 1986).

Bonding and bridging social capital.

Social capital is influenced by relationships within groups, or horizontal

relationships (across the same level of the community—i.e., households), as well as

relationships between different groups with different levels of power, or vertical

relationships (Grootaert, 1998; Jones, 2005). Based on these horizontal and vertical

connections between actors (Lyon, 2000), social capital may be broken into two core

components: bonding and bridging social capital. According to Woolcock & Sweetser

(2002), bonding social capital refers to the connections between people of a homogenous

group and therefore aids horizontal connections (family, relatives, kinship). This type of

social capital is important for a sense of personal identity and belonging. Bridging social

capital refers to the ability to build and maintain connections between diverse people; or

the social capital that links or cuts across different communities/groups (Narayan, 1999).

It extends beyond immediate networks of peers to cross demographic divides and

'structural holes' (Burt, 2017) (or gaps in networks) to facilitate access to information

and resources outside the community (Burt, 1997; Onyx, Edwards, & Bullen, 2007). In

other words, bonding refers to intra-community relations and bridging refers to extra-

community relations (Harpham et al., 2002). The 'quality' of these intra- and extra-

community relations may be examined through their cognitive and structural elements

(Lancee, 2010).

Cognitive and structural elements of bonding and bridging social capital.

All aspects of social capital, including bonding and bridging capital, are often

understood to be composed of cognitive and structural components (Grootaert &

Bastelaer, 2002; Krishna & Shrader, 1999). Cognitive aspects of social capital refer to

'how people feel' with respect to other actors (Harpham et al., 2002) and emerge from mental processes and ideas that are reinforced by culture and ideology (Uphoff, 2000). Therefore, cognitive aspects of social capital for an individual can emerge from close relationships with others as well as sporadic contacts with other groups or organizations in which the individual does not actively participate. Structural aspects of social capital refer to 'what people do' and how actors interact (Harpham et al., 2002); it addresses the rules, precedents, procedures, and networks of formal and informal institutions that help facilitate collective action (Jones, 2005); Uphoff, 2000). Unlike cognitive aspects of social capital, structural social capital assets are extrinsic and observable. Both cognitive and structural aspects of social capital are widely used in social capital assessments (Krishna & Uphoff, 1999; Moore, Severn, & Millar, 2006; Muniady, Mamun, Rosli Mohamad, Yukthamarani Permarupan, & Binti Zainol, 2015).

Social Capital and Conservation

As a feature of social organization, social capital facilitates coordination and cooperation between actors to achieve mutually beneficial outcomes. The concept of social capital has therefore been widely used to understand community relationships in shared natural resource contexts (Bisung, Elliott, Schuster-Wallace, Karanja, & Bernard, 2014; Ostrom, 1993; Pretty & Ward, 2001; Wakefield, Elliott, & Cole, 2007). Cognitive and structural aspects of bonding and bridging social capital have been linked to cohesion, trust, and reciprocity both within and between groups (Krishna, 2002; Pretty & Smith, 2004; Rastogi, Thapliyal, & Hickey, 2014), reducing transactional costs for collective action (Dean, Fielding, Lindsay, Newton, & Ross, 2016; Tai, 2007). And when

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cognitive and structural aspects of bonding and bridging social capital are strong, it is likely to enhance collaborative processes (Zahra & McGehee, 2013) and can potentially stimulate and propagate systems and processes leading to the effective and sustainable management of resources (Dahal & Adhikari, 2008; Moore et al., 2014; Musavengane & Simatele, 2016). Some authors also found that high levels of social capital encourage pro-environmental behaviors (Liu et al., 2014).

Despite multiple benefits, it is important to note that high levels of social capital do not always yield favorable conservation outcomes. In some cases, social capital can create and sustain opposition toward conservation efforts. Rastogi et al. (2014) in their India based study highlight how social capital is a significant determinant of potential for community action to oppose, as much as support tiger conservation. Unresolved conflict and uncompensated losses result in locals retaliating against parks and wildlife, leading to direct conflict with park managers (e.g., forest department and forest staff). If antagonized, communities can use political connections (Chhatre & Saberwal, 2005), collective non-cooperation, and retaliatory and incendiary action (Mukherjee, 2009) to pose serious threats to PA management. Such problems are often seen in India.

Most PAs in India are surrounded by densely populated communities that depend directly or indirectly on forests for their livelihood. Historically top-down, exclusionary management of forest departments in India has restricted access to PA resources which has negatively impacted local livelihoods (Vemuri, 2008). Proximity to PAs also subjects these communities to negative interactions with wildlife (Ghosal, Skogen, & Krishnan, 2015; Karanth, Gopalaswamy, DeFries, & Ballal, 2012; Miller, 2017). As a result, India

has moved towards a co-management or participatory framework aimed to increase support for conservation among PA proximate communities (Sekhar, 2003). Several programs such as India Eco-Development Project (IEDP) and Joint Forest Management (JFM) have been implemented in various PAs across the country to build structural capital and achieve these goals (Ghate, 2003; Gubbi, Linkie, & Leader-Williams, 2008; Kumar, 2002). The programs were initiated to foster positive relationships between park managers and locals, reduce conflict, and uncover cost-effective conservation and development solutions through locally managed committees. This co-management relationship was designed to result in mutually agreed upon rules for sustainable resource use, but these programs have yielded mixed results. In some areas forest health has improved (Shyamsundar & Ghatey, 2014), but in others certain social groups (e.g., women and lower-caste group households) have been excluded (Agarwal, 2001; P. Mukherjee, Ray, & Bhattacharya, 2016), exacerbating wealth disparities and power differentials (Ray & Bhattacharya, 2011). Overall, conflicting evidence suggests an uncertain relationship between social capital and protected area support, particularly in the Indian context.

Our exploratory study tests a model integrating multiple dimensions of social capital to examine PA support. We characterized the bonding capital within park-proximate communities and the bridging capital between communities and forest officials using cognitive social capital measures of trust, reciprocity and cooperation, and solidarity and structural social capital measures of integration, empowerment, conflict, and networks and mutual support. To test the model, we investigated the relationship

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between bonding and bridging social capital, composed of both cognitive and structural social capital, and support for PA/conservation around two Indian PAs that are geographically and culturally distinct. Therefore, this study is guided by the following questions:

1. What is the relationship between bonding social capital and support for the local protected area?

2. What is the relationship between bridging social capital and support for the local protected area?

3. How do these relationships vary in different protected area contexts?
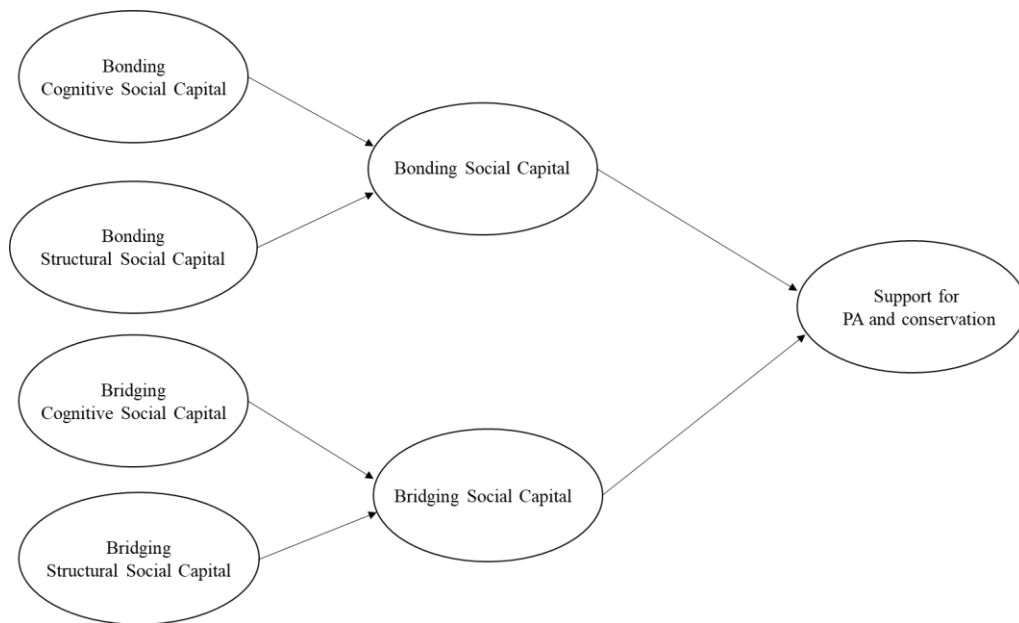
Fig. 2. 1 Conceptual Model Linking Various Types of Social Capital and Community Support for Parks and Conservation.

Methods

Study Area

　　　　To investigate how social capital interacts to influence support for PAs we studied communities around two Indian PAs characterized by different human population attributes, resource-related challenges, and park-related benefits (tourism opportunities, park access, etc.) The sites were specifically chosen to capture a range of potential social capital and PA support.

Dudhwa National Park.

　　　　Dudhwa National Park (DNP) in Uttar Pradesh is a part of the greater Dudhwa Tiger Reserve landscape which also encompasses Kishanpur Wildlife Sanctuary and Katerniaghat Wildlife Sanctuary. The national park is spread over an area of 7,680 km^2 and is situated in the Terai Arc Landscape. The northeastern part of DNP shares its boundary with Nepal. These low elevation plains (Terai) were originally covered by expanses of rich alluvial grasslands interspersed with subtropical rainforests. It is a biodiverse region characterized by a number of charismatic fauna such as the tiger (*Panthera tigris)*, elephant (*Elephas maximus indicus*), leopard (*Panthera pardus*), swamp deer (*Rucervus duvaucelii duvaucelii*), gharial (*Gavialis gangeticus*), Bengal florican (*Houbaropsis bengalensis*), along with a number of fish and bird species. The rich alluvial lands were cleared for agricultural purposes, which encouraged human settlement in this region. Much of the pristine landscape has therefore been cleared except for small fragments of forest and grasslands (Kanagaraj et al., 2011; Wikramanayake et al., 2004). There are approximately 68 villages within a distance of

100 meters from the park boundary. The region is dominated by a tribal group known as the 'Tharu'. Village communities are more heterogeneous moving away from the park towards the township of Palia Kalan. The primary occupation of communities in this region is agriculture (Maiti, 2004). Most people grow crops for self-consumption and commercial purposes (e.g., sugarcane, potato). Agricultural fields extend almost up to the park where there is no buffer (Singh & Prasad, 2014). Due to this, many local communities experience intense crop raiding. Tourism in this park is lower as compared to other parks in northern India, probably due to its remoteness.

Ranthambore National Park.

Ranthambore National Park (RNP) in Rajasthan has one of the highest tiger populations in western India, making it a popular wildlife tourism destination. It is a part of the larger Ranthambore Tiger Reserve, spread across an area of 1,394 km^2, which also consists of Sawai Mansingh Wildlife Sanctuary and Keladevi Wildlife Sanctuary. The habitat is primarily tropical, dry deciduous and thorn forest with a few semi-arid areas. Apart from the tiger, the biodiversity of the park includes a large variety of reptiles, birds, and mammals such as the leopard (*Panthera pardus*), caracal (*Caracal caracal*), spotted deer (*Axis axis*), sambar deer (*Rusa unicolor*), and Indian Gazelle (*Gazella bennettii*). The human population density around RNP is high, with more than 300 villages surround the park within 5km of its radius. The villages are dominated by the Meena, Mali, and Gujjar communities (Bagchi, Goyal, & Sankar, 2003). While the Meena and Mali community are primarily agriculturists, the Gujjars are an agro-pastoral community. Crop raiding and livestock loss due to wildlife are common in the region. Due to the park's

proximity to the 'Golden Triangle of Tourism' (New Delhi-Jaipur-Agra), it is frequented by tourists. However, while tourism is an important part of the local economy, studies indicate that less than 0.001% of the local population is involved in tourism activities (Karanth & DeFries, 2011).

Data Collection

The lead author and two research assistants collected data in the two Tiger reserves. Prior to data collection, research assistants were trained in social science data collection strategies and were familiarized with the survey instrument, the technology used to collect data, and ethical considerations. Data were collected using intercept surveys that occurred between June-August 2018. This period was towards the end of the tourism season for both sites.

Village selection.

This study focused on villages that were within a 5 km distance from the park boundary at each site. With the help of local informants and experts at both sites, we assessed the local landscape and characteristics of each village (density, size, composition, distribution, etc.). Some villages consisted of a single-family, while others consisted of multiple governing bodies and village leaders. Based on this information, we identified different clusters of villages that shared similar characteristics based on racial/ethnic composition and distance from tourism centers to ensure that data collection represented the breadth of socio-cultural diversity at the two sites. Within each cluster, the villages chosen were ones that were accessible from the main road. We identified two clusters in DNP and three clusters in RNP. A total of 20 villages were sampled in DNP.

Here, village clusters represented two management zones in the park. One cluster

consisted of 11 Tharu dominant villages; while the other cluster consisting of 9 villages,

represented more mixed communities At RNP, where tourism was particularly popular on

the western end of the park and community composition was quite diverse, we defined

villages clusters primarily based on proximity to tourism activity. A total of 28 villages

were surveyed in RNP. The tourism proximate cluster consisted of 10 villages, the

second cluster on the north end of the park consisted of 8 villages, and the third cluster on

the east end of the park consisted of 10 villages. We aimed to collect a minimum of forty

household surveys from each village cluster at each site to ensure statistical robustness.
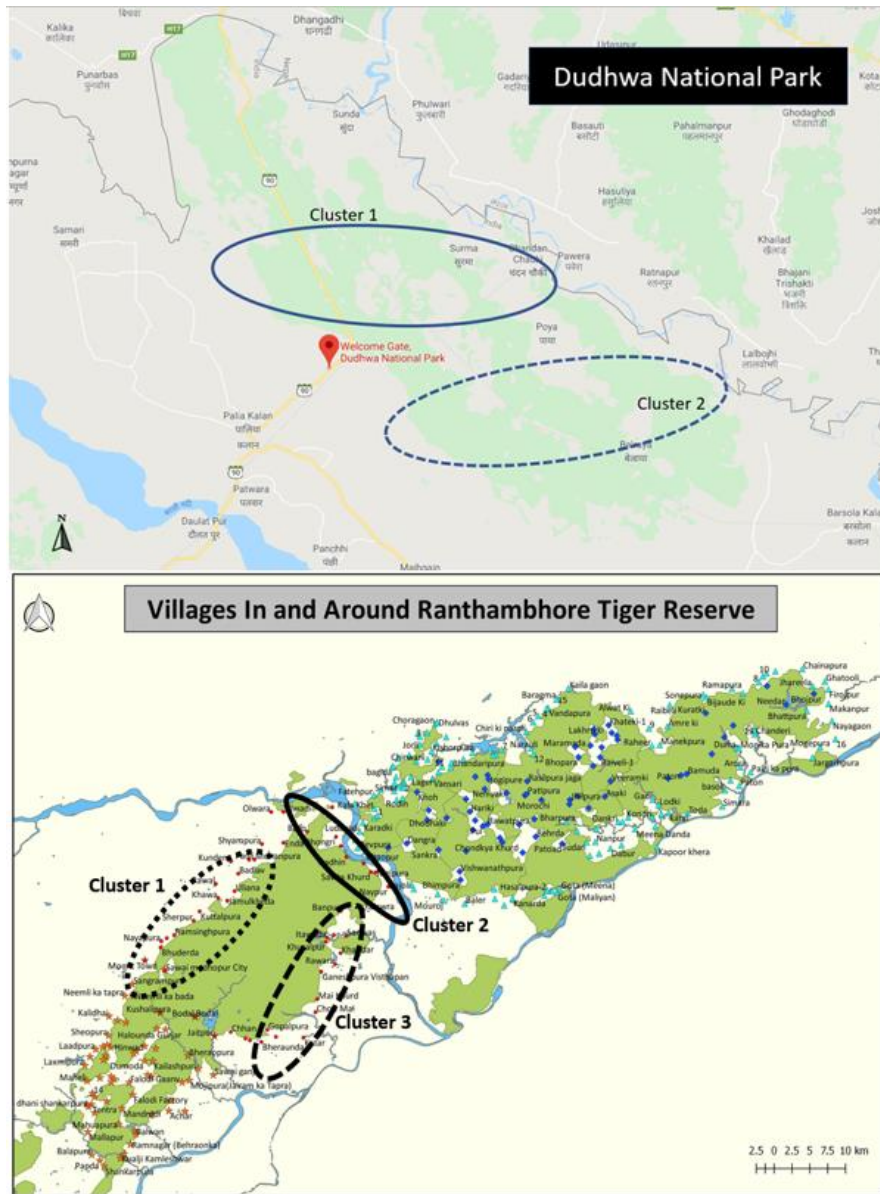
Fig. 2. 2 Maps of Dudhwa National Park (Above) and Ranthambore National Park (Below) Showing Location Of Village Clusters.

Household surveys.

To collect data in a village we used a systematic sampling strategy where every

k^{th} house was sampled (k was unique for every village, depending on the number of

houses). We were cognizant about village hierarchies and how marginalized groups in India were often pushed to the outskirts of the village. Therefore, to gather a sample that was diverse and representative of all social groups in irregularly spread villages, we started by sampling the outermost houses and moved to the center. The survey instrument was translated in the local language (Hindi) and designed in a way that could be understood by members of the local community. All members of the research team were fluent in Hindi. We sought to talk to the head of the household. In their absence, we would survey anyone from the household who was above the age of 18, willing to participate, and able to provide us with information. Due to low literacy rates among adults in rural India, survey questions were read to participants. Paper-based surveys were used in Dudhwa and iPads were used to collect data in Ranthambore. Open-ended questions in the survey were audio-recorded and transcribed later. We did not receive any refusals to participate in the survey.

Questionnaire design and measurements

The questionnaire consisted of six sections, with four pertaining to this study: 1) community character and bonding social capital (cognitive and structural); 2) relationships with park managers and bridging social capital (cognitive and structural); 3) attitudes towards the park and park support; and 4) individual demographic profiles.

Social capital items were adapted from the Social Capital Assessment Tool (SCAT) (Krishna & Shrader, 1999) and items developed by Onyx, Edwards, & Bullen (2007). Several researchers have used short, adapted versions of SCAT in low income

countries (Rastogi et al., 2014; De Silva, Huttly, Harpham, & Kenward, 2007; Harpham, Grant, & Thomas, 2002) Measures of social capital should be context-specific (Ballet, Sirven, & Requiers-Desjardins, 2007); therefore, our questions were adapted to fit contexts common to park-proximate communities. Cognitive social capital was measured through *trust* (the extent to which people feel they can rely on their social networks to assist them or do no harm); *reciprocity and cooperation* (if people care for each other or if community members are only interested in their own welfare); and *solidarity* (if villagers unite during a crisis). Structural social capital was measured through *integration/inclusion* (if people's views were respected in the community), *conflict* (if there are conflicts within the community), *empowerment (*if people had a voice in the community), and *networks and mutual support* (who takes action when needed). For bonding social capital, these measures were modified to characterize intra-community relationships; for bridging social capital, similar cognitive and structural indicators were adapted to understand relationships between the community and park managers. To keep the questionnaire concise, single-item measures were chosen to represent each construct. All items were measured on a scale of 1 (Disagree a lot) to 5 (Agree a lot) Likert-type scale. Several open-ended questions were also included in the survey to provide additional depth and context for responses, helping to illuminate patterns of interest.

Support for PA management was the dependent variable in the study. When present across multiple stakeholder groups, this support typically equates to conservation success (Brockington, 2004). "Support" can be measured in terms of support for resource

conservation and support for park policies (Stern, 2008). We measured park support through four items focused on *individual* and *community*-level endorsement for the PA and how it is currently managed, and the extent to which the park balances *local livelihoods* and *wildlife conservation*. All items were measured on a Likert-type scale of 1 (Disagree a lot) to 5 (Agree a lot).

To create a demographic profile of respondents, we collected information about an individual's age, sex, education, religion, and occupation(s). To understand the social composition of communities, we also collected information about castes. The caste system is a 3000-year-old social-stratification system influenced by different dynasties and regimes in India. Modern Indian legislature recognizes certain historically 'Depressed Classes' that are educationally or socially disadvantaged and categorized into "Scheduled" (listed) Tribes (ST), Castes (SC), and Other Backward Classes (OBC) (Chatterjee, 1996). On a household level, we inquired about family size, years living in the community, sources of livelihood (specifically if any part of their income came from the forest, employment with the forestry department, or from tourism), sources of energy, dependency on the forest, distance from park boundary, house ownership and access to electricity, water, and sanitation.

Data Analysis

We analyzed data using IBM SPSS (v21) and EQS (v6.4) software (Bentler & Wu, 2005). Selected responses to open-ended questions were used to highlight and help explain key results. Prior to analysis, data were screened for outliers using the Mahalanobis Distance criterion. After data screening, we conducted separate

confirmatory factor analyses (CFA) for responses at each site to assess reliability, validity, and overall factor structure of items intended to measure each aspect of social capital and park support. The model was specified according to social capital theory using pre-existing scales and items (e.g., SCAT) (Krishna & Shrader, 1999). We assessed correlations between items and factors using factor loadings, retaining items with factor loadings above 0.4 (Tabachnick, Fidell, & Ullman, 2007). Model fit was improved by removing single items using an iterative process, based on post-hoc diagnostic tests such as Lagrange Multiplier Test and Wald Test. Retained items are listed in Table 2.3. To further validate the measurement of each aspect of social capital and park support, we performed increasingly stringent invariance tests (configural, measurement, and structural) between sites (Byrne, 2013; Kline, 2015). Model fit was examined after each test and compared to the baseline CFI; changes <0.05 were deemed to confirm invariance between the models (Byrne, 2013).

We then conducted descriptive analysis and t-tests to describe and investigate the characteristics of respondents at each site and compare social capital and park support variables across sites. Structural equation modeling (SEM) was used to analyze the hypothesized relationships between bridging and bonding social capital and PA support (Fig 2.1).

To test our hypothesized model and the relationships between different dimensions of social capital and PA support (Fig 2.2), we report the Satorra-Bentler Chi-Square (SBχ^2), Robust Comparative Fit Index (CFI), Standardized Root Mean Square Residual (SRMR), and the Robust Root Mean Square Error of Approximation (RMSEA)

and its 90% confidence interval (Byrne, 2013; Kline, 2015). The SB χ^2 is a robust

estimation that adjusts for non-normality and can be interpreted as a χ^2. For acceptable fit,

values of CFI > 0.9, SRMR <0.09, RMSEA< 0.08 are deemed acceptable (Bentler & Wu,

2005; Byrne, 2013; Kline, 2015; McDonald & Ho, 2002). We also report the

standardized coefficient (β) to assess the strength of relationships between variables.

Results

Descriptive statistics

A total of 307 surveys were collected from 20 villages in DNP (n=114) and 28

villages in RNP (n=193). More than 98% of the respondents surveyed were local (i.e.

were born in that region and had been living there for more than one generation); the

remaining 2% were first-generation immigrants. The average age of survey participants

across both sites was 35. Since we surveyed heads of the family, there were more male

participants than females in our sample (82% vs. 18%). Caste representation differed in

both sites, with scheduled tribes (e.g., Tharu) representing much of the population around

DNP (73%), while in RNP there was a similar representation of ST (37%) and OBC

(32%) in the sample (Table 2.1).

The primary sources of income in both parks were agriculture and unskilled labor

(manual labor in fields or construction) (Table 2.1). In RNP, 5% of the respondents

surveyed were employed in tourism-related jobs and 3% listed tourism-related jobs as a

secondary source of income. In DNP, none of the survey respondents listed tourism jobs

as a primary source of income, and 5% listed it as a secondary source. The reported

yearly income for 51% of the respondents was under INR 50,000, which is equivalent to

USD 708.65. About 10% of survey respondents (DNP=23%, RNP =4%) across both sites

reported that they made an income that allowed their lives to be livable enough to

'sustain' (Table 2.1). These responses indicated that most local residents possessed little

or no savings and ate what they were able to grow, however, it is uncertain if this amount

is large or small. Differences in forest dependency between the two sites were substantial,

with more forest-dependent respondents in DNP (97%) than RNP (54%). This could be

because participants in RNP were subjected to strict forest resource extraction rules and

had access to resources (e.g., cooking fuel) that decreased their dependency on forests.

