Negotiating the Panoptic Gaze: People, Power and Conservation Surveillance in the Corbett Tiger Reserve, India

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This dissertation is submitted to the University of Cambridge
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by

Trishant Tapankumar Simlai

Department of Geography
Selwyn College

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DECLARATION

This thesis is the result of my own work and includes nothing which is the outcome of work done in collaboration except as declared in the preface and specified in the text.

It is not substantially the same as any work that has already been submitted before for any degree or other qualification except as declared in the preface and specified in the text.

It does not exceed the prescribed word limit of 80,000 words as prescribed by the Degree Committee.

Trishant Tapankumar Simlai
November 2021

SUMMARY OF THESIS

In recent years, the use of new and existing surveillance technologies in the practice of conservation has increased rapidly. This includes the use of drones, camera traps, satellite, and thermal imagery for activities such as wildlife monitoring, anti-poaching, and law enforcement. In many respects surveillance is constitutive of modern society, especially in urban spaces (Lyon 1995) where its use has been widely discussed. In the conservation context, surveillance alters the demarcation of spaces between nature and people by intensifying territorialization (Adams 2017), and it has been suggested that it could impact the wellbeing of local stakeholders in various ways (Sandbrook 2015, Sandbrook et al 2018). However, the social and political implications of surveillance technologies in conservation and natural resource management remain an underexplored field of empirical inquiry.

Drawing from 13 months of ethnographic fieldwork in the Corbett Tiger Reserve, India, this thesis provides novel empirical material, that unpacks the social and political implications of conservation surveillance on local communities, conservation labour and on conservation governance. By situating my inquiry in the social and political history of the region, I argue that these technologies are used to establish multiple surveillance regimes resulting in the production of disciplined people and securitized conservation spaces. I also argue that the impacts of conservation surveillance are unequally experienced depending on intersections with often hidden dimensions of difference such as caste and gender. I further demonstrate that conservation surveillance exacerbates already prevalent social injustices and structural inequalities of gender, caste, and class discrimination, resulting in mistrust, harassment, and negative perceptions of local communities towards conservation practice. By engaging with the disciplines of surveillance, gender and labour studies, this thesis provides novel empirical evidence that corroborates, and adds to the previous, largely conceptual work done on this subject and has significant policy implications for conservation practice

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LIST OF ACRONYMS

BBC	British Broadcasting Corporation
BJP	Bharatiya Janata Party
BNHS	Bombay Natural History Society
CCTNS	Crime and Criminal Tracking Network and Systems
CCTV	Closed Circuit Television Cameras
CSTs	Conservation Surveillance Technologies
CTA	Criminal Tribes Act 1871
CTR	Corbett Tiger Reserve
DNT	De-notified Tribes
FRA	Forest Rights Act
GPS	Global Positioning Systems
HO