Human-wildlife conflict was prominent at both sites. Elephants were identified as most

problematic in DNP, whereas losses due to ungulates and cat species (tiger/leopard) were

prominent in RNP. Table 2.1 summarizes the characteristics of the respondents in each

site

Table 2. 1 Demographic Information of Survey Respondent at DNP (n = 114) and RNP (n = 193).

Measure	Dudhwa National Park (DNP)		Ranthambore National Park (RNP)	
	Frequency	Percentage	Frequency	Percentage
Age (Years)				
18-25	15	15%	36	22%
26-49	61	59%	88	53%
50+	27	26%	40	24%
Household size				
1-10	5	60.4%	145	82.8%
11-20	30	28.3%	27	15.4%

21+	12	11.3%	3	1.7%
Gender				
Male	101	88.6%	152	78.8%
Female	13	11.4%	41	21.2%
Religion				
Hinduism	108	94.7	185	95.9%
Islam	5	4.4	8	4.1%
Caste				
Scheduled Tribe	82	73.2%	60	32.4%
Scheduled Caste	9	8%	32	17.3%
Other Backward Caste	10	8.9%	69	37.3%
Other Groups	11	9.8%	24	13.0%
Education				
Uneducated/Illiterate	40	35.1%	51	26.6%
Primary	20	17.5%	22	11.5%
Secondary	30	26.3%	64	33.3%
High school and above	24	21%	55	28.6%
Household Income (INR)				
Sustainable	23	23.5%	7	3.8%
>INR 10,000	5	5.1%	4	2.2%
10K-50K	41	41.8%	93	50.8%
51K-100K	19	19.4%	41	22.4%
1.1K and above	10	10.2%	38	20.7%
Forest Dependency				
Yes	110 (113)	97.3%	104 (192)	54.1%
Timber	107	97.3%	49	47.1%
Grass	101	91.8%	0	0
Honey	11	10%	0	0
Fruits/Vegetables	71	64.5%	0	0
Grazing	68	61.8%	36	34.6%
Fish	14	12.7%	1	1%
Worship	0	0	66	63.5%
Human-Wildlife Conflict				
Present	112 (113)	99.1%	193 (193)	100%
Deer	61	55%	140	81.9%
Wildboar	56	50.5%	160	93.6%
Bluebull (Nilgai)	21	18.9%	165	96.5%
Leopard	0	0	100	58.5%
Monkey	37	33.3%	1	0.005%

Elephant	105	94.6%	NA	NA
Tiger	1	0.01%	155	80.3%

Valid percentage reported after removing missing values.

The structure of social capital (Measurement Model).

After removing 23 influential cases, 282 cases were analyzed (DNP=109, RNP=173). While we retained the two-factor structure for bonding social capital (with cognitive and structural capital as sub-dimensions), these CFA supported the cognitive and structural sub-dimensions to be combined into a single factor for bridging social capital.

After running initial models, two items from bonding structural social capital (conflict and network and mutual support) and one item from bridging social capital (conflict) that performed poorly across both sites were removed (see Appendix E for list of original items and loadings). After removing problematic items, fit indices indicated that the measurement model was an acceptable representation of the data (Dudhwa: SBχ^2 (59) p< .05; CFI= 0.948; SRMR= 0.074, RMSEA= 0.049, Ranthambore: SB χ^2 (59) p< .05 CFI= 0.936; SRMR= 0.048, RMSEA= 0.066).

Through invariance testing, we assessed the stability of the measurement model by carrying out an increasingly stringent cross-validation analysis across the two groups of respondents at DNP and RNP. Table 2.2 summarizes the fit indices for each incremental model. Based on these measures, the structure and metrics are stable, and the model can be considered as an acceptable representation of the data in both samples.

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Table 2. 2 Fit indices and measurement model invariance testing for equality of factor structures and loadings across two sites; DNP and RNP

Model	$SB\chi^2$ (df)[a]	SRMR	RMSEA[a] (90% C.I.)	CFI[a]	ΔCFI
Preliminary CFA Measurement Model					
Dudhwa	73.9095 (59) *	0.074	0.049 (0.00, 0.081)	0.948	--
Ranthambore	100.826 (59) *	0.048	0.066 (0.043,0.087)	0.936	--
Configural Model	174.709 (118) *	0.062	0.060 (0.040, 0.077)	0.944	--
Measurement Invariance	187.514 (127) *	0.074	0.059 (0.040, 0.076)	0.940	0.004
Structural Invariance	181.441 (123) *	0.075	0.059 (0.040, 0.077)	0.942	0.002

*Notes: [a] robust statistics; CFI = Comparative Fit Index; SRMR = Standardized Root Mean Squared Residual; RMSEA = Root Mean Square Error of Approximation; $SB\chi^2$ = Satorra-Bentler Scaled Chi-Square; df = degrees of freedom; * p < .05. p*

Assessing Differences across Both Parks

Patterns of relationships between social capital and park support were similar across both sites (Fig. 2.3). Despite higher park dependence in DNP (Table 2.1), park support was higher in RNP, $t(149.6) = -3.13$, p<.05, $d=-.387$ (Fig 2.3). A respondent from RNP shared, "*Yes (we support the park) because it supports rains, greenery, animals, tourism and (consequently leading to) inflow of money. Sawai Madhopur [the park's gateway community] has gained fame from this park*".

Overall, bonding social capital (cognitive and structural capital combined) was high around PAs, and slightly higher in DNP, $t(276) = -1.53$, p>.05, $d=-.189$ (Figure 2.3). Collectively these values indicate high levels of trust, solidarity, reciprocity, and

cooperation within the park-proximate community. A survey participant from DNP explained, "*Helping is a part of village life. Everyone helps each other. But when you live together- you tend to clash sometimes, but 90% people are helpful*".

Bridging social capital, which assesses relationships between a community and park managers, was higher in DNP than RNP, t (245.3) =3.196, p<.05, d=0.386 (Fig. 2.3). The communities in DNP are dependent on the forest and must, therefore, maintain cordial relationships with the forest department who regulates the community's access. However, a few community members expressed concern over forest staff restricting their forest access in return for bribes. A participant from DNP shared, "*They don't always give us what we ask for. They ask for money in return for wood, and that is wrong.*" In RNP on the other hand, forest access is restricted. The communities face intense human-wildlife conflict, which according to the locals the forest staff and department respond to inadequately, especially with respect to compensation. According to a participant from RNP, "*We've spoken to them in town meetings about the need for dams and better compensation programs. We got nothing but verbal assurance*".
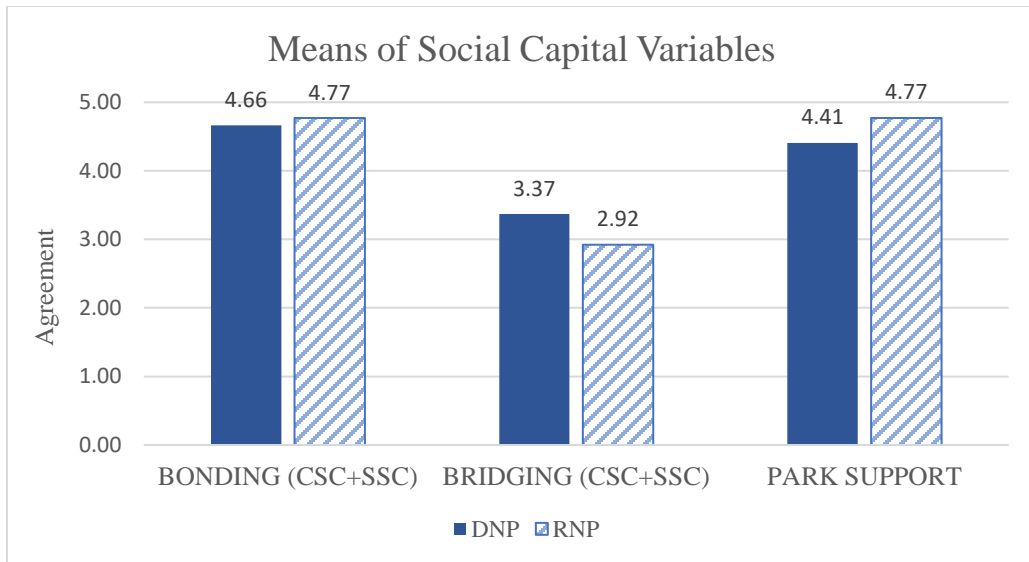
Fig. 2. 3 Graph Depicting Means Of Park Support and Intra-Community Bonding and Extra-Community Bridging Social Capital Variables.

Means for bonding and bridging capital are aggregations of cognitive social capital (CSC) and structural social capital (SSC) in both DNP(n=109) and RNP (n=173).

Relationships between bonding and bridging capital and park support (Structural Model).

The best-fitting structural model examining relationships between social capital and PA support reflected acceptable fit (SBχ^2 (df) = 181.441 (123) p<.05; SRMR = 0.075; RMSEA = 0.059; CFI = 0.942), indicating that the relationships present in the model adequately represented the data. However, these relationships deviated slightly from our predictive model (Figure 2.4), with the cognitive and structural dimensions of bonding capital demonstrating independent and contrasting effects on park support and bridging capital moderating the relationship between these variables and park support. Table 2.3 summarizes the final structural model variable means and loadings.

The model predicted 2.9% of the variance in PA support at DNP and 11.6% at RNP. At both sites, bonding cognitive social capital at the community level negatively

predicted park support, however, this relationship was not significant in RNP (β_{DNP} = -.109, p<.05; β_{RNP}= -.309, p>.05). On the other hand, bonding structural social capital (SSC) at the community level was positively linked to PA support at both DNP (β_{DNP} = .116, p<.05) and RNP (β_{RNP}= .293, p<.05). At both sites, bridging social capital was a positive predictor of park support. This relationship was comparatively stronger at RNP (β_{RNP} = 0.343, p<.05) than DNP (β_{DNP} =.17, p <.05).

Table 2. 3 Item Means, Factor Loadings, and Fit Indices of Final Structural Model Predicting Park Support for DNP (n=109) and RNP (n=173)

Factor and Variable [a]	Dudhwa (n=109)			Ranthambore (n=173)		
(Min=1, Max=5)	Mean	S.D.	λ	Mean	S.D.	λ
Bonding Cognitive Social Capital						
Solidarity: People in your community work together to fix problems:	4.86	.44	0.77	4.72	.76	0.92
Trust: People in your community are trustworthy:	4.85	.49	0.75	4.72	.8	0.90
Reciprocity and cooperation: People in your community work to help each other	4.81	.48	0.78	4.75	.74	0.98
Community Structural Social Capital [a]						
Inclusion: You are a respected member of this community	4.64	.88	0.31	4.84	.54	0.90
Empowerment: You have a say in community matters	4.33	.943	0.29	4.77	.651	0.68
Bridging Social Capital [a]						
Solidarity: Forest officers and community members work together to fix problems	3.80	1.44	0.64	2.61	1.69	0.85
Trust: Forest officers are trustworthy	3.75	1.47	0.71	2.88	1.71	0.85
Reciprocity and cooperation: Forest officers work to help people in your community	3.45	1.53	0.94	2.82	1.70	0.87
Integration: Forest officers involve	3.04	1.64	0.57	2.08	1.44	0.42

you in conservation and park management						
Networks: Forest officers act in a timely manner during wildlife-related incidents	2.63	1.59	0.46	4.05	1.44	0.51
Empowerment: Forest officers listen to you	3.55	1.48	0.67	3.03	1.57	0.72
Park Support [a]						
You support the park	4.41	1.16	0.74	4.81	0.61	1.00
Your community supports the park	4.46	1.09	1.00	4.73	0.68	0.83

Notes. [a] Rated as agreement on 5-point Likert scale (1 = strongly disagree, 5 = strongly agree); robust statistics estimated; λ = standardized factor loading. SBχ^2 = Satorra-Bentler Scaled Chi-Square= 181.441; *df* = degrees of freedom= 123; SRMR = Standardized Root Mean Squared Residual=0.075; RMSEA = Root Mean Square Error of Approximation= 0.059; CFI = Comparative Fit Index=0.942;

The overall model predicted 6.9% of the variance in bridging social capital (BSC) at DNP and 7.6% at RNP. We found that bonding cognitive social capital at the community level was a moderate predictor of BSC at both sites (β_{RNP} = .358, p <.05; β_{RNP} = 0.503, p <.05). However, the relationship between bonding structural social capital at the community level and BSC was significantly negative (β_{DNP} = -.341, p <.05; β_{RNP} =-.424, p <.05).
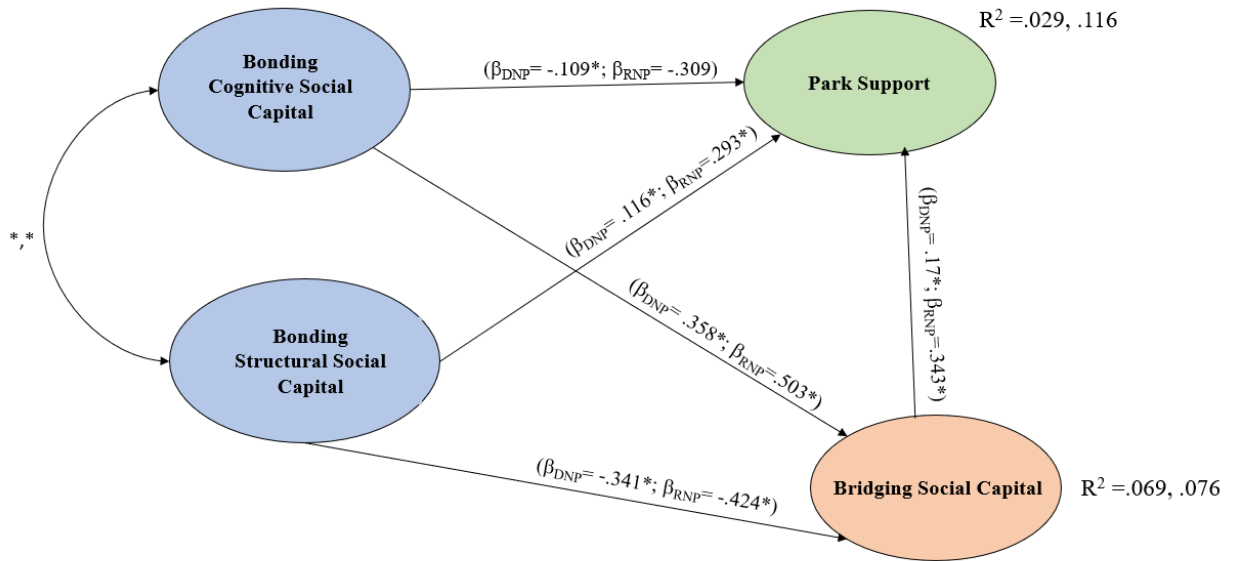
Fig. 2. 4 Structural Model Depicting Influence of Bonding Social Capital, (Including Cognitive Social Capital And Structural Social Capital Within Communities), on Bridging Social Capital (Linking Communities To Park Managers) and Overall Park Support At DNP(N=109) and RNP(N=173)

Values reported for DNP, RNP, respectively (robust estimates); *p<.05; β= standardized parameter estimates; R^2= explained variance. SBχ² (df) = 181.441 (123) p<.05; SRMR = 0.075; RMSEA = 0.059; CFI = 0.942

Discussion

Our study of two diverse Indian parks answers growing calls to understand factors impacting community participation in natural resource management and decision-making (Armitage, 2005) by modeling social capital, a vital feature of collaborative relationships, and its influence on support for PA management. We found that, overall, our models linking social capital to park support revealed relatively weak predictive power. This suggests that many factors in addition to bonding and bridging social capital impact local

residents' support for nearby protected areas. For example, forest dependence, integration with tourism, etc. (Martin, Myers, & Dawson, 2018; Nastran & Černič Istenič, 2017)

Communities around both parks face restrictions on access, derive low incomes from forests and forest-related activities (tourism), and face wildlife-related losses (Table 2.1). And despite these pressing issues, there is high support for the park (Fig 2.3). Therefore, in the absence of community-based management in either park, support for the parks can be explained through direct (dependence related) or indirect benefits (Hutton, Adams, & Murombedzi, 2005), or institutional (regulation of use through restrictions and rules), ideational (placed-based attachments), and psychological (internalized justifications) explanations (Martin et al., 2018).

Nevertheless, social capital was a significant correlate of park support, and the direction of this relationship varied depending on the type of capital being considered. Bonding social capital, which can create dense structures of community networks and strong localized trust (Smith, Anderson, & Moore, 2012), is often viewed as a key precursor to conservation action. But our results show that certain elements of bonding social capital, when strong, can negatively impact conservation. For example, community-level (bonding) cognitive social capital, which we measured through solidarity, trust, and reciprocity and cooperation, was widely recognized as a key feature of village life around both Indian parks. But higher levels of cognitive capital were associated with lower levels of support for both parks. Hence, cognitive capital alone might not ensure positive outcomes. The same phenomenon was illustrated in a slightly different context where poor communities in Nicaragua with high cognitive capital

participated inadequately in health-related civic activism (Mitchell & Bossert, 2007). A study from Iran showed that cognitive-bonding social capital promoted communal collective actions but was not necessary to facilitate participation in mutually beneficial public works (land consolidation) (Yokoyama & Sakurai, 2006).

Community-level (bonding) structural social capital positively predicted park support. Where present, structural capital provides individuals who are inclined to trust each other and cooperate, with a voice and direction to action (which can potentially stimulate park support). Structural capital facilitates empowerment and inclusion in decision making (Krishna & Shrader, 2000), which may extend to park-related decisions. When structural capital exists, it can leverage the high levels of cognitive capital present in communities to encourage support for conservation. As Jones (2005) illustrates, where there is a tendency to comply with social norms, there will be a tendency to follow norms connected to natural resource management. While cognitive capital predisposes people towards cooperative behaviors, structural capital provides the necessary capacity, mobilization, and networks for its usage (Bisung et al., 2014). The interplay of these crucial factors helped establish effective community-based conservation strategies in Botswana (Mbaiwa & Stronza, 2011). Therefore, both structural and cognitive social capital are complementary (S. Jones, 2005; Yokoyama & Sakurai, 2006), and important to consider together in relation to collective action in conservation contexts.

We define bridging social capital as relationships with external institutions (in the case of the Indian parks we studied: forest managers). We found moderately low levels of bridging social capital around both parks; however, where present, it had a positive effect

on park support. Pretty (2003) illustrated through an example of fishing communities and declining fish stocks, that communities having capacities of collective action, presumably due to high bonding, might not always have the knowledge to appreciate that their actions might be harmful to a resource that they support and utilize. This might be partly because they may not realize their actions have global impacts. Communities with an imbalance of bridging and bonding social capital become resistant to change (high bonding, low bridging), captious (low bonding and bridging), or engage in clientelism (low bonding, high bridging) (Zahra & McGehee, 2013). Therefore, there is value in external institutions that (such as governments and NGOs) that can reduce conflicts and provide support to local communities through a variety of effective interventions, such as partnership building, redistribution of resources, good governance, legal structures (Okazaki, 2008; Pretty, 2003; Michael Woolcock & Narayan, 2000) which will help strengthen local capacities and improve collaborative outcomes. Conservation partnerships with other non-governmental stakeholder groups can be beneficial (Measham & Lumbasi, 2013).

Previous research suggests communities with higher stocks of bonding social capital are likely to manage resources sustainably (Pretty, 2003) and are likely to be more environmentally active (Jones, 2010). Our study shows those relationships depend on the type of social capital being considered. Bonding social capital – both cognitive and structural - can reduce transactional costs and increase tendencies for people to work together (Pretty, 2003), however, it can also make communities selfish and more 'inward'(Putnam, 1993). This may reinforce exclusive identities in homogeneous groups

(Poortinga, 2012; Szreter & Woolcock, 2004); in the case of conservation, it might result in communities that do not prioritize park protection or fail to see the big picture of how they might be impacting the park. In these cases, bridging social capital – both cognitive and structural – may be needed to foster conservation action. However, weak bridging social capital in the Indian context we studied indicated low levels of trust and interactions with external actors (in this case, forest officials). In such instances, bonding and bridging social capital cannot function effectively in isolation and together are vital to achieving conservation outcomes and establishing effective collaborative natural resource management systems (Agnitsch, Flora, & Ryan, 2006).

Future research could address several limitations of this study. While the sample size was acceptable for SEM analysis, a larger sample size may have yielded larger effect sizes. Newman & Newman (2000) state that even a small effect sized measured by small R-squared values may be important and practically significant. Furthermore, the aim of this study was not to assess predictive power but to determine if there were consistent relationships between the factors across two parks in a developing country context. Secondly, it should be reiterated that social capital and its dimensions are contextual (Ballet et al., 2007; Sobel, 2002), which means that concepts and measures used in the study obtained meaning within a specific context (Van Deth, 2003). For example, while overarching patterns of social capital dimensions predicting park support were similar, our analysis revealed different levels of bonding and bridging social capital across both sites. This presents challenges in choosing standardized indicators for measuring different types of social capital in diverse settings, but it also underscores the importance of

context-specific characteristics that shape the creation of social capital. Our conceptualization of different dimensions of social capital was based on SCAT, a tool specifically designed for use in developing countries (Krishna and Schrader, 2000). However, to minimize response time burden associated with the lengthy SCAT instrument, we adapted and used only a few items in our study. The final bonding social capital items that were retained in the model, were not directly related to conservation action or park support, whereas the bridging items were. Furthermore, park support variables showed little variance. This may explain the small effect size of the model and the relationship of both bonding and bridging social capital with the outcome variable. Future research in these relationships can consider including other factors that could potentially impact park support such as forest dependence and human-wildlife conflict, which were absent in our model (to avoid overidentification) and could have influenced our results. These scales also had to be translated into the local spoken language, allowing for potential misinterpretation Despite being Indian and fluent in the local language, the lead author in charge of data collection, was recognized as a non-local. Males were also over-represented in our sample, an artifact of our sampling strategy and the fact that women in these regions were less likely to be knowledgeable of matters beyond the household. Finally, given the self-reported nature of the data, there is a chance that responses are exaggerations and misrepresentation of realities on the ground.

Implications and Recommendations

Despite wide support for community involvement in park management (Das, 2017; Jackson & Wangchuk, 2001; Ormsby & Bhagwat, 2010), there are limited avenues for collaboration between community members and park managers in India. However, there are instances where decentralized management, which incentivizes locals to take ownership of resource management, occurs successfully (see Shyamsundar & Ghatey, 2014) and builds social capital (Shyamsundar, 2008). Building social capital within the local communities can foster collective action, but it is important to simultaneously cultivate both intra-community cognitive and structural social capital to ensure that collective action supports conservation goals (Mehra, 2008). High levels of bonding social capital do not always ensure positive outcomes, particularly if structural capital dimensions are imposed and not organically created. A society may have strong institutions and embedded reciprocal mechanisms, but these might stem from fear and power inequalities as seen in feudal or unjust societies (Pretty, 2003). Further, collaborative process have been observed to fail when such power imbalances cause inequitable distribution of benefits (Ghosal et al., 2015; Kellert, Mehta, Ebbin, Lichtenfeld, & Lichtenfield, 2000; Sullivan, 2006) and become sources of conflict (Larson, Conway, Krafte, Hernandez, & Carroll, 2016). India, with its history of colonial marginalization and social hierarchies embedded in forest management, is a prime example (Torri, 2010).

Whereas within-community bonding capital often evolves organically and persists in traditional, tribal societies; continuous investment in trust and relationship building

must take place to sustain bridging capital with external actors (Sessin-Dilascio, Prager, Irvine, & De Almeida Sinisgalli, 2015). This is a challenge in the Indian Forest Management regime, where forest managers receive limited training and time to devote to community capacity building. This duty often is taken up by non-governmental entities (e.g., conservation NGOs). For example, Measham & Lumbasi (2013) found that local connections with NGOs were valuable in creating mutually compatible goals, and the resources made available by the NGOs aided progress toward these goals. These groups, therefore, play a key role in collaborative management (Mehra, 2008), and of the impact of these organizations in building and leveraging social capital in the Indian context may be critical.

Future research could build on our work by using more comprehensive indicators for the different dimensions of social capital, including interactions with external actors other than forest officials. There are also opportunities to expand our simple metrics of "community support" for parks and conservation, a concept that is poorly understood and widely debated (Martin et al., 2018). We used PA support to approximate the "flow" or collective action associated with social capital, but this metric could include more concrete measures of community-level pro-conservation behavior. Understanding how cognitive and structural aspects of bridging and bonding social capital interact and how they may influence community-based initiatives, can provide a more comprehensive understanding of stakeholder relationships in these contexts. There are several factors that influence a community's support for conservation. Our study shows that different aspects of social capital play a key role. In places like India, where multiple stakeholders interact

to influence management efforts and efficacy, attempts to build and strengthen the

cognitive and structural aspects of both bonding and bridging social capital could help in

achieving conservation goals.

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CHAPTER THREE

"IT IS DARKEST UNDER THE BRIGHTEST BURNING LAMP":
COMMUNITY PERCEPTIONS OF WILDLIFE TOURISM AND IT'S
(INEQUITABLE) BENEFITS IN INDIA

Abstract

Throughout India, tiger-centric wildlife tourism is often viewed as a way to support human livelihoods and encourage positive attitudes towards conservation. But this approach only works if local communities participate in the tourism economy and embrace it as a strategy for promoting both development and conservation. We examined differences in community perceptions towards tourism using a mixed-methods, comparative case study design in two distinct Indian national parks (Ranthambore National Park, Rajasthan; Dudhwa National Park, Uttar Pradesh). While both parks are important tiger habitats, Ranthambore (RNP) is one of India's most iconic wildlife tourism destinations and Dudhwa (DNP) is just beginning to attract tourists. We focused on three key metrics: 1) knowledge and awareness of tourism 2) beliefs about tourism's impact on communities, and 3) beliefs about tourism's impact on parks and wildlife. Data were collected from June to August 2018 at both sites through community surveys (n=193 in RNP, n=114 in DNP) and semi-structured interviews with community leaders and key informants (N=15 in RNP, 15=DNP). Awareness of tourism and employment in the tourism industry was low at both sites, and particularly low at DNP. Beliefs about the economic impacts of tourism were positive in tourism zones, where villages had more

opportunities to engage with tourists and tourism infrastructure, but negative in villages

around parts of the PAs. Respondents in both parks expressed mixed sentiments about the

link between tourism and conservation. Positive beliefs about tourism were typically

linked to park support, but other factors (e.g., forest dependency) also played a role.

Overall, most local residents believed tourism has the capacity to transform communities

and yield positive conservation outcomes, but successful achievement of these goals

depends on keen attention to context and consistent engagement with diverse

stakeholders across local communities.

Introduction

Around the world, protected areas (PAs) have been established with the aim of conserving biodiversity. PAs, therefore, impose restrictions on resource use (Phillips, 2004; Sekhar, 2003), which directly impacts the lives of local communities (Ghimire & Pimbert, 2013). By supporting wildlife populations, PAs also increase the potential for human-wildlife conflict in vulnerable communities around parks (Wegge, Yadav, & Lamichhane, 2016). On the other hand, PAs can generate economic benefits that benefit local communities, providing prospects of alternative livelihoods to help offset the costs of conservation (Beaumont, 2001). If local residents view PAs as a threat to their livelihoods, attitudes toward the parks are likely to be negative (Manyama, Nyahongo, & Røskaft, 2014). However, when local residents recognize and receive socioeconomic benefits from PAs, attitudes are likely to be positive (Oldekop et al., 2016). When benefits are realized, it can boost local support for parks (Nastran, 2015) and conservation (Sirivongs & Tsuchiya, 2012), thereby supporting the efficacy and longevity of PAs (Dewu & Røskaft, 2018).

Tourism is typically viewed as a tool that combines economic development with environmental protection (Negi & Nautiyal, 2009). It engenders more positive attitudes toward PAs among local residents by theoretically providing economic benefits and thus offsetting the costs of conservation (Carr, Ruhanen, & Whitford, 2016; Ferraro & Hanauer, 2011; Liu et al., 2012; Mbaiwa & Stronza, 2011; Kideghesho & Mtoni, 2008; Scanlon & Kull, 2009). Wildlife tourism, in particular, has been gaining popularity around PA areas worldwide (Balmford et al., 2009). In India, for example, where diverse

and charismatic wildlife abounds, wildlife tourism is growing at a rate of 15% annually

(Karanth, DeFries, Srivathsa, & Sankaraman, 2012). Wildlife tourism can enhance

tourists' appreciation and awareness of local environments and cultures and inspire pro-

environmental behavior among visitors (Ballantyne, Packer, & Falk, 2011; Goodwin,

2000). Tourism can also be transformational for local communities.

Tourism has been observed to positively impact local communities in several

ways. It has been seen to bolster local economies, reduce forest dependency, promote

empowerment, and foster conservation activity among locals (Holmes, 2007; Jamal &

Stronza, 2009; Liu et al., 2012). Tourism in protected areas can also provide avenues for

income generation (Naidoo et al., 2019), skill development, and leadership training

opportunities for local residents (Paudel, 2016). It can benefit local infrastructure by

providing access to better roads, medical care, and education (Archabald & Naughton-

Treves, 2001; Scheyvens & Scheyvens, 2015), generate socio-cultural awareness by

promoting cultural exchange (through tourists) and foster learning about the world (Brunt

& Courtney, 1999; Mccool & Martin, 1994). Collectively, these benefits improve human

health and well-being (Naidoo et al., 2019).

Tourism in protected areas also generates negative impacts. The environmental

impacts of recreation and tourism are well documented (Larson, Reed, Merenlender, &

Crooks, 2019), ranging from changes in the population health and ecology of wild

species (Haskell et al., 2015) the introduction of invasive species (Anderson, Rocliffe,

Haddaway, & Dunn, 2015) and the alteration of wildlife habitats (Tisdell & Wilson,

2005). PAs and their regulations aim to decrease negative impacts, but the drive for more

tourism often results in additional ecological consequences including increased resource extraction and exploitation, pollution, and harassment of wildlife (Bindra, 2010; Krüger, 2005). More concerning, perhaps, are the social impacts of tourism that manifest over time and threaten to alter the social fabric of local communities. For instance, as tourism in an area grows local residents face increased prices of goods and services and an increased cost of living (Andriotis, 2005). To exacerbate the problem, tourism in many developing countries is largely owned and controlled by external stakeholders (Mbaiwa, 2005); thus, the distribution of economic benefits from tourism are largely disproportionate and rarely seen by local residents (He et al., 2008; Karanth & DeFries, 2011). In such cases, the involvement of local residents is limited and the majority of local employment opportunities are constrained to low paying seasonal jobs (Karanth & DeFries, 2011). The problem is confounded by additional issues such as racism, relocation of local communities, breaking up of traditional family structures, increases in crime, and exploitation of women (Mbaiwa, 2005). These processes often referred to as 'enclave' tourism (Ceballos-Lascurain, 1996) or 'internal colonization' (Heffernan & Dixon, 1991) occur when natural resources in a tourism region benefit outsiders or foreigners at the expense of local residents. Such inequalities cause rifts within local communities (Rastogi, Hickey, Anand, Badola, & Hussain, 2015) and threaten the sustainability of tourism endeavors. Thus, while the inclusion of locals in tourism enterprises is typically encouraged, on-the-ground realities make that aspiration challenging to achieve. PA management plans that involve local communities are crucial (Ortega-Álvarez, Sánchez-González, Valera-Bermejo, & Berlanga-García, 2017), but

they may be insufficient for generating positive attitudes towards tourism and conservation (Nepal, 2000) unless local residents recognize and receive tangible socio-economic benefits (Oldekop et al., 2016). The balance between tourism's positive and negative impacts on communities and the environment plays a significant role in shaping residents' perceptions and attitudes towards tourism (Kuvan & Akan, 2005). Perhaps nowhere are these benefits and costs of wildlife tourism more conspicuous and controversial than India.

With its 104 National Parks, 544 wildlife sanctuaries, and 50 tiger reserves, India offers numerous avenues for wildlife tourism to both domestic and international visitors (Karanth & Nepal, 2012). The most popular PAs are reserves dedicated to the charismatic tiger. These reserves were established (1) to support viable tiger populations in India for scientific, economic, aesthetic, cultural, and ecological values; and (2) to preserve, for all time, the areas of such biological importance as a national heritage for the benefit, education and enjoyment of the people (Hannam, 2005; Narain, Panwar, Gadgil, Thapar, & Singh, 2003). These objectives require that Indian parks are highly regulated and strictly managed (Hannam, 2004). Most tiger reserves are open for eight months per year and allow park entry for short periods every day. Established temporal and spatial carrying capacities dictate the number of vehicles allowed in the park each day to avoid overcrowding (Chanchani et al., 2009). Tourist movement is restricted, and vehicles are required to stay on assigned routes. Restrictions are also imposed on extracting resources from the forest to maintain the habitat (Hannam, 2005; Narain et al., 2003). These actions have significant consequences for people living in park-proximate communities.

Past studies of Indian PAs have assessed community perceptions of the benefits and costs of tourism, including how tourism has impacted local livelihoods and social relationships (Karanth & Nepal, 2012; Rastogi et al., 2015; Sekhar, 2003). Many of these studies focus on local perceptions, which encompass beliefs and attitudes and are the primary form of cognitive contact an individual holds with their world (Efron, 1969; cited in Nastran, 2015). Perceptions of local people have been used extensively in PA-focused research (Arnberger & Schoissengeier, 2012; Nastran, 2015; Stoll-Kleemann, 2001) to understand and predict conservation behavior (Bennett, 2016). Local beliefs and attitudes towards wildlife tourism, specifically, offer insights about knowledge of tourism and awareness of its benefits; the inclusivity of the industry (Black & Cobbinah, 2018); the potential for tourism to serve as a conservation tool (Kuvan & Akan, 2005); and the relationships people have with a PA (Arjunan, Holmes, Puyravaud, & Davidar, 2006). Although many studies have focused on perceptions of tourism around PAs, few in India have explored how those perceptions differ within the diverse and heterogeneous communities that often surround them (Puri, Karanth, & Thapa, 2019). Because the inequitably distributed benefits and costs of tourism around PAs depend on a variety of contextual factors (Imran, Alam, & Beaumont, 2014; McGehee & Andereck, 2004), answers to these questions are critical. By examining diverse perceptions of tourism and conservation around two Indian PAs experiencing different levels of tourism, our study sought to investigate and compare local residents':

1. knowledge and awareness of wildlife tourism in each park

2. beliefs about wildlife tourism's impacts (both positive and negative) on local communities

3. beliefs about wildlife tourism's impacts (both positive and negative) on parks and wildlife

Methods

Study Sites

We used a comparative case study design with a mixed-methods approach that combined quantitative and qualitative sources of data. This mixed-methods design can be described as partially mixed concurrent equal status design (Leech & Onwuegbuzie, 2009), where both qualitative and quantitative data are collected concurrently and are not mixed until both data has been collected and analyzed. We focused on two Indian PAs: Ranthambore National Park (RNP) in Rajasthan and Dudhwa National Park (DNP) in Uttar Pradesh to compare and contrast local perceptions of tourism and conservation at both sites. These parks were selected to represent different geographic regions of the country, unique habitats (tropical, dry deciduous forest and alluvial grassland with subtropical rainforest) containing flagship species (tigers in RNP; tigers, elephants, and rhinos in DNP) and drastically different levels of tourism.

RNP is in the Sawai Madhopur district of Rajasthan. Along with the neighboring Sawai Mansingh Sanctuary and Keladevi Wildlife Sanctuary, it is part of the greater Ranthambore Tiger Reserve landscape spread across an area of 282 km^2. The habitat is primarily tropical, dry deciduous and thorn forest with a few semi-arid areas.

Apart from the tiger, the biodiversity of the park includes a large variety of reptiles, birds, and mammals such as the leopard (*Panthera pardus*), caracal (*Caracal caracal*), spotted deer (*Axis axis*), sambar deer (*Rusa unicolor*), and Indian Gazelle (*Gazella bennettii*). The local community is diverse and is comprised primarily of the agro-pastoral Meena, Mali, and Gujjars amongst other caste groups. They grow a variety of seasonal crops, including the cash crop Guava. RNP experiences high levels of tourism owing to the 'ease' of tiger sighting and its proximity to the 'Golden Triangle' of tourism (New Delhi-Agra- Jaipur). Tourism is centered on the western side of the park. There are numerous high-end, luxury hotels that offer foreign tourists comfort with a rich Rajasthani cultural element. Local museums, forts, temples add to the cultural draw of the region. Ease of wildlife viewing and connectivity to major Indian cities are added aspects that underscore RNP's popularity. RNP faces significant anthropogenic pressures due to growing tourism and communities that reside on the periphery of the park (Karanth & DeFries, 2011; Karanth & Nepal, 2012). Despite receiving high tourist visitation, studies indicate that less than 0.001% of the local population is involved in tourism activities (Karanth & DeFries, 2011).

DNP is a part of the Dudhwa Tiger Reserve. Spread over 1,284 km^2, the tiger reserve also encompasses Kishanpur Wildlife Sanctuary and Katerniaghat Wildlife Sanctuary. The national park comprises of a 430 km^2 core and 190 km^2 buffer area. It is situated in the Terai Arc Landscape. The landscape consists of low elevation plains (terai) which were originally covered by expanses of rich alluvial grasslands interspersed with subtropical rainforests. The region is characterized by charismatic fauna such as the tiger

(*Panthera tigris*), elephant (*Elephas maximus indicus*), leopard (*Panthera pardus*), swamp deer (*Rucervus duvaucelii duvaucelii*), gharial (*Gavialis gangeticus*), Bengal florican (*Houbaropsis bengalensis*), along with a number of fish and bird species. The rich alluvial lands were cleared for agricultural purposes, which encouraged human settlement in this region. Much of the pristine landscape has therefore been cleared except for small fragments of forest and grasslands (Kanagaraj et al., 2011; Wikramanayake et al., 2004). The district of Lakhimpur-Kheri is the largest district of Uttar Pradesh and has the characteristics of a semi-urban township. The Tharu tribal community dominates this landscape. Villages in this region are basic, traditional Tharu villages with mostly *kuccha* (mud) houses with grass roofs. The economy is agriculture-dependent and sugarcane is the major cash crop grown in this region (with sugar mills as the major industry). The sugar industry has always attracted a trade to the region, and the national park is becoming an increasingly important tourist draw. However, due to the remoteness of the park and the lack of infrastructure, tourism in DNP is low compared to RNP. The gate of DNP is approximately10 km from the town of Palia Kalan, where a few privately-owned hotels are located. The Forest Department also provides limited accommodations in the park. Other privately-owned hotels are in the town of Palia. Table 3.1 provides additional details about both PAs.

Table 3. 1 Characteristics of Ranthambore And Dudhwa National Parks, India

Characteristic	Ranthambore National Park (RNP)	Dudhwa National Park (DNP)
Size	392 km^2	490.3 km^2
Location	25.54°0–26°120'N, 76.230–76°390'E	28°31.8'N–28°42'N 80°28'E–80°57'E
Established	1955	1977

Vegetation	Dry scrub deciduous forest	Tropical mixed forests interspersed with grassland
Rainfall	800mm (June-September)	1600mm (June-September)
Key Species	Tiger, Leopard, Sambar, Indian Gazelle	Tiger, , Leopard, Elephant Swamp Deer, Rhino
Tourist Visitation	High (>300,000 annually)	Low (<25,000 annually)
Dominant Communities	Maali, Meena, Gujjar,	Tharu

Data Collection

The research team consisted of the lead author and two research assistants who assisted with data collection; all were fluent in the Hindi languages. Prior to data collection, research assistants were trained in social science data collection strategies and interviewing skills and familiarized with the survey instrument, the technology used to collect data, and ethical considerations. During the first few days at each site, the team familiarized themselves with the local landscape by visiting villages and consulting local experts. Due to logistical issues and advice from local experts at both sites, we decided to focus data collection on villages residing within a 5km distance from the park boundary. At both sites, villages were often semi-organized and village size and spread was not uniform. Some were comprised of one single extended family; others included several small villages governed under a local governing body called a *panchayat*. Based on inputs from local experts and informants, we created village clusters consisting of villages in close proximity to each other that shared similar socio-economic characters. We aimed to collect at least forty surveys from each village cluster. In RNP, three such clusters were surveyed, which consisted of a total of 28 villages. One cluster was created to capture villages from near the primary tourism zone closer to Sawai Madhopur

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(western side). This cluster consisted of ten villages. Other RNP clusters were from

lighter tourism areas near the northern and eastern side of the park (Figure 3.1) consisting

of eight and ten villages each. In DNP, Palia-Kalan serves as the gateway township where

light tourist traffic is centered. However, most villages were a considerable distance from

Palia. Around DNP, we, therefore, created two clustersbased on different management

zones in the park. One cluster consisted of eleven Tharu-dominated villages and the

other consisted of nine villages that exhibited heterogeneous community composition. A

total of 20 villages surveyed in DNP (Fig 3.2).
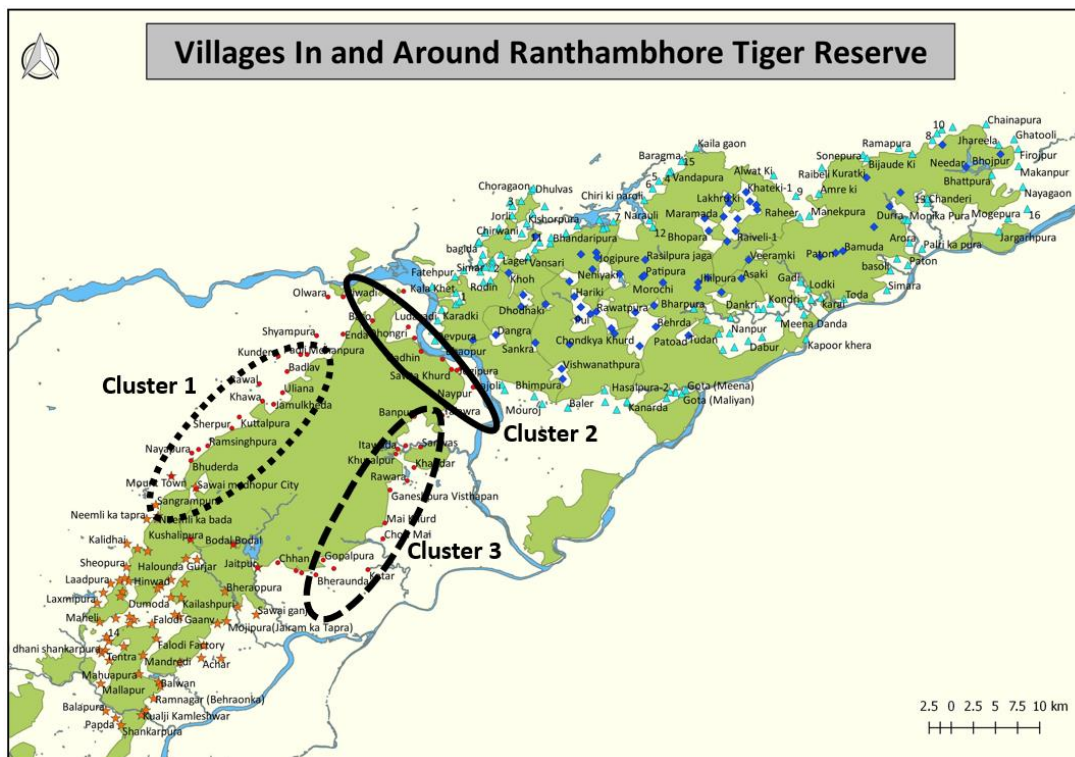
Fig. 3. 1 Map of Ranthambore National Park Depicting Village Clusters Based on Tourism-Zone Proximity. Map Courtesy Tiger Watch, Ranthambore.
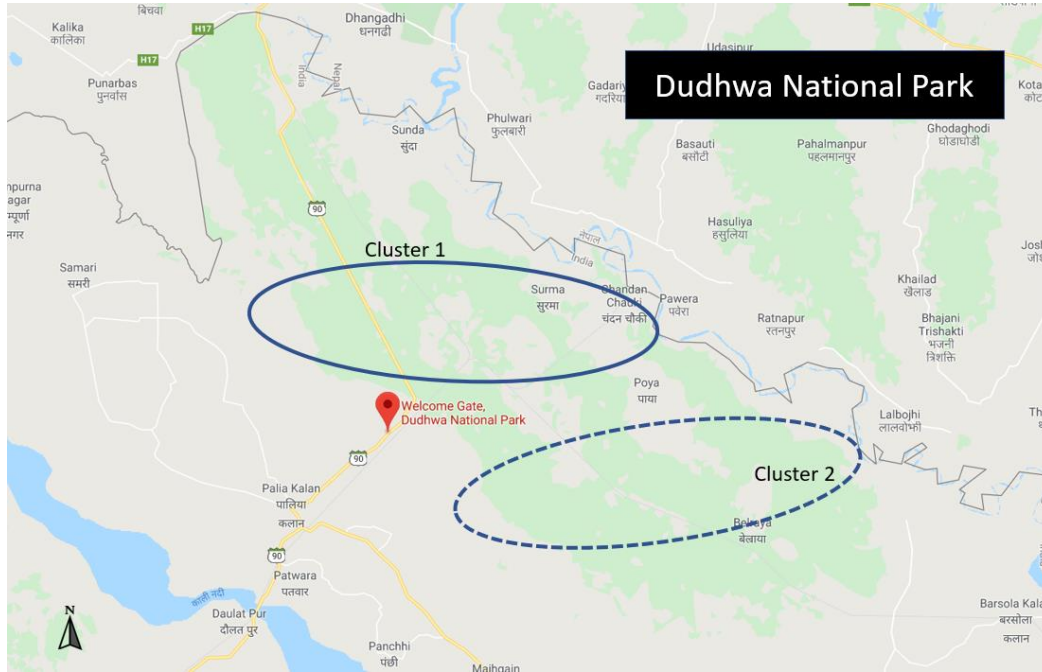
Fig. 3. 2 Map of Dudhwa National Park Depicting Village Clusters Based on Management Zones.

Once arriving at a village, the research team examined the distribution of households. We systematically selected every k^th house, (k for each village was unique depending on the number of houses). Within the household, the eldest member of the family was approached to participate in the survey. Due to higher illiteracy rates in older adults in rural India, survey questions were read to participants, and this method was kept constant across the data collection period in its entirety. Paper-based surveys were used to collect survey data in DNP and iPads were used in RNP. Further, village leaders (or *pradhaans*) and local experts were approached to provide through semi-structured

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interviews that helped provide context to survey responses. These interviews typically

lasted over an hour.

Surveys and interviews.

Data were collected during June-August 2018 using a questionnaire that included

a mixture of closed and open-ended questions. In this study, we conceptualized tourism

awareness as the level of knowledge local residents had about the existence of tourism.

Based on this, our interactions began with a qualifying question to gauge awareness of

tourism. The participants were asked how they felt about wildlife tourism in their park.

Numerous participants indicated they did not know about wildlife tourism. Based on

these responses, we coded the participants are aware or unaware of tourism. Those who

indicated they were unaware, were not asked further tourism-related questions and given

their lack of knowledge we assumed they were unaware of tourism-related benefits. The

responses of those who were aware were coded on a five-point scale of strongly negative

to strongly positive. These respondents were further asked tourism-related questions. The

questionnaire consisted of questions about beliefs regarding tourism impacts on

communities, beliefs about tourism impacts on parks and wildlife, and perceptions of the

relationship between tourism and conservation. *Tourism impact on community* questions

focused on perceived economic impacts (e.g., livelihood generation, support for local

handicrafts) and non-economic impacts (e.g., improved access to infrastructure, skill

development)(Nunkoo & Gursoy, 2012) *Tourism impacts on parks and wildlife* questions

focused on community support for parks and wildlife and tourism impacts on park and

wildlife (specifically the tiger given the focus on tiger reserves). All attitude and belief

questions were measured on a five-point Likert-type scale (1= Disagree a lot to 5= Agree a lot). Surveys also included open-ended questions that allowed residents to explain how they and their local communities viewed the tourism-conservation relationship. To create a *demographic profile* of survey participants, we collected information on age, sex, education, religion, and caste. Income and occupation information was also collected, specifically if any part of their income came from the forest, employment with the forestry department, or from tourism. Information pertaining to the availability of community resources was also collected in the form of sources of energy, dependency on the forest, distance from the park boundary, years of living in the community, and access to electricity, water, and sanitation.

Interviews with village *pradhaans,* key informants, and local experts adressed similar themes as in the survey and provided deeper insight into community relationships with tourism and PAs. Interviews questions focused on village and community characteristics, broader livelihood issues, perceptions and history of the tourism industry at the site, the connection between tourism and the PA, and the role of the forest department and the community in both tourism and conservation.

Data analysis.

Villages were aggregated in clusters and we sampled from each cluster. In Ranthambore, cluster RNP1 (High Tourism) consisted of samples from the village cluster closest to the township of Sawai Madhopur and the main Ranthambhore entrance. This cluster was closer to many hotels and resorts. RNP2 and RNP3, on the other hand, were further dispersed towards the north end and the east side of the park, respectively (Fig

3.1). To compare high-tourism and low tourism perspectives, we combined responses from clusters RNP2 and RNP3 (RNP-LT) and compared the beliefs of these communities to those of RNP1 (High tourism, RNP-HT). It is expected for RNP-HT to show more support towards tourism due to alternative employment opportunities made available through the tourism industry (Table 3.4). We aimed to similarly compare clusters in DNP, however, there was very little knowledge of tourism which did not support conducting this analysis.

Survey responses were translated into English before analysis. Quantitative data were analyzed using SPSS statistical package (v25). Descriptive statistical tests were used to compare the demographic attributes of participants across both sites. Due to differences in sample sizes and non-normality in data distribution across both sites, we analyzed differences in perceptions using non-parametric statistical tests (e.g., Chi-square test, Kruskal-Wallis H test, Mann-Whitney U tests) run at .05 significance levels. To run these analyses, the scales for the test variables were condensed from 5-point to 2-point scales (disagree and agree) to facilitate interpretation. We assumed that participants who reported to be unaware of tourism did not recognize benefits. These comparative tests were run between sites and within RNP clusters for the overall populations. We also ran these difference tests separately between RNP clusters for those who were aware of tourism. To explore the relationship between tourism and conservation, we ran non-parametric correlations (Spearman's rho) to compare four variables: Park Support, Attitudes towards Tourism, Beliefs about Tourism Benefiting Communities, and Beliefs about Tourism Benefiting the Park. For this analysis, all variables were measured on a

scale from -2 (strongly negative or disagree) to +2 (strongly positive or agree), with 0

representing neutral as well as don't know, unsure, or NA (not applicable) responses

(e.g., people not aware of tourism).

Interview responses were translated into English, transcribed, and coded in Nvivo.

The coding of responses were guided by a-priori themes outlined by our quantitative

questions (e.g., tourism awareness, tourism impacts on the community, tourism impacts

on parks and wildlife). Qualitative findings from interviews were mixed with the

quantitative findings during the analysis phase (Creswell, 2014).

Results

A total of 315 responses were collected from both parks. After removing partial

responses and incomplete responses, this resulted in 307 useable surveys (Ranthambore

N= 193, Dudhwa N= 114). Results from both sites, highlighting contextual differences in

local perceptions of tourism-related costs and benefits and the factors that might affect

them, are presented independently below. In our discussion, we explore similarities and

differences between the parks and broader implications for wildlife tourism around PAs.

Ranthambore National Park

Demographic Profile
Results from the household survey in RNP revealed that respondents were

primarily male (78%) with an average age of 37 (Table 3.2). A majority of the

community was Hindu (96%) and either belonged to Scheduled Tribes (ST) or castes

designated 'Other Backward Castes' (OBC). The average household size in RNP was 8

(with a maximum of 22 in a household). Most respondents were either uneducated (26%)

or possessed a secondary level (33%) of education. There was moderate forest

dependency observed in RNP (68%). All participants in the survey reported losses from

wildlife conflict. RNP respondents indicated issues related to water access (Table 3.2).

Table 3. 2 Descriptive Statistics Comparing Demographic Details Of Participants, Including Those Who Were Aware and Not Aware of Tourism, In RNP (Ranthambore National Park) and DNP (Dudhwa National Park)

Measure	RNP			DNP		
	Total	Aware of Tourism	Not Aware of Tourism	Total	Aware of Tourism	Not Aware of Tourism
				(N=114)	(N=25)	
	(N=193)	(N=107)	(N=86)			(N=89)
		Mean (S.D.)			Mean (S.D.)	
Age	37.84	37.39	38.4	41.27	39.21	41.84
	(14.3)	(13.9)	(14.8)	(14.3)	(12.7)	(15.5)
Household Size	7.48	7.57	7.3	10.97	12.1	10.6
	(3.7)	(4.2)	(3.19)	(7.3)	(9.3)	(6.7)
Percentage (%)						
Gender						
Male	78.8	76.0	81.4	88.6	100	85.4
Female	21.2	23.4	18.6	11.4	0	14.6
Religion						
Hinduism	95.9	98.1	93.0	94.7	92.3	92.0
Islam	4.4	1.9	7.0	4.4	3.8	4.0
Other	0.9	0	0	0.9	3.8	4.0
Caste						
Scheduled Tribe	32.4	37.5	25.9	73.2	91.7	67.4
Scheduled Caste	17.3	8.7	28.4	8.0	0	10.1
Other Backward Caste	37.3	42.3	30.9	8.9	4.2	10.1
Other Groups	13.0	11.5	14.8	9.8	4.2	12.4
Education						

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Uneducated/ Illiterate	26.6	19.8	34.9	35.1	23.1	38.2
Primary	11.5	15.1	7.0	17.5	15.4	18
Secondary	33.3	34.0	32.6	26.3	30.8	24.7
High school	7.8	10.4	4.7	10.5	15.4	10.1
Certificate/ Degree	15.5	16.0	15.1	6.1	15.4	3.4
Masters	5.2	4.7	5.8	4.4	0	5.6
Forest Dependency						
Dependent	68.0	59.8	64.7	97.3	96.0	97.8
Not Dependent	32.0	40.2	35.3	2.7	4	2.2
Human-Wildlife Conflict						
Present	100	100	100	99.1	100	98.9
No Conflict	0	0	0	0.9	0	1.1
Electricity						
24 Hours	3.1	3.7	2.3	0	0	0
Intermittent 12-16 hours	34.7	34.6	34.9	0	7.7	10.3
12 hours or less	52.3	57	46.5	64.3	73.1	62.1
Solar panels	9.8	4.7	16.3	25.9	19.2	27.6
Water						
In house connection (24 hours)	22.3	24	20.2	48.7	30.8	54.5
Handpump	0	0	0	38.9	42.3	37.5
Community Tap	34.6	39.4	28.6	4.4	26.9	5.7
Other	43.1	36.5	51.2	8.0	26.9	2.3
Sanitation						
In house	92.2	94.4	89.4	36.0	42.3	34.9
Outdoor	7.8	5.6	10.6	60.4	46.2	64.0
Other	0	0	0	3.6	11.5	1.2

Most respondents reported annual incomes of up to 10,000 Rupees ($139US) (Table 3.3). Few were unsure about the exact amount their household earned and shared that they earned "enough to sustain" their families and break even after accounting for

losses (RNP= 2.2%). It is difficult to ascertain whether this amount was large or small.

The primary source of income was agriculture (50%) and unskilled labor (manual labor

on fields, construction sites, etc., 15%). Few respondents (11%) reported incomes from

tourism-related occupations (hotel employee, safari driver, naturalist, etc.), and 4%

reported forest-based incomes (from selling forest products, etc.) (Table 3.3).

Table 3. 3 Descriptive statistics comparing income and livelihood details of participants, including those aware and not aware of tourism, in RNP (Ranthambore National Park) and DNP (Dudhwa National Park)

Measure	RNP			DNP		
	Total	Aware of Tourism	Not Aware of Tourism	Total	Aware of Tourism	Not Aware of Tourism
	(N=193)	(N=107)	(N=86)	(N=114)	(N=25)	(N=89)
	Percentage %					
Household Income (INR)						
Sustainable	2.2	4.7	2.4	20.2	15.4	24.7
<INR 10,000	50.8	2.0	2.4	5.1	3.8	5.2
101K-50K	22.4	40.4	63.1	41.8	23.1	45.5
51K-100K	18.6	27.3	16.7	19.4	23.1	16.9
1.1K-500K	1.6	22.2	14.3	10.2	19.2	19.0
Above 500K	0.5	3.0	1.2	0	0	0
Primary Source						
Agriculture	50.3	47.7	53.5	86.8	92.3	85.4
Livestock/Dairy	0.5	0.9		0.9	0	1.1
Skilled Labor	5.2	6.5	3.5	0	0	0
Unskilled Labor	15.5	18.7	11.6	7.0	0	9.0
Tourism/Tourism Related	5.2	7.5	2.3	0	0	0
Business/Store	7.8	2.8	14.0	1.8	3.8	1.1
Government Job	4.7	5.6	3.5	0.9	3.8	2.2
Other	9.8	8.4	11.6	1.8	0	1.1
Not Employed	1.0	1.9	0	0.9	0	0
Income from Forest						

Yes (A little/Some/A lot)	4.2	6.6	1.2	9.8	11.5	9.2
None	95.8	93.3	97.7	90.2	88.4	90.8
Income from Tourism						
Yes (A little/Some/A lot)	11.5	17.9	3.5	2.7	7.7	0
None	87.6	77.3	96.5	97.3	92.3	100

Tourism awareness in RNP

Overall, 55% of survey participants in RNP were aware of tourism. Chi-square tests revealed that caste was a significant correlate of tourism awareness (Likelihood Ratio= 11.85, Cramer's V= .276, p<.05) and participants belonging to the OBC (Other Backward Caste) category being more aware. Cluster membership (Likelihood Ratio= 49.04, Cramer's V= .475, p<.05) was also significant correlate. Participants living near the tourism center (RNP-HT=55%) were more aware of tourism than those that were far (RNP-HT55%, RNP-LT=52%,)

Beliefs about tourism impacting communities

Respondents from RNP held mixed views of tourism. Respondents from RNP-HT, the cluster closest to hotels and the tourism zone, were more likely to acknowledge benefits. The differences in cluster responses (Table 3.4) for tourism being *good for the community* [U=890,n_1=55,n_2=52, p<.05] and *benefitting the community* [U=890,n_1=55,n_2=52, p<.05] were statistically significant (Table 3.4). Many residents in RNP-HT villages felt a sense of pride when people, especially foreigners visited RNP. *"People come to Ranthambore from all over the world. It is famous worldwide!"*.

To many local residents, community development or '*vikaas*' was primarily associated with three things: roads, water, and infrastructure. In some cases, respondents

also said the availability of jobs a sign of positive community development. If tourism

provides those tangible benefits, villagers were likely to embrace it. Although 62% of the

respondents from RNP-HT viewed tourism as a decent way to earn a living, they were

also cognizant about how few people were indirectly benefitting. "*Tourism is good for

the community. Take the milkman for instance. His sales are so high because of tourism.*"

Other benefits included employment opportunities made available for women in the

numerous handicraft enterprises, who earlier had limited means to earn for their families.

About half of the respondents believed tourism helped skill development "*Tourism is

good. We get to learn new things, our knowledge increases.*" While several respondents

weren't personally involved in the industry, they were happy that at least some people

gained employment through tourism. *"We don't benefit much, but some people in other

villages do, and that's good!"* Even farther from the tourist center, respondents in the

RNP-LT cluster believed that proximity hotels could be beneficial: *"if a hotel was near

this village people could get some (financial) support."*

In other cases, however, villagers vigorously questioned these social benefits:

"*Koi fayda nahi hai!*" (There are no benefits!). This particularly true in RNP-LT, farther

from the tourism center (Table 3.4), but also for villagers in RNP-LT outside the hub of

tourism development in the township of Sawai Madhopur. The selective involvement of

villagers in the hotel industry underpinned many negative views of tourism. Some felt

this exclusion from jobs was due to villagers being under-qualified. Others felt the lack of

trust between villagers and the hotel owners was a factor, *"They don't trust us, so they

don't hire us. They think that we are locals, and we might fight or steal things if we are*

hired. Further, few involved in tourism expressed disdain over how hotels were trying to maximize their profits and monopolize the safari business. Other participants noted the divide between hotels and the locals ran deeper than educational qualifications:*"(Tourism is) harmful. This place attracts tourists, hotel businesses have come up. Landowners don't have much to do here. Neither do livestock owners - we can't bring our cattle inside the forest anymore. It's banned. And the 'goras' (white people) are free to move around. The villagers do not benefit at all- outsiders take all our jobs. We are given small jobs like sweeping, cleaning, gardening. The hotels themselves are owned by outsiders."* Some community members complained that living near hotels restricted them in many ways. One respondent mentioned, *"There is no problem with hotels and tourism as such, except when we have weddings or celebrations, they ask us to shut our music down because their guests get disturbed."* Another lamented that that development in their region was reserved only for hotels and not local residents: *"These hotel people get electricity for 24 hours. We get electricity for a few hours a day even though we are right next to each other".*

Table 3. 4 Percentage of All Local Residents (And Local Residents Who Are Aware of Tourism) Across Clusters in Both Parks Expressing Positive Beliefs (% Agreeing) About Tourism's Impact on Communities

Variables	RNP-HT High Tourism N=61 (N=55) %Agree	RNP-LT Low Tourism N=132 (N=52) %Agree	DNP N=114 (N=25)[+] %Agree
I support the park	88.5%[+] (87.3%)	93.9% (96.2%)	83.3% (96%)
My community supports the park	85.2%[+] (83.6%)	92.4% (94.2%)	80.7% (96%)
The park protects wildlife	98.4%[+]	99.2%	88.6%

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	(50%)	(98.2%)	(91%)
The park supports local livelihoods	60.7%[+] (63.61%) *	37.1% (28.8%)	43% (44%)
Wildlife tourism…			
is good for the community	62.3%[+] (63%) *	18.2% (34%)	32.5% (57.1%)
benefits the community	27.9%[+] (30.2%) *	2.3% (6.7%)	6.1% (28%)
contributes to community development	36.1%[+] (40.4%) *	3% (7.9%)	9.6% (30.8%)
helps create jobs	62.3%[+] (63.6%) *	16.7% (34.1%)	13.2% (15.4%)
increased prices of local goods and services	42.6%[+] (41.8%) *	6.8% (15.9%)	14% (15.4%)
has promoted local arts and handicrafts	54.1%[+] (53.7%) *	12.1% (27.3%)	12.3% (30%)
has helped develop skills	52.5%[+] (50.9%)	13.6% (31.8%)	11.4% (21.4%)
improves local infrastructure	37.7%[+] (38.9%)	6.8% (17.1%)	14% (21.4%)
has caused conflicts in people	6.6% (5.6%)	0.0% (0.0%)	0.9% (14.3%)
helps protects the park	78.7% (84.9%)	76.5% (88.5%)	43% (62.5)
helps protect the tiger	82%[+] (85%)	79.5% (88.5%)	31.6% (56.3%)

*Note: [+]Represents significant difference (p<.05) between RNP-HT(High Tourism) RNP-LT (Low Tourism), and DNP for Kruskall-Wallace Test *Represents significant different (p<0.05) between tourism aware RNP-HT and RNP-LT clusters for Mann-Whitney U Tests*

Beliefs about impacts of tourism on parks and wildlife

Survey participants from both clusters equally agreed that tourism helped protect the park (RNP HT=78.7%, RNP LT=76.5%) (Table 3.4). Participants believed that tourism helped strengthened the justification for park protection and ensured authorities were vigilant managing the park as it attracted so many visitors. However, many participants also reported the negative impacts of tourism. Respondents, particularly from RNP-HT, were unhappy by the amount of garbage that tourism generated. Several

respondents also felt that the high-revenue-generating hoteliers had significant influence over the forest department, which allowed them to get away with bending the rules. *"…The forest department allows them to build wherever they want. They just hand out permits to whoever can pay."*

Respondents from both clusters also agreed that tourism positively impacted the tiger, specifically (Table 3.4). Many noted that economic benefits from tourism helped fund tiger conservation. Further, communities recognized that there was an economic imperative to be attentive towards tiger populations because of the scale of tiger tourism in RNP. A safari driver highlighted the conservation benefits of tiger tourism: *"We keep an eye out for tigers. We track them and notify the forest department if a certain tiger is in the forest or seen hiding in someone's field. So definitely, tourism is benefitting tigers."* On the other hand, a few participants shared several reasons as to why tigers were not benefitting from tourism. They felt that tourists were only interested in taking pictures of the park and wildlife. Many believed that tourism was actually hampering tiger populations, as tourists and tourist vehicles disturbed tigers in the forest, driving them outside the park to seek refuge (and prey) in the adjoining fields. Many locals expressed concern about how tourists propagate unethical tourism by bribing their drivers and guides with money to take them close to tigers, which negatively impacts the animals. Some respondents believed it was the villagers who were protecting the tigers, not the tourists: *"We are saving the tiger. It's eating our animals and surviving. And we don't get compensated. How can you say tourism is saving it?"*

Regardless of their beliefs about tourism, most participants (88% in RNP-HT, 93% in RNP-LT) were supportive of protecting the park (Table 3.4). Reasons for park protection frequently listed by respondents included the environmental importance of the park (including wildlife conservation) and the benefits the forest provided with respect to local livelihoods. Since a few households indicated park dependency, the availability of forest products for human consumption was also listed as a reason for forest protection. Many respondents also linked their support for the park directly to tourism, noting the attention (and subsequent income) the industry brings to RNP. As one respondent noted: *"It is important to protect the forest-Ranthambhore is the reason why this region is famous."*

Dudhwa National Park
Demographic Profile

Results from the household survey from DNP revealed that, like RNP, most respondents were male (DNP=89%) with an average age of 41. Most respondents belonged to the Scheduled Tribe category (73%) and were predominantly members of the Tharu community. A third of DNP respondents were illiterate or uneducated (35%). Communities were highly forest dependent (97%), and all participants experienced wildlife related losses (99%). Communities lacked many amenities. Access to electricity was an issue in DNP. Many houses relied on solar panels during power outages, which at times lasted up to 16 hours a day. Sanitation was also observed to be a key issue in DNP with nearly half of the households indicating outdoor defecation (DNP=60%) (Table 3.2).

Though income levels were generally very low, most respondents indicated they earned "enough to get by" (Table 3.3). The primary source of income for many was agriculture (86%). Few respondents reported incomes from forests (10%), working as day laborers in the forest or selling forest products. No respondents reported a primary income derived from tourism, and only 3% reported indirect benefits. Tourism is a seasonal occupation. During the off-season tourism staff (nature guides, drivers, hotel attendants) focus on agriculture, which explains why tourism was not reported as a primary income in DNP.

Tourism awareness in DNP

Despite living nearby the PA, only 21% (N=26) of respondents at DNP were aware of wildlife tourism at the site. Those aware of tourism typically had a family or community member involved in some capacity. Caste was a significant predictor of tourism awareness (Likelihood ratio=11.857, Cramer's V= .265, p<.05), which in DNP were Scheduled Tribes (primarily the Tharu community). Gender was also a significant predicter, as all respondents who were aware of tourism were male.

Beliefs about tourism impacts on communities

In DNP, respondents felt that tourism was good for communities (DNP= 32%) but few felt they received benefits from it (DNP= 6%) (Table 3.4). One key informant noted that any current development in the villages was catalyzed by local and state government intervention but acknowledge that sparking development through tourism could be a way to boost local interest in tourism. "*Forget these villages, the forest area itself lacks development. For instance, roads are an important thing. Our CM (Chief Minister) visited this region recently and made a comment about the roads needing maintenance.*

So that might happen in the next few months…so once that happens, people here will

learn and be aware and they'll be interested in tourism." Another informant suggested

the disconnect between villagers and tourism existed because most local residents - apart

from the few who had family members working in the industry – were never introduced

to tourism. He elaborated: *"There is a huge disconnect. I don't see any benefit (to the*

community). And most of the people (employed in tourism) are from Palia. Further, there

are 45 guides but not that many tourists. So, people don't get a steady income even

during the season. And the DD (Deputy Director) creates more positions every year, so

this number just keeps on increasing. This increases competition and people drop out.".

Beliefs about tourism impacts on parks and wildlife
    On inquiring whether they felt that tourism was benefitting parks and wildlife,

especially tigers, only about half of residents in DNP saw a connection (Table 3.4). 43%

of participants believed that tourism helped protect the park (Table 3.4). But many people

were also convinced that tourists only came here to click pictures of the charismatic

megafauna in the park. Further, many local residents believed the tigers survived here not

because of DNP, and tourism but because of forests and farmlands surrounding the park.

As noted by a key informant, *"Wildlife has benefited because agriculture has flourished.*

The wild boar is well fed because of sugarcane. And boar breeds very rapidly. So, the

tiger has food too." Key informants revealed that while tourism may not support tiger

conservation financially and could disturb wildlife, it brought attention to the plight of the

forest and the animals. However, most respondents felt tourism needed to be regulated

and closely monitored, supporting limited access and restrictions on tourist activity in the

park. As one noted, *"It really depends on the kind of guide you have. If the guides or*

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drivers are the kinds who harass the tiger or invade its personal space, then that's not good. It might drive the tiger outside the forest."

While addressing the overall lack of awareness both tourism and conservation within communities around DNP, one key informant suggested it can be improved by increasing local involvement. He elaborated: "*Jalte diye talley andhera* (it is darkest under the brightest burning lamp). *There are all these communities living near the forest, and they have no knowledge about it. When they've never been invited to participate or have never been involved, how will they ever learn. So, once they get to see the whole picture, they'll be able to think about their actions. And if not all the people, some of them might change their behavior; and that'll help change the village's behavior eventually."* Another respondent acknowledged that nothing was likely to decrease the momentum of tourism in DNP. A key informant explained, "*Like alcohol. It will never be banned. It will continue to be sold; as the state collects a lot of money through liquor tax. So, tourism in the tiger reserve is the only way we can generate money for the forest. There is no other source. So, it has to keep going on."* Park managers in DNP however, do not foresee tourism increasing in the region anytime soon because for DNP, *"the priority is conservation, not tourism".*

Regardless of tourism activity in the region, a large percentage of people around DNP supported the park (83%). Local communities were heavily dependent on the forest for firewood *(jalauni)* and elephant grass *(phoos)*. This dependency spawned strong support for the park. As one respondent mentions, *"Yes, the forest is very important! It will be problematic for us if the jungle doesn't exist as we depend on it for so many*

things!" But tourism also played a role. As in RNP, individuals who were aware of tourism and tourism benefits (for both communities and the park) were more likely to support the park.

Relationship between tourism-conservation across both parks

Overall, park support was observed to be high in both RNP groups and in DNP. We observed substantial variation in tourism attitudes, with generally neutral responses in RNP-Low and DNP (where tourism presence and awareness was low) and a plurality of responses in RNP-High (where tourism activity was high) (Table 3.5). Similar patterns were observed for beliefs about tourism benefitting communities. Perceived benefits were minimal in RNP-Low and DNP. Though higher on average in RNP-High, only 28% of respondents perceived these benefits, and many strongly disagreed (Table 3.5) On assessing the relationship between tourism attitudes and support for conservation, results of the Spearman's Rho suggested significant and positive correlations between attitudes and beliefs about tourism and park support (Table 3.6). Local residents who expressed positive attitudes about tourism and believed that tourism positively impacted communities and the park (in particular) were more likely to support the park (Table 3.6).

Table 3. 5 Comparison of Park Support and Tourism Attitude and Belief Variables Across RNP and DNP Sampling Clusters.

	RNP-HT		RNP-LT		DNP	
	Mean	%Agree	Mean	%Agree	Mean	%Agree
Park Support	1.62	**89**	1.77	**94**	1.38	**84**
Tourism Attitudes	.22	**45**	.06	**18**	.13	**16**[+]
Tourism Benefits Communities	.70	**28**	-.94	**3**	-.99	**8**
Tourism Benefits Parks	1.42	**80**	1.28	**78**	.79	**57**[+]

Different superscripts ([+]) denote statistically significant differences between clusters based on Kruskall-Wallis Test at α = .05. Mean values based on 5 point scale from -2 (high disagreement) to 2 (high agreement). %Agree represents the percentage of respondents who agreed or strongly disagreed with the statement

Table 3. 6 Correlations Between Park Support And Attitudes And Beliefs About Tourism Across Both Parks (N > 241)

	Park Support	Tourism Attitudes	Tourism Benefits Communities	Tourism Benefits Parks
Park Support	1			
Tourism Attitudes	.158**	1		
Tourism Benefits Communities	.113*	.155*	1	
Tourism Benefits Parks	.217**	.164*	-.034	1

*,**,*** denote statistical significance of Spearman's Rho correlation at α = .05, .01, and .001, respectively

Discussion

India has the largest tiger population in the world, and its 50 tiger reserves are either current or potential wildlife tourist attractions. Despite the widespread popularity of tourism around India's PAs, the benefits and costs of tourism are not equitably distributed (Rastogi et al., 2015). For example, around RNP – one of India's more

popular tourist destinations – only 55% of local residents survey were aware of tourism and its benefits. Tourism awareness was even lower in the more remote DNP, where just 21% of local residents knew about tourism and its benefits. Although tourism is widely viewed by conservation practitioners as a potential economic boon for rural communities (Xiang et al., 2011), few local residents appear to share those sentiments – even in a park popular with tourists like RNP.

Awareness of tourism in RNP was predicted by village location and income from tourism, with communities living close to the hotel and tourism zones are more aware of tourism. More respondents in villages near the RNP tourism zone also believed tourism provided benefits to communities, likely because they had greater access to tourism-related livelihoods. Distance from tourism was a major issue in DNP, which made participation for many respondents unfeasible. This was reinforced by poor infrastructure within and around communities that hampered potential tourism growth. Even around RNP, only a small proportion of locals received tangible economic benefits from tourism (Table 3.3) – a trend observed in other parks throughout India and much of the world (Karanth & DeFries, 2011; Sekhar, 2003; Sinha, Qureshi, Uniyal, & Sen, 2012).

Caste was also associated with tourism awareness at both RNP and DNP. Caste status may be linked to tourism engagement in India because 'Scheduled Tribes' qualifying to receive special government considerations and reservations (quotas) in education, government jobs, and legislative representation (Chatterjee, 1996). These policies aim to address the historical discrimination and oppression of disadvantaged

communities. For example, the Tharu living around DNP are a recognized 'Schedule Tribe' and are given special consideration in tourism-related jobs, which could explain their awareness and increased access to the limited tourism in the region.

Community members from both sites (and particularly DNP) reported high levels of forest dependency - a rationale that has been linked to park protection in similar contexts (Badola, Barthwal, & Hussain, 2012; Rastogi et al., 2015). And due to a combination of direct dependencies and indirect ecological and cultural benefits, communities living near PAs are likely to have an understanding and appreciation for conservation (Snyman, 2014). We also found that local residents at both sites supported the park despite the various challenges associated with forest proximity, including limited access to resources, lack of amenities, and high levels of human-wildlife conflict. In both RNP and DNP, residents who recognized benefits of tourism were more likely to support the nearby park. The weak links between the variables indicate that high park support observed in both RNP groups and DNP may be due to other causes, however we can postulate that tourism may contribute towards supporting the park in a small way. But not all locals viewed tourism as a positive contributor to the conservation of wildlife. Negative environmental impacts of tourism were noted by many respondents at RNP, and communities around DNP suggested tourism was not necessarily helping wildlife, including the tiger.

Different PAs have different priorities, and those contextual differences may ultimately define the relationship between tourism and conservation. At DNP, for example, catering to tourists needs or increasing tourist numbers has not been a priority.

This approach exemplifies India's exclusionary model of conservation, which views parks as people free spaces (Ghate, 2003; Guha, 1993; Vemuri, 2008). However, considering the socio-economic status of communities around DNP, the costs of losses from wildlife, and the general lack of livelihood options in the area have questioned these priorities, suggesting it is possible to provide elevated tourism opportunities without compromising on conservation outcomes. While in RNP tourism has created opportunities, it has given created inequalities as evidenced by the very different responses in villages farther from the tour zone. They may support the park (for reasons other than tourism), exclusion from participating could serve as potential sources of conflict.

Our study, one of the first to explore contextual influences on local perceptions of wildlife tourism by examining differences both within communities and across parks experiencing different levels of tourism, had several limitations. Since the data was self-reported, there may be some room for bias. For example, several participants were concerned about the lack of unemployment opportunities due to tourism. It is likely that a generalized disdain over the lack of employment opportunities could have influenced this sentiment. Tourism and park support were the key variables used in the study which can benefit from broader, more comprehensive measures in future studies. We were also limited in the interpretation of our analysis by the small sample sizes in both parks. The parks in our study represent high and low tourism parks. Forest departments in different states differ in the way they manage parks and tourism. Therefore, while our results may

be broadly generalizable, several managerial aspects and insights might be unique to the parks in this study.

Future Considerations and Management Implications

As wildlife tourism numbers increase and new destinations emerge, several factors should be considered before positioning tourism as a 'panacea' for conservation and community development (Das & Chatterjee, 2015; Krüger, 2005). Many studies advocate benefit-sharing through tourism ventures (Adams & Hutton, 2007; Rastogi et al., 2015; Sinha et al., 2012; Spiteri & Nepal, 2008), but these benefits are rarely equally shared in practice. Inequitable access to and benefits from tourism was certainly the norms at both of the PAs we studied. It is possible that reported community benefits were understated in our study. However, for communities to realize socio-economic benefits from tourism, they must see some level of local infrastructure development (Leung, Spenceley, Hvenegaard, & Buckley, 2018). In park-proximate villages, this might be the availability of basic amenities like water, electricity, and roads. It might also address losses from wildlife through compensation and mitigation programs (Ogra, 2009), though poor implementation of these programs often leads to unfavorable outcomes (see Chapter Three). Rather than compensation, studies have suggested implementing conservation incentives which align with local needs (Harihar, Veríssimo, & MacMillan, 2015; Turton, 2002). Addressing these needs will likely require a collaborative effort among the forest department, tourism providers, and local leaders and organizations – providing the

bridging social capital that to effectively merge tourism development and conservation (see Chapter One).

Local involvement in tourism should be structured in ways where community inputs are actively sought and members are invited to participate in roles that empower rather than reinforcing socially unjust practices (Campbell & Vainio, 2003; Coria & Calfucura, 2012). A particularly empowering feature of popular parks is the involvement of women through the handicraft industry. In RNP, allowing women to work from home has fostered social awareness and acceptability of the idea that women are equal contributors to the household income (Singh, Shaikh, Jha, & Khandal, 2012). This is reinforced via the promotion of local culture through arts and handicrafts that helps generate additional monetary benefits in the community (Hussain et al., 2012; Ollenburg & Buckley, 2007). And the findings from RNP (compared to DNP) might suggest these changes are working. The push for tourism-linked livelihood strategies might not be feasible in all cases, however. In such situations, other alternative livelihood options that are compatible with local cultures and traditions and conservation priorities could be considered (Coria & Calfucura, 2012; Mbaiwa & Stronza, 2011; Sene-Harper, Matarrita-Cascante, & Larson, n.d.).

In DNP, the few local residents who are engaged in tourism have devised ways to direct tourist fees to local communities. While the revenue collected from the gate is low (Karanth, Jain, & Mariyam, 2017), respondents shared that INR 50 (<$1) from ever entry fee collected is diverted to an ecotourism committee fund. Nature guides claim this amount is deducted from their meager guiding fee but ensure the funds are not used

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without their consent. The local Nature Guide Association directs these funds to install water taps and solar panels in communities or help local individuals in a financial crisis. Collectively, this evidence suggests that when locals are involved, and empowered to make joint decisions about the use and allocation of resources they rely on, inevitable costs can be negotiated without conflict (Pretty & Ward, 2001).

From our study, we observed that livelihood generation and community development are critical factors influencing the relationship between tourism and conservation around PAs. This is particularly true in India, where has a long history of top-down forest and park management policies has disenfranchised local residents and fueled conflict and distrust (Torri, 2011). Wildlife tourism is viewed by some as a way to combat this legacy and leverage parks as economic engines in rural communities such as those around DNP. Others remain skeptical, however, especially in low tourism zones around places like RNP where tourism is already established but positive impacts are seldom seen by many residents. Perceived exclusion, socio-economic costs, and a lack of tangible benefits not only threaten community support for tourism but support for the park itself. Establishing linkages between tourism, local livelihoods, and conservation is complex, yet essential for long-term success (Kiss, 2004). Our study indicates that active stakeholder participation and engagement is key, with increasing awareness of tourism and its potential benefits as an obvious first step. Local residents should be more than mere spectators in decisions regarding the very landscapes they depend on for survival.

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CHAPTER FOUR

'ONLY TIGERS PROSPER HERE':
IDENTIFYING AND ADDRESSING SOURCES OF SOCIAL CONFLICT AROUND
INDIAN TIGER RESERVES

Abstract

Conflicts are common in protected areas typically emerge as either human-wildlife or social conflict. Human-wildlife conflicts, or direct conflicts between humans and animals, are often surface-level manifestations of deeper social conflicts, which may be a result of historical, top-down, restrictive management strategies, power disparities, and lack of community involvement in decision making. Although such conflicts are prevalent around the globe, mitigation has been challenging. This is particularly true in places like India, where a) protected areas are impacted by multiple stakeholder groups who hold different values regarding resource use, and b) institutional policies, processes, and practices further hinder the formation of collaborative relationships to achieve conservation goals. Using case studies and qualitative interviews conducted across and around two tiger reserves: Ranthambore National Park (Rajasthan) and Dudhwa National Park (Uttar Pradesh), we explored how different stakeholder groups perceiveaccess to natural and community resources, human-wildlife interactions and associated mitigation strategies, perceive park management and collaboration with other stakeholder groups. We found four common and overarching sources of conflict: forest access, human-

wildlife conflict, distrust and discrimination, and exclusion due to power disparity. While present in both locations, these sources manifested uniquely in different park contexts. Findings support other studies of conservation conflict and illustrate the importance of integrating local cultural contexts in conservation planning, park management, and community-based interventions.

Keywords: Conflict, Conservation, Protected Areas, India, Tiger Reserves

Introduction

The establishment of parks and protected areas (PAs) is considered an important means of addressing biodiversity loss (Convention on Biological Diversity, 1992; Eken et al., 2004) and safeguarding ecosystem services (Balmford et al., 2002; Rodrigues et al., 2004). However, PAs are not only sites of ecological significance, but also areas of social production and interaction (West, Igoe, & Brockington, 2006), vital sources of livelihoods for millions of indigenous people worldwide (Hall et al., 2014; McNeely, 2008; West et al., 2006), and important socio-cultural and religious sites (Negi, 2010). Additionally, parks are arenas for research, education, and tourism (Spenceley & Snyman, 2017). Yet protected areas around the world also generate conflict. Understanding how these conflicts emerge and how they might be addressed to effectively balance human needs with the protection of wildlife and natural resources is a grand challenge.

Conflicts in Protected Areas

Conflict in protected areas is a global issue that arises in different forms (Baynham-Herd, Redpath, Bunnefeld, Molony, & Keane, 2018) and poses several challenges to conservation and sustainable livelihoods (Anand & Radhakrishna, 2017; Dickman, 2010). Because of its profound impacts on both people and animals, human-wildlife conflict is one of the most widespread and widely studied issues in conservation and wildlife management (Anand & Radhakrishna, 2017; Baynham-Herd, Redpath, Bunnefeld, & Keane, 2019; Karanth, Gopalaswamy, Prasad, & Dasgupta, 2013; Knight, 2000). Human-wildlife conflict occurs when 'the needs and behavior of wildlife impact

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negatively on the goals of humans or when the goals of humans negatively impact the needs of wildlife' (Madden, 2004, p. 248). Mammals and other migratory species have been observed to inhabit regions outside reserves and protected areas and cause conflict with humans (Inskip, Carter, Riley, Roberts, & MacMillan, 2016). Negative interactions with wildlife can result in several costs incurred by local communities; such as depredation of livestock (Zimmermann, Walpole, & Leader-Williams, 2005), crop-raiding or destruction of stored food (Pérez & Pacheco, 2006), and impacts on human life through attacks and disease (Penteriani et al., 2017).

Many different intervention strategies can help to mitigate negative impacts of wildlife. These often focus on proximate human behaviors which conflict with conservation interests (Schultz, 2011) and address their immediate drivers. For instance, retaliatory killing is often addressed by attempting to reduce negative wildlife impacts (Nyhus, 2016). In their analysis of the conflict literature, Baynham-Herd et al. (2018) categorized these interventions into technical, cognitive, and structural types. Technical fixes attempt to modify the physical environment (e.g. fences to prevent crop-raiding) to reduce retaliatory killing of wildlife or active opposition to conservation (Nyhus, 2016). Cognitive fixes have been described to potentially influence behavior change through information dissemination, such as conservation or livelihood education (Espinosa & Jacobson, 2012). Structural interventions attempt to change the context itself and aim to mitigate conflict through economic or financial instruments such as compensation programs (Karanth, Naughton-Treves, Defries, & Gopalaswamy, 2013); enforcement through rules and regulations around resource use and access (Arias, 2015), and

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stakeholder engagement (Young et al., 2016). In many cases, interventions generally focus on material losses, which only address superficial aspects of conflict (Madden & McQuinn, 2014). When conservation efforts focus on tangible disputes and fail to account for history, nature, and multiple levels of social conflict which influence conservation efforts (Madden, 2004), they limit stakeholder receptivity to change and commitment to conservation goals (Reed, 2008). Conflicts in protected areas are therefore more complex then they may seem, primarily because they are often manifestations of underlying human-human or social conflicts (Dickman, 2010; Madden & McQuinn, 2014; Redpath et al., 2013).

Protected areas are multi-actor landscapes. These actors not only hold diverse philosophies of park use, management, and conservation; but also have different interests, status, and influence in decision making (Fisher, Maginnis, Jackson, Barrow, & Jeanrenaud, 2005; Gavin et al., 2015; Hovardas, Korfiatis, & Pantis, 2009). Social conflicts in these contexts can be defined as conflicts between groups of people with differing interests, where at least one group acts against the interests of another (Lecuyer, White, Schmook, & Calmé, 2018; Marshall, White, & Fischer, 2007). In protected areas, social conflicts can stem from one group implementing restrictions or in some way requiring a group of people to alter their way of life in order to protect wildlife or other resources – often resources that may have been historically utilized by people (Barua, Bhagwat, & Jadhav, 2013; Dickman, 2010; Woodroffe, Thirgood, & Rabinowitz, 2005). Considering how actors (local communities and conservation authorities) perceived impairment from each other, De Pourcq et al. (2015, 2017) identified causal factors of

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conflict which include reliance on park resources, forced displacement, social exclusion, deficient community participation, and unanticipated negative consequences of conservation measures.

However, conflicts in the protected area context are not always merely expressed disagreements among people who see incompatible goals (Peterson, Peterson, Peterson, Leong, 2013). Restrictions on resource use are often shaped by historical ideologies that view parks and people as separate entities (Neumann, 1997; Terborgh, 1999). Further, conflicts are typically rooted in non-material unmet social needs, including status and recognition, dignity and respect, empowerment, freedom, voice and control, power disparities, social, emotional, cultural, and spiritual security (Hafner-Burton & Montgomery, 2006; Madden & McQuinn, 2014; Shaw & Williams, 1994; Sheehan & Ritchie, 2005). Conflict has both visible and hidden impacts on communities and conservation (Barua et al., 2013), and it can be particularly counterproductive when creating the capacity for collaborative resource management that is essential for positive conservation outcomes (Lecuyer et al., 2018; Nastran, 2015; Pretty & Smith, 2004). Yet, there remains a dearth in research that identifies socio-cultural and historical drivers of conflict, which could shed critical light on the contextual factors, processes, relationships that influence conflict resolution (Holland, Larson, & Powell, 2018; Madden & McQuinn, 2014). And such conflicts have been widely present in India.

Protected Area Conflicts in the Indian Context

Indian protected areas are largely characterized by their unique biodiversity, which is proximate to dense, resource-dependent human populations (Karanth, 2007; Shahabuddin, Kumar, & Shrivastava, 2007). For more than two centuries, India was

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under a British colonial regime. Not only did colonial powers impact political relations, ethnicities, and social structures; they also transformed nature, landscapes, and ecologies and altered the relationships between people and wildlife (Gadgil & Guha, 1993; Shiva & Bandyopadhyay, 1989). Under British rule, indigenous communities who relied on forests for subsistence, cultural and religious reasons, were denied access and removed from their lands. Forest resources were redirected to benefit the British empire and wildlife was wiped out through game hunting (Rangarajan, 2001). At the time of independence, India faced a gamut of socio-political, economic and environmental issues. To fulfill the needs of a growing nation, the government focused on bolstering agriculture and infrastructure, resulting in further devastating the country's natural resources (Bindra, 2017). The country was in a full-fledged environmental crisis in 1972 when the first legal framework for conserving wildlife and forests was developed (Mahesh Rangarajan, 1996). After this legislation, many protected areas were declared without prior surveys or studies, which designated many communities as encroachers on government owned forest land (Damayanti, 2008). Large scale relocations and restrictions on access were enforced on these newly formed protected areas; these policies seriously impacted locals who not only lost their ancestral lands, but also their traditional livelihoods (Torri, 2011). To some, the severity of India's conservation crisis justified the necessity of such extreme actions (Bindra, 2010). These actions have yielded positive results for wildlife, such as the tiger, which through continued conservation efforts has been brought back from the brink of extinction (Jhala, Qureshi, & Nayak, 2019; Narain, Panwar, Gadgil, Thapar, &

Singh, 2003). However, despite these commendable strides in wildlife conservation, conflicts - both human-wildlife and human-human - continue to persist in Indian PAs.

India's environmental policies restrict development around protected areas and limit the scope of industrialization and development in these regions (Ogra & Badola, 2008b). Thus, around most protected areas in India, livestock holdings and agriculture become the primary means of income (Karanth, 2007; Shahabuddin et al., 2007). Intensive livestock grazing in and around protected areas drive forest ungulates into agricultural fields, which results in crop losses to farming communities (Madhusudan & Mishra, 2003). Additionally, encounters with large carnivores result in loss of livestock and human life. Communities bearing these losses tend to be from weaker socio-economic sections of society (Das and Chattopadhyay, 2011). Losses from direct conflict with wildlife can further impact people's physical and mental well-being (Chowdhury, Mondal, Brahma, & Biswas, 2008; Dixon, Hailu, Semu, & Taffa, 2009). These negative impacts and interactions often cause local communities to retaliate against wildlife, the park, and park managers (Madhusudan & Mishra, 2003; Treves & Karanth, 2003; Rosie. Woodroffe, Thirgood, & Rabinowitz, 2005), hindering conservation progress. As in other places, India has implemented numerous strategies to address human-wildlife conflict through prevention measures (fences, noise, guarding, etc.), compensation programs, and insurance (Dickman, Macdonald, & Macdonald, 2011; Karanth, Gupta, & Vanamamalai, 2018; Karanth & Kudalkar, 2017); and legislation and initiatives such as the Forest Rights Act (2006) and Joint Forest Management programs (Bhattacharya & Basnyat, 2003). The 'success' of these programs has been questioned by several researchers,

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whose findings indicate that people-management relationships continue to remain estranged (Macura et al., 2016; Shahabuddin, 2010). In many cases, these initiatives fail to reconcile conservation and development priorities (Johnson, Karanth, & Weinthal, 2018) and continue to remain fixated on state-driven solutions to short-term, proximate challenges that delegitimize local authority (Read, 2016). Mitigation efforts,, therefore, address superficial manifestations of conflict (Madden & McQuinn, 2014) limiting stakeholder receptivity to change (Reed, 2008).

While many studies identify and enumerate the diverse consequences of conflict, few explore the complexities and contextual drivers necessary for addressing the underpinning causes (Baynham-Herd et al., 2018; Madden & McQuinn, 2014). This research aims to fill this gap. This study is guided by the question: how do both human-wildlife and human-human conflict emerge in different park contexts; and what are their socio-cultural and historical drivers? While exploring these themes, we further identify potential disparities and disagreements between diverse stakeholder groups that might aggravate conflict. We conclude by offering insights about how social conflicts in these contexts might be addressed.

Methods

We used a comparative case study design (Baxter & Jack, 2008; Yin, 2017) to explore park-related conflict in different contexts, allowing us to compare and contrast 'how' and 'why' social conflict occurs in and around different sites. Because of the prominence of carnivore related conservation conflicts (Holland et al., 2018), we chose to

study parks within Indian tiger reserves. Given India's commitment to conserve tigers and tiger habitat, managers of tiger reserves struggle to balance the needs of local communities with conservation outcomes. We selected two Indian National Parks, Ranthambore National Park (Rajasthan) and Dudhwa National Park (Uttar Pradesh), as study sites. Both are important tiger habitat; however, they are geographically, ecologically, socially, and politically distinct.

Study Areas

Dudhwa National Park (DNP) was established in 1977 and covers an area of 490.3 km^2. It is a part of the Dudhwa Tiger Reserve, declared in 1987, along with Kishanpur Wildlife Sanctuary and Katarniaghat Wildlife Sanctuary. The park is located in the Terai belt, which is primarily marshy grassland that spreads across southern Nepal and northern India. These low-lying plains of fertile alluvial soil make the area desirable for farming making Agriculture the economic backbone of the region. At the same time, this region is highly biodiverse with the presence of a vast range of endangered mammals including tigers (*Panthera tigris*), elephants (*Elephas maximus indicus*), one-horned rhinoceros (*Rhinoceros unicornis*), and swamp deer (*Cervus duvauceli duvauceli*) (Mathur & Midha, 2008). Due to its proximity to Nepal, the park faces several transboundary conservation issues. The Tharu, a forest-dependent tribal community dominates this region. They and other tribal communities are granted forest access under the Forest Rights Act of India, [also known as The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006] which recognizes and vests the 'forest rights and occupation in forest land in forest-dwelling Scheduled Tribes and other traditional forest dwellers' (Forest Rights Act, 2006). Despite these

provisions, locals are in constant conflict with the Forest Department. Further, human-

elephant conflicts are common in park proximate fields and villages and farming

communities bear significant losses as a result of crop-raiding.

Fig. 4. 1 Map showing location of study sites: Dudhwa National Park, Uttar Pradesh and Ranthambore National Park, Rajasthan. India

Ranthambore National Park is spread over an area of 392 km^2. It was established

in 1980 and along with Keoladevi Wildlife Sanctuary and Sawai Mansingh Wildlife

Sanctuary forms the larger Ranthambore Tiger Reserve. Along with tiger, the park is

known for several species such as the leopard (*Panthera pardus*), caracal (*Caracal caracal*), sloth bear (*Melursus ursinus*), Indian gazelle (*Gazella bennettii*), and other ungulates. Several local communities surround the park. The population of these communities is diverse and comprised of Meenas, Maalis, and Gujjars, who practice agro-pastoral livelihoods. Ranthambore is prime tiger habitat and is consequently one of the most visited parks in India. Additionally, tourism plays a major role in the local economy and culture (Vasan, 2018). Development and tourism in the region have diversified local livelihoods, and fewer people are directly dependent on the forest. However, a small proportion of locals are directly involved in tourism (Karanth & DeFries, 2011). Human-wildlife conflict is prevalent in the form of crop-raiding and livestock loss due to interactions with carnivores.

Data Collection

From June to August of 2018, we collected qualitative data from individuals in multiple stakeholder groups (village leaders, key informants, forest managers, NGO staff, etc.) to explore conflict through a variety of lenses, allowing for multiple facets of the phenomenon to be revealed and understood (Baxter & Jack, 2008). Our primary sources of data were semi-structured interviews developed to explore the key themes of conflict identified in the literature (De Pourcq et al., 2017; Dickman, 2010; Madden & McQuinn, 2014). In each community, we first identified and spoke with village leaders. We then asked each leader to identify additional community members to be interviewed with an eye toward identifying diverse individuals. This snowball referencing strategy also

helped to establish trust and credibility with new participants (Altinay, Paraskevas, & Jang, 2015; cited in Bowen, Zubair, & Altinay, 2017). We also interviewed participants from outside the community – a group that included park managers and representatives from local NGOs (Non-Government Organization). Our sampling approach yielded a broad representation of diverse perspectives from community members, village leaders and other key informants from villages on the peripheries of both parks. Participants were from different castes, socio-economic backgrounds, occupations, education levels, and sexes. Fifteen participants were interviewed in DNP, including two forest rangers, two NGO staff, two tourism employees, and a combination of nine community leaders and key community informants. To maintain comparability and consistency between the two sites, a similar distribution of stakeholders was interviewed in RNP. The fifteen participants in RNP were comprised of two forest staff, three NGO staff, one tourism employee, and ten community leaders and key informants.

Three broad concepts were considered in the study: village life and community relationships, the experience being a forest (or park) proximate community, and relationships with external stakeholders (forest managers and NGOs). All interviews were conducted by the lead author. When participant responses hinted at discord or conflict, additional prompts yielded deeper insight into the issue. Interviews at both sites were carried out in Hindi. Interview data were complemented by informal conversations with community members and local observations, which took place during the data collection periods while the researcher was familiarizing themselves with the communities at both sites. These were captured through field notes and memos

maintained by the first author, which helped maintain objectivity, extract greater meaning from the data, and facilitated interpretation of information based on the context it was collected (Birks & Francis, 2008).

Data Analysis

Interviews were recorded with the participants' permission, then transcribed and translated to English by the first author. Data were analyzed using a directed content analysis approach (Hsieh & Shannon, 2005). This approach allowed us to use prior research (Madden and McQuinn, 2014) and the concepts under study to guide initial coding categories. The interviews were read several times to ensure familiarity with the data. As each interview was reviewed, the lead author created a summary table core concepts in the study (e.g. access to resources, discrimination, distrust, etc.). An initial coding strategy was developed, and conflicts were identified and coded as human-wildlife and human-human conflict (expressed disagreements between two actors, where one worked against the interest of the other). This method helped in identifying additional sub-themes related to conflict. Data from informal conversations and participant observation helped in providing context for the interview responses, minimizing the likelihood of misinterpretation. Contrasting the findings from each site allowed us to separate aspects of conflict that were generalizable from the ones that were specific to each site.

Results

Findings from our study reveal that tangible conflicts around parks emerged with respect to access to natural resources and human-wildlife interactions. However, upon further scrutiny, these surface-level conflicts appeared to be influenced by two deep-rooted causes: discrimination and distrust, and power inequalities and exclusion. We explore these overlapping themes of human-wildlife and human-human conflict and the contextual factors underpinning them in the following sections.

Access to Resources
Access to natural resources
Access to natural resources in and around the parks was a central issue for communities at both sites. In Dudhwa National Park (DNP) forest products such as firewood, known as *jalauni,* and grass or *phoos* are essential for living the traditional way of life - especially for the Tharu tribal community. While *phoos* is essential for the construction of traditional Tharu huts with grass roofs, *jalauni* helps cater to the food and cooking requirements of large Tharu households. A community member from DNP explained why forest resources are so important for subsistence, "*The important thing to note here is that people who belong to Scheduled Tribes (ST) live in joint families. They all live together; their meals are cooked together. That is food for* (at most) *40-45 or at least a dozen people at a time."* Additionally, firewood was a key component in several Hindu rituals (marriage, prayer, funerals, etc.) followed by the Tharu and non-Tharu alike. This socio-cultural dependency on natural resources reinforced inherent respect towards the forest. As one participant noted: "*Of course we think about these things* (sustaining the forest). *The forest supports our life.*"

Communities around RNP, on the other hand, were less dependent on park resources. For example, the enhanced availability of cooking gas (LPG or Liquified Petroleum Gas) in the area has reduced the community's reliance on the forest for firewood. However, several pastoral communities who remained dependent on the park have struggled to meet grazing needs of their livestock. This, according to a key informant, has impacted livestock rearing practices. He explained, "*Earlier, we could graze all our livestock and sell and use milk to raise and nourish our families. Few of us raise livestock anymore because there is no way we can graze them.*" Grazing rights are a controversial subject with the Forest Department, and many community members are wary of them. Another community member disclosed, "*They catch us if we go inside the forest. We have to pay fines. We've been beaten up. Locked up in jail.*"

While subsistence uses of the park were of lesser concern in RNP, many participants were worried about the impact of park-related restrictions on cultural practices. A few village elders raised issues regarding the restrictions placed around visiting religious sites in the park, "*Hundreds of years ago, our villages were inside the forest, and so our shrines were built there. We left when we were asked to relocate, but how can we shift a hundred-year-old shrine? Our Gods live inside the forest, and we can't visit them when we want to.*" Despite these issues, most community members around RNP appeared to understand the need for rules and regulations. They felt these rules were required for sustaining the forest, which plays a role in the seasonal rainfall crucial for agriculture, especially in an arid state like Rajasthan. A community member shared, "*I'm aware of a few rules. And they exist for good reason. The forest needs to be*

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protected and protection is important…we get all the benefits of a clean environment. I feel like I'm in London." This 'London-like' feeling alluded to the stark differences locals experienced while travelling outside the region. Forests and their adjoining areas felt almost exotic as compared to the polluted and congested average Indian township or city, which locals appreciated. However, this privilege of living in such an environment also came at gripping costs, "*Who will be happy? It's (the forest) the root of all our problems*".

The 'core' of the issue

The "problem" of access is rooted in how the PAs were created and defined. Most Indian tiger reserves are demarcated into different zones that inform conservation and management practices and dictate levels of human activity (Ebregt & Greve, 2000). The core is a strict conservation zone free of all human activity outside of minimal research and management practices. The buffer zone (often known as 'multiple-use zone' or transition zone) generally adjoins and surrounds the core. Buffer zones were conceptually established to minimize human impact on the core; they eventually transitioned into social areas where activities such as agriculture, collaborative conservation, reserved forestry, regulated natural resource extraction, and recreation and tourism take place. In DNP, most villages are situated in the transition zone or on the periphery of the buffer where human use of the forest is permitted. However, RNP's forest access issues differ because its core-buffer zonation is designated differently. Almost the entire national park lies within the core conservation zone (or Critical Tiger Habitat), and the adjacent Sawai Man Singh and Keoladevi Sanctuary form the buffer. These sanctuaries, however, do not encase the core as buffers should. Access is permitted through tourism, as Ranthambore

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is one of the few parks in India that permits tourism in its core. A community participant shared that, like resource extraction, tourism can potentially be counter-productive to conservation if not monitored, "*(Managers need to) be stricter with tourism and tourists; as strict as they are with the locals*". "*Tourists pay a lot of money to watch wild animals,* shared another community member. "*If they see our animals grazing (in the forest while on safari), they don't like it- so they (forest managers) have pushed us out and imposed restrictions on us*". Favoring tourists access over locals with respect to forest access was also a source of contempt with several community members.

Short-sighted interventions

Several intervention strategies had been introduced in both sites to address local needs regarding resource use. Access to firewood is one of the main drivers of forest use. To reduce forest resource dependency through government and NGO intervention, local communities are provided with cooking fuel alternatives. While such interventions were introduced long ago in RNP, they were new to DNP. Several community members recognized this as a positive change in DNP. The transition to LPG (liquified petroleum gas) at both sites was viewed as a safer alternative for women, who were usually responsible for bringing firewood from the forest. This shift also gave them more time to spend with their families. Despite these benefits, several households in both DNP and RNP expressed concerns about LPG and its distribution system. Modern cooking stoves are incompatible with their traditional cooking utensils. As a result, buying suitable cooking-ware is an extra cost that community members have to bear. Further, gas is distributed to these communities in cylinders that are refilled and redistributed

periodically. A 15-kilogram cylinder of cooking gas lasts a month for a family of four; however, frequent refilling and subsequent costs were problematic for larger sized families like the Tharu in DNP. For small landholders and land-less farmers, even subsidized cylinders were too expensive to be a long-term firewood alternative. An informant from DNP explained, "*Yes, we have gas cylinders. But there are some families who are really poor who can't afford cylinders every month. So they continue to be forest-dependent*". Firewood was also considered as an important source of heat in the winters at both sites, where temperatures drop considerably.

Alternative energy resources available to communities varied between and within sites. For instance, while some communities in RNP had access to up to 18 hours of electricity a day, some received less than 10 hours. Many remote Tharu villages in DNP only had access to enough solar electricity to power two lightbulbs. A community member from RNP explained the issue in more detail: "*Water* (scarcity) *is a huge issue. We used to have a* (manually operated) *communal handpump here earlier, but it was removed by the authorities in exchange for a motorized borewell. We can barely use it because there is no electricity. We get 2-3 hours of electricity on a good day. And toilets? Every house in the village has a toilet. But we don't use them- because we have no water*". According to a local community leader from DNP, these shortcomings are bound to arise as these policies are "*conceptualized by officers who sit in air-conditioned offices*" who have little or no context of ground realities and processes. Such inequities compromise the success of programs and interventions designed to improve the quality of life in communities by enhancing access to resources.

Human-Wildlife Interactions

Human-wildlife interaction issues

Due to their park proximity, communities around both DNP and RNP experienced

significant human-wildlife conflict. Nilgai (*Boselaphus tragocamelus*), Spotted Deer

(*Axis axis*), Wild Boar (*Sus scrofa*), and monkeys are common sources of crop-raiding for

both sites. In DNP, the Asian elephant (*Elephas maximus indicus*) is an additional,

sizeable threat to agricultural practices. Locals regarded elephants as a seasonal menace.

The frequency of raids compelled many community members to build *madhaiyas* (small

huts) on the edge of their fields to be ready when a herd came their way. Driving away

elephants was regarded as a difficult, dangerous task. A community member describing a

close encounter with an elephant said, "*They are a different story altogether. Too big to

do anything to them. I've taken my tractor up close to one. Stopped it right behind it to

try and drive it out of my field. And it turned around to face me. It was so close that I

thought it'll pick me up right from my tractor.*" Even a small herd of elephants can cause

significant loss spanning acres of agricultural land. This can be devastating, especially for

small landholding farmers who grow sugarcane for trade and rice for sustenance.

Community members around DNP did not report conflict with tigers, barring a few

places where tiger movements were observed, and a few instances of livestock loss had

occurred. This may have been due to the presence of fewer tigers in the region.

On the other hand, RNP has a higher tiger density. According to a local tiger

conservation NGO, there are close to 57 individual tigers in the core area of the reserve.

The entire Ranthambore tiger reserve supports a viable tiger habitat for 50-55 individuals.

While this makes it a desirable landscape for tourism and tiger viewing, it also translates

to livestock losses suffered throughout the local community. There is fear in the communities because of tigers, and villagers have to be careful and vigilant while moving around. "*Tigers are very scary. They'll start stalking the fields as soon as the mustard starts growing. We hesitate to go to our fields.*" According to several participants, other wild animals were also problematic, especially those perceived as pests that devastate crops. As one community member talking about wild boar illustrated, "*I've been trying to grow jowar for the past five years. My yield never exceeds more than one sack-full.*"

Community action and conflict mitigation strategies

Communities in both parks differed with their responses to human-wildlife conflict. In DNP, when elephants raid fields, a collaborative response to conflict is critical because the farmlands of a village are close to each other. Elephant herds move across several fields in a single raid and devastate acres of farmland together. Farmers, therefore, work collectively to drive animals away. Additionally, as attested by several community members, chasing away elephants is not a task that can be undertaken by one person alone. Villagers tend to rely on each other more than the Forest Department during elephant related conflict. *"We don't rely on foresters for human-wildlife conflict issues because they are too far from us. By the time they get to us everything will be over. We are separated from them because of the forest. Plus, there are only 2-3 people at the nearest chowki. What difference will that make?"* The remoteness of villages in the region and the constraints to timely communication, combined with the poor condition of roads and the lack of resources, impacts the department's capacity to respond. Some aid is available through non-profits like the World Wildlife Fund (WWF), who supply

elephant-deterring tools (firecrackers and torches) to raid-prone villages. Community members crave more permanent solutions like electric fencing and boundary walls. However, they feel these too are not sufficient to stop elephants completely.

Similar strategies for deterring crop pests have already been implemented in RNP, but efficacy is minimal according to local residents. Many community members installed fencing around their fields, which was occasionally subsidized through local programs. A community member elaborating on the inefficacy of fencing strategies mentioned, "*Wild animals have figured out ways to get around them. The dig under or jump over. These animals don't even let the seeds survive. It's like killing a child in the womb*." In RNP, a boundary wall also runs around the periphery of the park. Instead of alleviating conflict with wildlife, this wall added to people's frustration. Many community members claimed the boundary was not high enough and was broken in several places due to poor maintenance, making it easy for wild animals to jump over. Other community members felt that building a boundary wall was unfair. While ungulates and predators from the park could still access their fields, they and their livestock were impeded from accessing the forest. A community member exclaimed, *"I thought we had an agreement. That they erect a boundry wall around the park so that we don't graze our animals- because that harms the forest. Fine. But their animals still move outside and damage our crops. How is that fair?"* As a result, conflict mitigation strategies fueled more conflict.

Community members from both study sites expressed a shared belief that the Forest Department cared very little about humans in human-wildlife conflict scenarios. Residents felt if a forest animal was found injured or dead, the forest authority wasted no

time in arresting and/or fining the community members. However, if humans suffered losses that impacted livelihoods, the forest officials did little to respond to their issues in time. As per one informant from RNP, "*The Forest Department only responds to wildlife issues when a tiger is involved… Only tigers prosper here*".

Compensation programs

Participants from both communities acknowledged the presence of compensation programs, but there was a general belief these programs are ineffective. In DNP in addition to compensation for carnivore-caused livestock loss or human harm, farmers were compensated for losses caused by elephants. But a farmer from DNP explained the tedious nature of the reimbursement process, "*Like two years ago a huge group of elephants made their way into the field. They destroyed quite a bit- about 2 acres of sugarcane was lost. We notified the authorities and submitted a request at the range office. Till today we have not received compensation. Who knows where that money went? Same thing for wild boar. They (*Forest Department*) don't even entertain complaints for losses by wild boar.*" Another key informant from DNP expressed that the lack of cellular network coverage and poor conditions of roads resulted in several added costs in the process of filing compensation. In RNP, participants also complained that compensation programs did not cover losses from crop-raiding. Further, the compensation for livestock loss is underwhelming, as one participant explained, "*It's inconsistent. People come here to do the paperwork. It takes 2,4-even 12 months to get the money. A buffalo costs INR 50,000 and we'll maybe get up to INR 10,000 if we're lucky. We get a dime for a dollar.*"

Discrimination and Distrust

Local residents' perceptions of authorities
Community members around both parks recognized the value of being involved

in conservation. In DNP, participants felt that since forest tribes have a close relationship

with the forest and their identities are tied to it, tribes should play an important role in

conservation. Locals helped the Forest Department with trail maintenance and cleared

trails after storms. Local residents were also involved in building roads and dousing

forest fires. Local involvement in these 'collaborative' efforts was contingent on

continued forest access. Some locals believed they had a personal stake in fighting forest

fires: "*We put out fires ourselves. Otherwise, the forest is damaged and that will cause us*

harm. We have a couple of mango plantations around the border- those would burn down

too". While the few community members invested in tourism were more engaged with

the Forest Department, the relationship was primarily transactional, "*We help if they need*

us. They give money in return for our work. It's not like we do favors for each other.

Everything is on a payment basis." However, strained relationships and friction with

forest staff regarding forest access issues have impacted community participation. "*Now*

during fires, the forest keeps burning. No one helps."

In RNP, there was evidence of some community participation in conservation;

often because participants perceived this involvement as a potential avenue of livelihood

earning. A few local residents were involved in tracking wildlife and setting up camera

traps to monitor species. They informed the Forest Department and partner NGOs about

tiger movements and communicated with them frequently. However, this involvement

was typically limited to just one or two people in a community. According to one village

leader, "*Whatever work the Forest Department carries out in communities is through NGOs. They don't really work with us directly.*" Other community members felt the forest staff was too preoccupied with managing tourism to pay attention to anything else. Sharing concerns with forest authorities were also problematic for community members due to the inconsistent leadership, "*We share our feelings with officers. They say they'll look into it. Then (they) either don't or get transferred. These guys know RNP is a place where they can make good money. So, they focus their energies on just that.*"

At both sites, participants questioned the intentions of the Forest Department and higher authorities. In DNP, interactions between the community and the forest staff for forest access is often influenced by corruption. Several participants shared that forest staff would collect bribes in the form of money or produce from community members in exchange for forest access. One respondent stated that village leaders did not report these events, probably because they were involved in some capacity, "*For instance, if I'm the head of a village, and the FD Collects a "gulla" (fixed bribe/protection money) from the people- I get a cut. So why will I say I have a problem? They break the unity of the village. It's like the British all over again.*" Additionally, participants felt that cross-border timber smuggling in the region happened either because forest staff was too preoccupied collecting bribes from locals or because they were involved themselves, "*Your neighborhood will be frequently burgled when the cops are involved with the thieves. Because the cops protect the criminals, they get away with crime. Otherwise, if the law-enforcement officers are powerful, how can anyone get away with anything? If you're busy extorting money from a community to fill your own pockets instead of*

patrolling- you can't expect the forest to be protected." To many, the perceived

corruption prevalent throughout the Forest Department was assumed to be a normal part

of Indian bureaucracy.

NGOs were identified as an important mediator who helped develop community-

forest management relations. However, community members from both DNP and RNP

expressed their frustration with NGOs who would initiate community development and

conservation projects that were often left incomplete. A community member from RNP

agreed that it was challenging work but claimed NGOs did not invest enough time and

lacked the patience to work with village communities, *"I think they don't do what they do*

consistently. If you work with us- maybe, we won't understand on the first day but in 3-4

days you'll see a change. And the older generations might take longer, but younger ones

will catch on quickly. They (NGO staff) *are lazy. They just get paid and relax.*" As a

result, community participation in externally organized programs was low.

Authorities' perceptions of local residents

Interviews with external stakeholders in DNP (Forest Department and NGO staff)

yielded several interesting insights about the perceptions of and experience working with

local communities. In RNP, forest staff acknowledged that forest proximate communities

lived tough lives and should be provided with all the help they could get. They also

believed that for communities, forest dependence was more psychological than practical,

"*A villager's thought process makes them believe that they have to hoard firewood. It*

doesn't matter how much firewood they have- even if they have enough for two years. It

doesn't matter if it's all sitting there, rotting, infested with termites. They have to feel

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secure. That's how they think." In these circumstances, officials accepted that conflicts with the locals were bound to happen and they (the forest staff) should learn to deal with it.

Contrastingly, external stakeholders in DNP viewed the local community as a nuisance that impeded forest management. Many felt the presence of these communities was detrimental to the forest, and they believed local people needed to be removed completely to ensure forest protection. As per a forest ranger in DNP "*They'll set one part of the forest on fire and once the staff is busy putting it out, they'll cut trees somewhere else*". Distrust between the forest staff and the Tharu community could be based on the ethnic origins of community members. Several stories exist in the community about the Tharu's ancestry. While some claim to be migrants from the 'Thar' desert in Rajasthan, others claim to be mixed descendants of Rajput royalty and Nepali common folk. This presumed historic and cultural connection with Nepal subjects local Tharu to heightened scrutiny from local officials and non-Tharu communities. A non-Tharu participant voiced his contempt, "*You will find many Nepalese migrants here. For instance, a Tharu from Nepal comes here and settles, Ok? He doesn't own a single inch of land. In the eyes of the government, he's landless and extremely poor. They sympathize with that person and give him INR 2-2.5 Lakhs (~ $3000) as aid, (*They*) give a Ration card (*ID card*), and all sorts of amenities. Any and all kinds of people can walk into India and can easily become citizens. That's a huge problem in this country. And this is a major problem in this region. If one thoroughly investigates this issue, I'm pretty sure one will find more than 5000 Nepalese in this area alone.*" It is believed, that these cross-

border connections between the Indian Tharu community and Nepal instigate timber smuggling across the border. One forest staff member remarked, "*This forest is nurturing two countries.*" In addition to being perceived as ill-intentioned, the communities in DNP were also considered greedy, jealous, and dependent on external aid. A local NGO representative working on community development mentioned, "*When we started our work there was a feeling of gratitude. Now people are greedy. They want to know what they can gain from us. Instead of considering this as help, they think this is their right. This is a problem*". Distrust towards local communities in DNP (and to a lesser extent in RNP) suggests deep-rooted identity-based conflict that impacts conservation efforts.

Power Inequalities and Exclusion

The interactions between the Forest Department and the local community in DNP is a complex, power-driven relationship. Forest access, though permitted in DNP, is monitored and regulated through a Forest Department whose primary function is the maintenance and protection of forests and its wildlife. As per local regulations, the community is only allowed to collect a 'headload' of small timber or fuelwood,' called *sirdhoni* or *sarbhojha.* In part due to these regulations, interactions between the community and the Forest Department are tense. Community members indicate that the forest staff often used forest access as means to exert their power over the local community, creating tensions between these two groups. A respondent elaborated, "*If foresters stop someone from bringing even fallen sticks for fuel wood, they'll have to listen because they're foresters after all. But at some point, people will retaliate and*

oppose." Long standing conflict and escalating restrictions from the Forest Department combined with government pressures on several communities to relocate eventually led to the creation of a *Van Samiti* (Forest Rights Union) known as the *Tharu Adivasi Mahila Majdoor Kisan Manch* in 2007.

The Van Samiti is a local, female-led grassroots movement where members of the Tharu community organized themselves to resist restrictions imposed by higher authorities and protect their access to forest resources. Their endeavors are supported by the *Akhil Bhartiya Van-Jan Shramjeevi Union* (All India Union of Forest Working People or AIUFWP) who represent underrepresented and marginalized communities in the traditional workforce. A Van Samiti leader explained, "*They* (the Forest Department and higher authorities) *denied us our forest rights. So, we fought back. If you look anywhere, the best forests are where forest tribes prosper. From the outside everything looks green. But from the inside, it's empty. Hollow. Because they are snatching the forest from us*." The forest staff often found themselves outnumbered when locals took charge and entered the forest by force. Thus, the forest staff often resorted to coercion to control locals. "*Just go in the forest right now… there will be people cutting trees in thousands… they destroy everything. Please tell me one good thing that they've done for the forest. This could be one of India's prime- one of the world's best forests had it not been for these people. And these samitis are adding to the problem. We have to scare them, that's how they calm down*."

Despite presenting a solid unified front fighting for local rights, there are internal disputes, disagreements, and power-hierarchies within village communities in DNP as

well. Not all village communities are a part of the Van Samiti. Many villagers, both Tharu and Non-Tharu, disagree with the Van Samiti's aggressive approach primarily because, in their opinion, the Van Samiti hampers forest conservation by interfering with the Forest Department's work. Others believed that fighting against such a powerful institution is a foolhardy endeavor. A key informant remarked, "*How you behave with the foresters is how they will behave with you. You're the public. You don't have much power. You can't challenge a government officer… if you do, they will find ways to put you in jail. As a leader, if you're in jail… what good are you to your people? They have more power here than any department…their own laws*." An NGO leader from DNP spoke about an internal example of power disparities, noting that many local leaders do not appreciate community members' independence and self-efficacy, "*…now other people interfere- and break this unity. Like the village pradhans (leaders). If I had to rely on them for anything, I wouldn't have been successful. They don't want anyone to work. They don't like that officers and authorities come and meet me and not them. They are jealous. The work that we do here is worth seeing and showcasing so people do that. The pradhans don't like it. And they don't like confrontation- or any kind of communication… they're afraid that they might be told to actually do some work.*"

Aggressive clashes between stakeholder groups were less conspicuous in RNP. Local community members feel that forest staff are paid to protect the forest, so they are merely fulfilling their duties by restricting local's access to the forest. A few community members felt that in spite of their efforts to relinquish forest dependence and assist with tracking illegal activity, the forest staff often harassed locals. One community member

admitted, "*We listen to them and follow forest rules*". Another added, "And *we've helped the forest- we've informed foresters when illegal activities take place. But they still trouble us.*" Locals from RNP further expressed frustration over higher authorities who were unwilling to set up meetings and talk about local issues. This had a discouraging effect, making workers less likely to engage with the Forest Department, "*Who will want to do anything? We are often ignored. No one comes here or gives us dates for a meeting. We want to talk about our issues.*" Forest staff in RNP acknowledged the value of involving locals in conservation but clarified that villagers' roles were typically limited to volunteers and informants helping to monitor and track wildlife. He explained his reluctance to deeper engagement, "*... if we hire villagers, unnecessary rivalries are created within the community. So, if on their word we confront someone innocent, we are denounced by the community.*"

Another widely mentioned barrier to community involvement at both sites was a lack of education and educational opportunities. As one community member noted, "*Until a person is educated- nothing matters. Everything you do for them is useless. You wouldn't ask me all these questions if you were uneducated*". The general sentiment about education suggested that the uneducated mind is simple, lacks critical analyzing skills, and is unable to comprehend larger, complex issues. In DNP, an NGO leader who was also a member of the Tharu community felt this was what made locals difficult to work with, "*It's hard to get through to people sometimes. People have such diverse opinions. No one works together for the common good. Especially men. Women are more united. They are financially independent- they earn so now they are confident.*" The

empowerment of women – especially due to their participation in the Van Samiti - was mentioned in multiple interviews with external stakeholders as an example of how tribes were not "*as simple as they used to be.*" According to the forest staff from DNP, this presented problems, "*The women have become mafia. They are foul-mouthed and you don't want to deal with them at all".* In RNP, NGO leaders appreciated the value of woman empowerment but acknowledged that it was a difficult outcome to achieve - especially when it involved women convincing their families to allow them to work. The leader further shared that providing livelihoods to women yielded unforeseen outcomes that impacted youth, "*Girls are generally very hard working. (But) If they are ill and parents are considering treatment, it's not out of love; but because if she is sick- who will work? And I was horrified… they would ask their child to be given an injection that makes her fit for work the next day.*"

Overall, stakeholders at both sites indicated the costs and benefits of working with locals. While local empowerment and involvement in conservation were sought and valued, "too much" empowerment could yield unwanted changes in the social fabric of communities, disrupt relationships, altering power structures, and fueling conflict.

A Future of Conflict

External stakeholders from both parks acknowledged that life near the forests will never be free of conflict. While involving local residents in park management and monitoring might be beneficial, there is a limit to how many people could be involved. Participants from RNP recognized the importance of multiple agencies and organizations

(e.g., the Forest Department, NGOs) and their collective responsibilities toward the park and the community. However, a crucial aspect to achieving positive outcomes in collaborative contexts was ensuring that the various actors defined and fulfilled their specific roles and duties. A leader from an NGO in RNP working on alternative livelihood development explained, "*I recognize living here is not easy. I can't expect them* (the community) *to just stop going to the forest because they* (have started to) *earn some money.* (They feel that) *forest access is a benefit that others avail- and just because they work- they shouldn't go anymore? So, forest access (restrictions) need to be very strict. The Forest Department asks us to ensure our workers aren't going* (to the forest) *and* (asks us) *to discourage them. We can't guarantee that. This is the job for NGOs doing tiger conservation, education- what are they doing? We are doing our job- we started here to provide employment. And we are doing that. There are some organizations that came here to do conservation and they don't do that well. And even if our women are accessing forests- there must be some loophole or some way they are able to go in- and that's the Forest Department's job.*"

A forest staff member from RNP highlighted the challenging position of forest officers, disclosing that their actions were often delayed or obstructed due to a lack of capacity and limited government resources. Shedding some light on the challenging plight of forest guards and ground staff, he mentioned, "*I started out this job because I had to- and now I like it. Just because I do, you can't pay me anything and expect me to be happy. Give us some reassurance that this is a job worth doing. It's like you've been forcefully married to someone- so might as well like them because you have to spend the*

rest of your life together. We live our lives like 'lunatics'. We forget sometimes that we are government employees. We look so unkempt and ridiculous. People back at home get confused about what our jobs are." Even when forest officials are motivated to engage with the community and work towards collaborative solutions, they may be constrained by limited resources. Yet, one forest official from DNP was adamant that community conservation programs are never successful. He explained, "*People say that to save face. No one wants to admit to failing. And in other parks where these programs are successful don't have people living inside the forest. Here there are elaborate village networks. How many people will you transform?"* This statement succinctly highlights the social conflicts among various stakeholders that make protected area management so difficult.

Discussion

Our study revealed the tangible causes of human-forest and deeper sources of human-human conflict around two protected areas in India. We found common themes of conflict across both sites and contextual differences driven by unique socio-cultural and historical drivers (summarized in Table 4.1).

Table 4. 1 A Summary of Conservation Conflicts Across the Two Study Sites

	Bases of Conflict	**DNP**	**RNP**
Superficial conflict	Forest Access	Conflicts around regulated forest access are unaddressed, resulting in retaliation from locals and opposition of the forest department from the Van Samiti	Conflicts around regulated forest access are partially addressed. Where unaddressed, people broke rules.

	Human-Wildlife Interactions	Focus on elephant (major) and (few) tiger related issues. The remoteness of villages compels local action.	Focus on tiger related issues, while intense crop loss caused by ungulates are uncompensated Locals rely on forest managers to act.
Deep-rooted conflict	Distrust and Discrimination	Evidence of ethnic-based conflict between the Tharu and Forest Department. Locals feel foresters engage in transborder timber smuggling, and vice versa.	Distrust between locals and Forest Department
	Power Inequalities and Exclusion	Forest Department exerts power to regulate forest access; bribes for forest access. Cordial relationships between the community and Forest Department to ensure continued access. Community-based conservation viewed as unfavorable due to distrust. Power-disparities within the community impacts the efficacy of community-based programs where leaders are unsupportive of local participation	Community participation is sought but is selective (restricted to a few people in a community) to avoid internal rifts in the community.

Primary Sources of Human-Forest Conflict

The most obvious conflicts reported by stakeholders related to forest access and human-wildlife interactions. Previous research suggested that forest dependency stimulates participation in forest management, with higher dependencies reflecting a higher stake in the forest (Dolisca, Carter, McDaniel, Shannon, & Jolly, 2006; Lise, 2000). While this appeared to be true in both parks we studied, differing rates of forest

dependency and restrictions imposed on the communities also presented unique challenges. In RNP, denial of forest access had a direct impact on pastoral livelihoods, which altered livestock rearing practices. However, in DNP strict regulation of forest access was viewed as an impingement of socio-cultural rights of local tribal communities, which threatened their way of life.

Human-wildlife conflict and wildlife-related losses were also a major concern around both parks. As in other studies (Agarwala, Kumar, Treves, & Naughton-Treves, 2010; Dickman et al., 2011; Karanth, Gopalaswamy, Prasad, & Dasgupta, 2013; Karanth et al., 2018; Karanth & Kudalkar, 2017; Naughton-Treves, Grossberg, & Treves, 2003), compensation for wildlife-induced losses was a controversial issue. The inefficiency of compensation programs (e.g., tedious paperwork, delayed or no payments, inadequate amounts, slow response of forest officers) discouraged many local residents from filing compensation claims (Barua et al., 2013). A key informant from our study stated, "*When a compensation program works well, everything functions better. You need two hands to clap. So, when one thing is off, everything else is out of sync, causing issues between them and us.*" Poorly executed programs fuel distrust in park managers - a crucial factor impeding successful conservation outcomes (López-Bao, Frank, Svensson, Åkesson, & Langefors, 2017; Stern, 2008). Several studies warn of the dangers of community dependency on compensation payments, which could undermine or replace existing conflict prevention practices (Ogra & Badola, 2008; Ravenelle & Nyhus, 2017; Watve, Patel, Bayani, & Patil, 2016). When compensation is utilized as a tool for addressing

human-wildlife conflict, it must consider the local socio-political conditions that inevitably affect its efficacy.

Framing of human-wildlife conflict is also important. Locals explained that losses caused by certain species received more attention from forest managers than others. Despite economic losses due to herbivores being more prevalent in both parks, damages caused by carnivores, especially tigers, received more attention. A study of four different protected areas in Rajasthan reported similar results (Johnson et al., 2018). At DNP, we found a local emphasis on crop-depredation by mega-herbivores such as elephants, possibly because their impacts were more conspicuous in nature and easy to assess (Sukumar, 1990, 1991). We also found that smaller herbivore damage (such as wild boar) remains uncompensated or undercompensated (Ogra & Badola, 2008). At RNP, the presence of a physical barrier (or boundary wall) separating people from the park was a significant source of contention. Though the barrier did not effectively prevent wildlife movements, it served as a constant reminder to locals that the boundary was meant to keep livestock and people out of the park. Collectively, these frustrations resulted in a loss of local agency in across both parks, eroding local residents' willingness to cooperate with the Forest Department.

Addressing Social Drivers of Conservation Conflict

The examples above highlight ongoing conflicts about wildlife and resource extraction. However, these surface-level disputes are responding to deep-rooted, identity-based conflicts that impact relationships and processes and require transformative thinking about problems and how they can be addressed. To address complex conflicts in

conservation, Madden and McQuinn (2014) proposed a Conflict Intervention Triangle as a general guide for mitigation efforts. The triangle highlights three interacting aspects of conflict that must be addressed to achieve enduring resolution or conflict transformation: substance, relationships, and process (Fig. 4.2). 'Substance' refers to straightforward, surface-level disputes. In our study, these disputes manifested as conflicts regarding access to resources and negative human-wildlife interactions.

The 'relationships' component appears in personal conflicts between individuals, where the level of trust and respect between the actors can itself become a source of contention. In our study, distrust and discrimination between local residents and authorities (e.g., forest officials, NGO leaders) fractured relationships and fueled additional conflict.

'Process' factors fueling conflict relate to decision making design, equity, and authority, and how and by whom these are exercised. Madden and McQuinn (2014) stress that a good process "gives attention to dialogue and relationship building needed to foster dignity, respect, trust among stakeholders, as well as to support effective decision making around and commitment to tangible solutions. It creates space for a reconciliation of deep-rooted social conflicts that make reaching and sticking to a decision about a dispute more viable (p. 103)". In the Indian parks we studied, power inequities among stakeholder groups impacted relationships, fostered exclusion, and impeded participatory decision-making processes. Such inequities make working with multiple stakeholders and their diverse interests and statuses vary (Bragagnolo, Correia, Malhado, de Marins, & Ladle, 2017; Fisher, Maginnis, Jackson, Barrow, & Jeanrenaud, 2012).
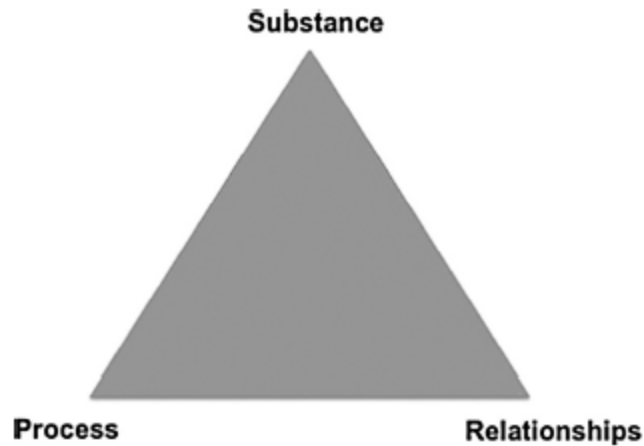
Fig. 4. 2 Conflict Intervention Triangle Model with Three Potential Sources of Conflict and Three Dimensions of Conflict Intervention (Madden And McQuinn, 2014: 102)

In these complex conflict situations, solutions require community participation and involvement (Kothari, 2006; Mayaka, 2002; Ostrom, 1990; Spiteri & Nepal, 2006). India is no exception.

Managers can draw inspiration from successful co-management systems which reduce transaction costs and friction and give locals greater say in decision making (Ballet, Sirven, & Requiers-Desjardins, 2007; Berkes, 2009; Pretty & Ward, 2001). The benefits of these systems can be seen in the sacred grove management in India, where religious and cultural taboos have shaped sustainable forestry practices (Negi, 2010; Ormsby & Bhagwat, 2010). However, as our study shows, lack of trust between actors often drives a wedge between collaborative approaches. And this when combined with community rights being ignored and their needs being unaddressed, might mobilize against forest managers (as observed in DNP with the Van Samiti), further perpetuating conflict. While the strengths of community inclusion and participation are widely

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acknowledged as a key theme in conservation conflict mitigation (Herrold-Menzies, 2006; Kellert, Mehta, Ebbin, & Lichtenfeld, 2000; Spiteri & Nepal, 2006), there are many contextual elements to consider when applying these concepts to unique protected area sites. Trust building is especially challenging in contexts similar to DNP, where discord is deep-rooted in identity or ethnic-based conflict. Furthermore, community inclusion and participation can be an expensive and lengthy process, requiring funds from governmental and non-governmental sources (Rodríguez-Izquierdo, Gavin, & Macedo-Bravo, 2010). As our interviews revealed, many units of the Forest Department carry out their duties despite a dearth of resources. Investing in relationships with local NGOs who have maintained relationships with the community and assigning clear-cut roles and responsibilities can help engender trust among local residents. However, a push for power-sharing management regimes in hegemonic institutions such as the Forest Department, whose functions were shaped and continue to be informed by colonial thinking and policies (i.e., a top-down, forest management regime), is inherently challenging (Das, 2011). Addressing this will require a systemic overhaul of conventional conservation ideologies to addressing current and future conservation concerns.

Environmental education focusing on conservation awareness and technical education focusing on skill-building is widely suggested for empowering local communities (Mehta & Kellert, 1998). However, capacity building must also be extended to forest managers and personnel (Rodríguez-Izquierdo et al., 2010). The Indian Forest Service officers are a highly skilled and trained team of forest and natural resource managers. However, their training often lacks cultural sensitivity and the development of

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social skills needed for conflict resolution (Miller, 2017). These skills are crucial in Indian protected areas, which feature historically marginalized populations who are resource-dependent and often hold contrasting views of conservation. Additionally, while they possess significant power in their constituencies, forest officers are often at the mercy of political powers of the State. Therefore, officers are frequently transferred to different regions in different roles. This impedes sustainable and long-term relationship-building opportunities with local communities and NGOs – the very relationships that form a critical foundation for conservation success. While beneficial, it is also uncommon for higher officials to visit local communities. Instead, forest guards and forest staff interact with locals communities. Several reports in the past year have highlighted the dangers that forest guards and rangers face on a daily basis from wildlife and hostile community interactions (Bindra, 2018). This can make forest staff unmotivated and disinclined to interact and work with locals. It is indeed important to build relationships and strengthen networks between institutions and local communities for effective co-management (Ballet et al., 2007; Rastogi, Thapliyal, & Hickey, 2014). It is also vital to build relationships within the Forest Department, especially between forest guards who operate on the front lines of conservation and the higher officials who often make decisions remotely.

Future Research Directions

Future research on conservation conflict in and around protected areas could address several limitations of this study. Our case study approach was used to compare

and contrast conflict contexts in the two parks, and may,, therefore, be restricted to the two sites in the study (Creswell, 2009). However, it should be noted that key themes that emerged at our sites are well documented in the literature (Baynham-Herd et al., 2018). To reduce bias, data were collected by the first author individually (Huberman & Miles, 2002). To enhance validity, triangulation was sought by soliciting input from multiple sources of evidence (interviews, informal conversations, community observations) when drawing inferences. However, despite being familiar with the local language, the researcher was non-local, which could impact participant responses (though interviews suggest responses were open and candid). Because of the monetary aspect of human-wildlife conflict is a matter of significant concern, participants might have exaggerated some of their losses. However, interviewing multiple community members helped establish a chain of evidence which further ensured validity. Due to the power dynamics and inequities within local communities and between them and forest managers and staff, it might be possible that many respondents overemphasized or underplayed the level of conflict between these actors. These concerns can be easily addressed by dedicating a longer time for fieldwork, which was a constraint for this study.

Even though efforts to include diverse perspectives in our study, our sample does not guarantee an accurate representation of all stakeholder perspectives. For instance, women from the local community were under-represented in our study. The study was conducted during the pre-monsoons in DNP when most women were occupied working in the fields. Given their significant role in the Van Samiti, future research can focus on gender roles in conservation conflicts, especially in contexts where matriarchal

communities (like the Tharu) challenge patriarchally-informed, authoritarian forest management regimes.

Conflicts over forest access and human-wildlife interactions are a serious issue in Indian parks and protected areas around the world. Finding effective mitigation strategies to assuage these conflicts continue to be a primary focus for researchers and managers. However, these conflicts may be exacerbated by deeper social conflicts between stakeholder groups. Our study emphasizes a need for mitigation strategies that address unique cultural contexts that are influenced by distinct socio-cultural and political processes surrounding each site (Waylen, Fischer, Mcgowan, Thirgood, & Milner-Gulland, 2010). Future research could employ socio-ecological models of conflict that contextualize human actions and behavior within larger natural and socio-cultural systems (Rechciński, Tusznio, & Grodzińska-Jurczak, 2019; Stephanson & Mascia, 2014). Such an approach could account for values that are deeply embedded in a community's material culture, collective behaviors, traditions, and institutions (Manfredo et al., 2017), as well as the institutional forces and stakeholder interactions that shape them. India, with its history of discrimination and power inequities and its diverse traditional and cultural connections to nature, presents many unique challenges for conservation. But careful attention to these complex conflicts and contexts can also create unique opportunities for collaborative conservation.

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CHAPTER FIVE

SUMMARY AND CONCLUSION

This dissertation aims to fill a gap in the literature by providing insights into the socio-cultural and contextual factors that influence conservation around two Indian protected areas (PAs). Dudhwa National Park (DNP), in Uttar Pradesh, is extremely biodiverse but also supports numerous indigenous villages (primarily belonging to the Tharu tribe) who continue to exhibit high levels of forest dependency. Ranthambore National Park (RNP), in Rajasthan, is known for its wildlife and tourism opportunities. The communities surrounding RNP are mixed (primarily Maali, Meena, and Gujjars) and fewer people around the park are forest-dependent. Both PAs are famous for their tigers, and communities around both parks face negative human-wildlife interactions. Despite the omnipresent conflict, local residents around both PAs report high levels of support for their nearby parks. By comparing two diverse PAs in India, this study underscores the importance of understanding site-specific contexts to improve conservation practices. This chapter summarizes the findings from the previous chapters, addresses limitations of the study, and suggests future research directions.

Social capital and park support
        Several studies advocate for the utilization of a community's social capital to enhance the management of PAs, engender community support for conservation, and reduce conflict. In our assessment of social capital within local communities (bonding

capital) and between communities and forest managers (bridging capital) at both sites, we found that different dimensions of social capital influence park support in different ways.

Two key aspects of bonding, or within-community, capital had different effects on park support. Cognitive social capital (how people feel) was measured through trust, reciprocity, and cooperation; structural social capital (what people do) was measured through empowerment and inclusion. Collectively, bonding social capital can reduce transactional costs and increase tendencies for people to work together. But in isolation, cognitive forms of bonding capital can foster a cooperative group of local residents that unite in opposition to a PA. In fact, we found that cognitive social capital at the community level was negatively related to parking support. However, the presence of structural social capital empowered action at the community level and positively influenced park support.

We, therefore, conclude that high levels of bonding social capital alone might not yield positive conservation outcomes. High bonding can make communities 'inward' or 'selfish' where they try to maximize benefits. This may cause depletion of natural resources or may allow for communities to unite and retaliate against restrictive policies. We detected some evidence of this around both PAs.

In these cases, bridging social capital might be needed to leverage existing bonding capital and foster conservation action. Bridging social capital refers to interactions between communities and external actors to achieve collective goals. In our study, we focused on bridging capital with forest managers. Both parks generally exhibited weak bridging social capital, which indicated low levels of trust and

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cooperation (cognitive bridging capital) and limited inclusion and interaction (structural birding capital) with forest managers. However, when an individual perceived bridging capital to be strong, he/she was more likely to support the parks. Bonding and bridging social capital cannot function effectively in isolation. Together they are vital to establishing effective collaborative natural resource management systems and achieving conservation outcomes and.

There is a dearth of research on links between social capital and conservation in the context of Indian protected areas. Our study helps to fill that gap. In previous research, authors have typically used either cognitive and structural dimensions or bonding and bridging dimensions to assess social capital. However, few studies focused on conservation (and none in India) have combined these dimensions and compare them in diverse settings. Future research should continue to assess multiple dimensions of social capital both within and between communities to understand its role in collaborative relationships and its subsequent impact on support for parks and conservation.

Community beliefs about wildlife tourism and its impacts
Both DNP and RNP are tiger reserves that experience varying levels of tourist visitation. RNP, because of its ease of access and high tiger density, receives a large number of domestic and international tourists annually. This has allowed for a steady growth of tourism in the area. Today, there are a large number of hotels near the park, rich with amenities, and that cater to varying tourist budgets. Tourism in DNP, on the other hand, is still in a nascent stage. DNP is difficult to access, and there are only a handful of hotel options for tourists. Other tourism infrastructure around the park is also

lacking. Many studies advocate for growth in wildlife tourism, viewing it as a tool that engages local and provides economic benefits that support local livelihoods and offsets costs of living near PAs. But the success of tourism as an alternative livelihood strategy depends on a variety of contextual factors, often leading to unexpected or detrimental outcomes such as wealth disparities and conflict.

To explore contextual differences in engagement with and beliefs about tourism, We examined within-site(e.g., villages near versus those far from the tourism zone in each PA) and between-site differences (comparing RNP and DNP) in local resident's awareness and perceptions of tourism, including its impact on local communities and parks and wildlife. Our results indicated very low tourism awareness in DNP, where only 21% of local residents knew about tourism and its benefits. This number was higher for RNP (55%). Tourism awareness in Ranthambore was predicted by location, with villages closer to the tourism zone indicating much greater tourism awareness. These villages in RNP also believed tourism benefited communities, likely due to enhanced access to tourism-related livelihoods. Caste membership was a predictor of tourism awareness in both parks. For example, in DNP many respondents acknowledged the special considerations that certain caste groups, such as Scheduled Tribes, receive in terms of increased access to livelihood opportunities (including jobs in the tourism industry). While communities around both sites generally supported the parks, not all residents believed that tourism was a positive contributor to the conservation of the parks or wildlife. Several respondents from RNP noted the negative environmental impacts of tourism in their communities and in the park. Respondents around DNP were also

skeptical of tourism's contributions to park protection and tiger conservation. Overall, while many local residents acknowledge the potential for tourism to support both parks and local communities, few believe this potential was currently being realized.

Our study highlights how contextual differences and contrasting priorities can define the relationship between tourism and conservation. For local communities living near PAs, livelihood generation and community benefits stemming from tourism were critical factors influencing this relationship. However, considering the fact that most local residents at both sites were either or not aware of tourism and unlikely to see tangible benefits, the growth of exclusive tourism in either area is likely to fuel conflict and controversy. Future research can be directed towards the employment capacities of tourism industries around PAs, and the barriers faced by locals in accessing tourism jobs.

Sources of conflict in conservation

Many studies describe sources of conflict in PAs, including those in India. However, few studies focus on its underlying social and cultural causes and how common sources of conflict manifest uniquely across different contexts. Conflicts related to forest access and conflicts stemming from negative human-wildlife interactions, disputes often present in a variety of PAs around the globe, were common in both parks. A variety of policies and practices (e.g., shifting laws for forest access, compensation programs for wildlife-induced losses) can help to mitigate these surface-level disputes. However, we found that many of the conflicts around both parks were also deeply rooted in social, cultural, and political dynamics, including histories of distrust and discrimination among

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stakeholder groups and persistent power inequities and exclusion. For example, in DNP many disputes appeared to stem from identity-based conflicts. The Tharu community, due to their Nepalese origins were subjected to scrutiny from forest managers which intensified forest access conflict. In RNP the presence of a boundary wall around the park was a source of contention as it impeded their access to the park but didn't stop wildlife. This led to community members breaking rules to graze their animals in the park and being fined and punished by forest managers.

Such conflicts cannot be solved by superficial methods but require transformative thinking to address root causes. These conflicts can seriously hinder the development of collaborative relationships, and the consequences can be detrimental to conservation.

Study limitations

This research had several limitations that could be addressed in future studies. First, we used a scaled survey method, which can be challenging in communities belonging to non-western cultures. This required translation of pre-existing scales from English to the local language (Hindi) and back, possibly leading to misinterpretation of some concepts. Surveys were read out by the field assistants to the participants; this might have fostered some degree of self-reporting and desirability bias where local community members intentionally exaggerate their losses or underreport benefits. The incorporation of qualitative methods (e.g., interviews with key informants from diverse

stakeholder groups) helped to offset some of these potential biases and informed our interpretation of the survey data.

Our approach to understanding local conservation contexts was limited to socio-cultural and historical contexts. Although some themes about power disparities emerged, the socio-political processes that shape conservation were not adequately addressed. Future research could focus on exploring the roles of different stakeholders in decision making around PAs and the complex power dynamics and hierarchies within which these decisions are made. Furthermore, PAs consist of other key stakeholder groups that were under-represented in our study such as NGOs, tourism operators/hotel owners, and tourists. While we attempted to incorporate insights about NGOs and tourism staff as potential sources of bridging social capital sources, most local residents were largely unaware of these groups. Hence, other than a few interviews with NGO representatives and tourism leaders, we did not have enough data about community interactions with these other stakeholders to fully incorporate in the analysis. Future research could explore the role of these influential groups around PAs, illuminating the unique contributions and potential conflicts with all of the complex stakeholders that interact and collaborate to influence conservation. Few communities in Dudhwa National Park continue to live inside the forest, however they were not included in this study. It is possible that these communities might share a different relationship with the park, park officials, and may have different insights about resource use and access. Future studies with appropriate permissions to study such groups can bring to light their perspectives of park protection and the nature of conflict or collaboration that they share with park managers. Finally,

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while it may be possible to generalize and apply some of our findings to other PAs within India and abroad, researchers should also consider contextual differences when assessing the factors that influence conservation success.

Implications for Conservation Practice

The growing number of wildlife extinctions are pressurizing countries to act and respond to this crisis, and several agencies across the world are resorting to drastic measures to save their remaining imperiled wildlife. While community-based initiatives can be viewed as one end of the spectrum, the other extreme involves violence and coercion to enforce protection of wildlife or protected areas. 'Green militarization' or using military and paramilitary personnel, training, technology, and partnerships; is a growing trend worldwide undertaken to achieve conservation goals. And while the rapidly declining and disappearing biodiversity may justify the need for such extreme actions, it has several adverse impacts on local communities and can be counterproductive to conservation. Such means are unjust, reinforce colonial practices, and, address the problem at the surface level instead of examining the historical and structural factors that allow issues, such as poaching, to persist. Coercion can further aggravate communities and create animosity towards conservation and those who enforce them. Engaging with communities may seem futile, cumbersome, or expensive to many. The few examples of successes of community-based programs is an additional drawback. However, using paramilitary forces on conservation is also expensive and draws funds away from conservation. Such funds instead can be instead used to empower, engage, and

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incentivize communities. For instance, traditional hunting communities in Ranthambore called the Moghiyas, who was once heavily involved in poaching, have been provided education and alternative livelihoods by local NGOs to discourage them from continuing to poach wildlife. Such initiatives are successful because they identify the root causes of the issue and work towards solving them. Involving people in conservation, therefore, does not only serve to fulfill a moral purpose, but it is also essential for conservation. Several aspects of how it is achieved may be unique to a specific context.

Insights from this study can help inform management strategies that are both generalized across PAs and suited to the unique contexts of each park in the study. Social capital is an essential precursor for the success of community-based management. During this research, several community members complained about the lack of transparency in forest management and policies, lack of information, and poor communication that hindered their interaction with the forest managers. Addressing these issues can help foster trust within communities and initiate the building of bridging social capital. Community meetings and public forums held at convenient times where community members can participate can make them feel involved and empowered. This will also require clear communication between community members and managers. NGOs working with the communities can mediate these meetings, till a cordial working relationship has been established. Tight-knit homogenous communities have stock bonding social capital. Incentive-based conservation programs within these communities can help activate bonding capital and help resource-deprived Forest Departments fulfill their duties without overworking their field staff. These capacities can be strengthened

within the Forest Department through cultural sensitivity training and building social skills for conflict resolution.

Wildlife tourism in protected areas, as suggested by countless studies, needs to involve locals, generate tangible benefits that are equitably distributed around the park. These goals are seldom achieved due to the clout and political power that hotels and businesses posses in these regions. Tourism management plans around the protected need to be more stringent, transparent, and inclusive of local communities. While it is challenging to invite all members of the community to partake indirect economic benefits from tourism, support for tourism can be garnered through infrastructure development and making amenities available in resource-deprived communities. A proportion of tourism revenue can be directed towards community development, and efforts must be made to communicate these benefits to the communities. The development of eco-tourism funds like in DNP, where a part of the gate fee is allocated to and controlled by nature guides is an example of such a program.

This study helps to reveal the complex socio-cultural factors and forces that influence conservation around PAs in India. Future research and practice should apply these lessons and continue to explore complex relationships between social capital, conflict, and the potential role of tourism for enhancing PA management, supporting communities, and achieving conservation goals. This will help generate a holistic understanding of social relationships in PAs that can help inform management strategies that allow less room for failure.

APPENDIX A

National Park Community Survey

June-August 2018

Instructions:
Questions in **bold** will be audio recorded

<u>Village/Community</u>**:** _____ Distance from PA:
_____

1. General household questions: Household size:
a. How many adults live with you in this house (18 years old or older)? _____
b. How many children live with you in this house (under 18 years of age)? _____

2. How many years have you lived in this
community?_____

3. Tell me about your community.
3a. Does everyone get along with each other?
3b. Does everyone work together and help each other out?
3c. Is anyone discriminated against?
3d. If someone is hurt because of a wild animal do community members do anything?

4. Please indicate your level of agreement with the following statements about your community?	Disagree		Neutral	Agree	
People in this community work together to fix problems	A lot	A little	Neutral	A little	A lot

People in this community are trustworthy	A lot	A little	Neutral	A little	A lot
Members work together to help each other out	A lot	A little	Neutral	A little	A lot
You feel like an accepted member of this community	A lot	A little	Neutral	A little	A lot
There are few conflicts between people	A lot	A little	Neutral	A little	A lot
You feel like you have a voice	A lot	A little	Neutral	A little	A lot
People take action in wildlife-related incidents	A lot	A little	Neutral	A little	A lot

QUESTIONS ABOUT THE PARK AND WILDLIFE

5. So what are your thoughts about the forest? How do you feel about them?

6. Are you aware of the rules and regulations of the park? YES   NO

6a. If yes, do you agree with the rules?   YES   NO

7. Do you or anyone in your family go to the forest for anything?

      No-

      Yes   - For Timber/Firewood

              - For Grasses

              - For Honey

              - Seasonal fruit/flowers

              - Grazing livestock

              - Bushmeat

              - Other_____

8. Do you think the reserve (Ranthambore/Dudhwa) should continue to be protected?

Why or why not?

9. Are there people in your community who break the park rules?   YES   NO
      10a. **If yes, what do they do?**

10. Are any animals causing problems in your area? YES   NO
      -What animals? _____
      - Do tigers, in particular cause any problems?
      -What do you feel about tigers?

11. What is the biggest problem caused by wild animals in your area?

      INJURY   CROP DAMAGE   LIVESTOCK LOSS

      OTHER_____

12. Is there a compensation program to help you cover your losses caused by wild
animals? YES NO   12a. Have you ever used it?   YES   NO
      12B. What is your impression of this program? Does it work?

13.Please indicate your level of agreement with the following statements?	Disagree		Neutral	Agree	
You support the park	A lot	A little	Neutral	A little	A lot
Your community supports the park	A lot	A little	Neutral	A little	A lot
The park effectively protects wildlife	A lot	A little	Neutral	A little	A lot
The park supports local livelihoods	A lot	A little	Neutral	A little	A lot

QUESTIONS ABOUT IFS OFFICERS

14. Let's talk about forest officers. How do you feel about them?

15. Do they listen to people in your community?

16. Do they involve you in conservation related work?

       Yes- How?_____

       No- Why not? _____

17. Do you have any disagreements with forest officers?

18. Please indicate your level of agreement with the following statements?	Disagree		Neutral	Agree	
Forest officer and community members work together to fix problems	A lot	A little	Neutral	A little	A lot
Forest officers are trustworthy	A lot	A little	Neutral	A little	A lot
Forest officers work to help people in the community	A lot	A little	Neutral	A little	A lot
Forest officers involve you in conservation and park management	A lot	A little	Neutral	A little	A lot
Forest officers act in timely manner in wildlife related incidents	A lot	A little	Neutral	A little	A lot
There are conflicts with Forest officers	A lot	A little	Neutral	A little	A lot
Forest officers listen to you	A lot	A little	Neutral	A little	A lot

QUESTIONS ABOUT NGOs

19. Let's talk about NGOs.

20a. Do you know of any who work here? Names _____

20b. How do you feel about them?

20. Do they listen to people in your community?   YES NO

21. Do they help you?

      Yes- How?

      No- Why not?

22. Do you have any disagreements with them?

23. Please indicate your level of agreement with the following statements?	Disagree		Neutral	Agree	
NGOs and community members work together to fix problems	A lot	A little	Neutral	A little	A lot
NGOs officers are trustworthy	A lot	A little	Neutral	A little	A lot
NGOs work to help people in the community	A lot	A little	Neutral	A little	A lot
NGOs involve you in conservation efforts	A lot	A little	Neutral	A little	A lot
NGOs act in timely manner in wildlife related incidents	A lot	A little	Neutral	A little	A lot
There are conflicts with NGOs	A lot	A little	Neutral	A little	A lot
NGOs listen to you	A lot	A little	Neutral	A little	A lot

      QUESTIONS ABOUT THE TOURISM INDUSTRY

 24. What about the tourism people and the hotel owners? How do you feel about them?

25. Do they listen to people in your community?

26. Do they help you?

        Yes- How?

        No- Why not?

27. Do you have any disagreements with them?

28. Is wildlife tourism good or bad?

29. Has it helped development in the community in any way?

30. Do you think tourism helps the tiger?

31. Please indicate your level of agreement with the following statements about the tourism industry?	Disagree		Neutral	Agree	
Hotel owners and community members work together to fix problems	A lot	A little	Neutral	A little	A lot
Hotel owners officers are trustworthy	A lot	A little	Neutral	A little	A lot
Hotel owners work to help people in the community	A lot	A little	Neutral	A little	A lot
Hotel owners involve you in tourism	A lot	A little	Neutral	A little	A lot
Hotel owners act in timely manner in wildlife related incidents	A lot	A little	Neutral	A little	A lot
There are conflicts with Hotel owners	A lot	A little	Neutral	A little	A lot
Hotel owners listen to you	A lot	A little	Neutral	A little	A lot

32. Please indicate your level of agreement with the following statements about widlife tourism	Disagree		Neutral	Agree	
Tourism is good for your community	A lot	A little	Neutral	A little	A lot

You personally benefit from tourism in my community	A lot	A little	Neutral	A little	A lot
Tourism has helped create jobs for locals	A lot	A little	Neutral	A little	A lot
Tourism has increased the price of local goods and services	A lot	A little	Neutral	A little	A lot
Tourism has helped stimulate local arts and handicrafts	A lot	A little	Neutral	A little	A lot
Tourism has helped locals in developing new skills	A lot	A little	Neutral	A little	A lot
Tourism has improved local infrastructure (roads, sanitation, medical facilities, etc.)	A lot	A little	Neutral	A little	A lot
Wildlife tourism helps the protecting the park	A lot	A little	Neutral	A little	A lot
Wildlife tourism helps tiger conservation	A lot	A little	Neutral	A little	A lot
Tourism has increased conflicts within the community	A lot	A little	Neutral	A little	A lot

32a. If yes, could you tell me how tourism has increased conflicts?

Please answer a few more questions before we end.

33. Age: _____

34. Gender: Male   Female

35. Primary source of income: _____
35a. What are all the sources of your income?
35b. Are there seasonal variations in your sources of income?
36. About how much money did your household earn last year?
_____

36a. How much did you benefit from the park? A LOT/ SOME/CAN'T SAY/ A LITTLE/NONE

36b. How much did you benefit from tourism? A LOT/ SOME/CAN'T SAY/ A LITTLE/NONE

37. Are you a local/ non-local: _____

38. What is the highest level of education you have received?

_____

39. Religion: _____

40. Caste: _____

41. What languages do you speak?

_____

42. Living conditions:

    a. House ownership (Ancestral/ Self-owned/Govt. owned/Rented/Other):_____

    b. Electricity: (24 hour, consistent/ intermittent 16 hrs/ less than 12 hrs): _____

        b1. Alternate sources: Generator/inverter/none: _____

    c. Access to water: (24 hour, consistent/ thrice a day/ twice a day/Other):_____

    d. Access to Sanitation facilities: (In house/ community bathrooms/ outdoor/other): _____

43. Have you ever lived in the park _____

    43a.Have you ever been relocated from the park? _____

    43b. Was it a personal choice to relocate?_____

Guideline for interviews

Questions for interview: community leaders/key-informants and members

Questions in **bold** are main questions, sub-points are prompts to guide the interview.

- Please tell me about yourself.
    - Family history, background, education
    - Occupation
    - How long have you been living in this community?

- How would you describe your community?
    - Are people trustworthy?
    - Do you feel like an accepted member of this community?
    - Do you think anyone is ignored or discriminated against?

- Have there been any efforts by the community or overcome a wildlife or conservation related problem?

- What is your relationship with the park?
    - Do you use the forest in any way?
    - Do you know if people use the forest illegally?

- How do you feel living close to wild animals
    - Are there any animals causing problems in your area?
    - What do you feel about tigers?
    - What are the biggest problems these animals cause?
    - How do you deal with that?
        - Who is responsible for resolving human-wildlife conflict problems?
    - Have you ever been eligible for HWC related compensation?
        - How was your experience?

- Describe your relationship with forest officers.
    - How often do you interact with forest officials?
    - How would you describe these interactions? (positive/negative)
    - Do you think they help people effectively?
    - Do you think Forest officers are trustworthy?

- o Do you think you have the power to report the forest officers if/when they do something questionable?
  - o Do you or would you work with forest officers on conservation related issues?

- Are you aware of any NGOs working in your community?
  - o Can you name a few and what they do to help your community?
  - o Describe your reationship with them.
  - o Do you think they are aware of the issues you/your community experience?
  - o Do you think they have the skills to solve your problems?
  - o Do you/ would you work with them?

- Let's talk about tourism. Is tourism good or bad?
  - o What thoughts do you have on the industry here?
    - ▪ Do you think your community has changed since the development of tourism?
  - o Do you think you/your community members has the skills to be a part of the industry?
    - ▪ What are the barriers that stop you from participating in the tourism industry?
  - o Do hotel owners reach out to community members?
  - o Do you think tourism here benefits the tiger?

- Any last thoughts you'd like to share on conservation and tourism, and the management of this park?

Guideline for interviews

Questions for park managers/ NGO

Questions in **bold** are main questions, the ones under are prompts.

- Please tell me about yourself and your role in this organization.
  - o Educational background
  - o Work experience
  - o Local/non-local
- What are the roles and responsibilities of this department/organization towards conservation and park management?
  - o Do you carry out any tourism related responsibilities?

- What is your/your department's/organization's relationship with the local community like?
  - o What has your experience been like working with the local community?
  - o Are there any barriers that hinder your work with them?
  - o Does the community reach out to you for help in any way?
    - What is the nature of these problems?
    - How have these been addressed?
- Are there any strengths of working with the community?
  - o What are the challenges?
  - o How would you handle a complaint? What steps would be taken and who would be involved?
- To what extent do you think that community participation is necessary for conservation?
  - o Are there any limitations that obstruct local people who want to be involved in conservation?
  - o Do you get any support from the local community in any form? Is it important?
  - o What about the community's participation in tourism?
- Are there any final thoughts on park management or community or tourism before we wrap up?

Guideline for interviews

Questions for interview-tour operators

Questions in **bold** are main questions, the ones under are prompts.

- Please tell me about yourself and your role in this organization.
    - Educational background
    - Work experience
    - Local/non-local
- What is your/your department's/organization's relationship with the local community like?
    - What has your experience been like working with the local community?
    - Do you employ any local people?
        - At what positions?
    - How is the local community involved in your business besides being employed? (Supply local products, provide a consultation about locality)
- What are the strengths of working with the community?
    - What are the challenges?
    - What are the barriers? How do you address these barriers?
- Is tourism good or bad for conservation?
- Is tourism good or bad for the community?
- Do you get any support from the local community in any form? Is this support important?
    - To what extent do you think that community participation is necessary for tourism?
    - What about conservation?
- Are there any final thoughts on park management or community or tourism before we wrap up?

Table A 1 Descriptive statistics and factor loadings of independent variables

Factor and Variable	Dudhwa (N=109)			Ranthambore (N=173)		
(Min=1, Max=5)	Mean	S.D.	λ	Mean	S.D.	λ
Bonding Cognitive Social Capital [a] [b]						
Solidarity: People in this community work together to fix problems:	4.86	.44	0.78	4.72	.76	0.92
Trust: People in this community are trustworthy:	4.85	.49	0.78	4.72	.8	0.90
Reciprocity and cooperation: People in this community work to help each other out	4.81	.48	0.77	4.75	.74	0.98
Bonding Structural Social Capital [a] [b]						
Inclusion: You feel like a respected member of this community	4.64	.88	0.49	4.84	.54	0.88
Conflict: There is conflict in this community [c,d]	2.48	1.54	0.23	3.60	1.45	-0.05
Empowerment: You have a voice in the community	4.33	.943	0.47	4.77	.651	0.73
Networks: People take action in wildlife related incidents [d]	4.64	.948	0.32	3.90	1.53	0.23
Bridging Social Capital [a] [b]						
Solidarity: Forest officers and community members work together to fix problems	3.80	1.44	0.63	2.61	1.69	0.86
Trust: Forest officers are trustworthy	3.75	1.47	0.70	2.88	1.71	0.85
Reciprocity and cooperation: Forest officers work to help people in the community	3.45	1.53	0.94	2.82	1.70	0.87
Integration: Forest officers involve you in conservation and park management	3.04	1.64	0.56	2.08	1.44	0.42
Networks: Forest officers act in a timely manner during wildlife related incidents	2.63	1.59	0.46	4.05	1.44	0.51
Conflict: There are conflicts with Forest officers [c,d]	1.82	1.36	0.09	1.92	1.45	0.31
Empowerment: Forest officers listen to you	3.55	1.48	0.66	3.03	1.57	0.71
Park Support [a] [b]						
You support the park	4.41	1.16	0.74	4.81	0.61	1.00
Your community supports the park	4.46	1.09	1.00	4.73	0.68	0.83
The park effectively protects wildlife [d]	4.55	0.877	0.30	4.94	0.24	0.16
The park supports local livelihoods [d]	2.95	1.8	0.33	2.94	1.74	0.71

Notes: [a] Agreement measured on 5 point Likert scale (1= Strongly Disagree, 5= Strongly Agree) [b] Robust estimation statistics; [c] Reverse coded values for this variable were used during CFA; [d] Item not retained

APPENDIX F

Fieldwork Photographs

Photo1.1 Picture of a Tharu hut near a rice field, Dudhwa National Park

Photo1. 2 Dudhwa National Park jungle safari

Photo1. 3 Stakeholder Interviews, Dudhwa National Park

Photo1. 4 Dudhwa National Park Research Team

Photo1. 5 Community interaction at Ranthambore National Park

Photo1. 6 Tiger cubs at Ranthambore National Park
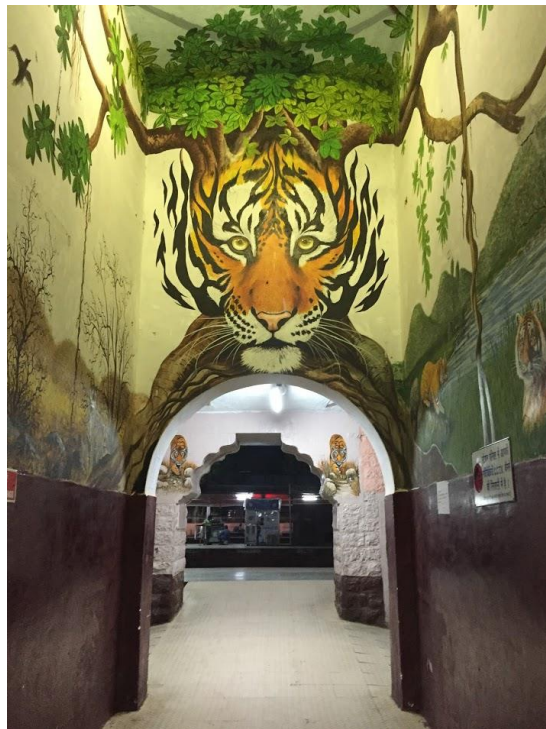
Photo1. 7 Ranthambore Fort

Photo1. 8 Sawai Madhopur Railway Station

Photo1. 9 Ranthambore National Park Research Team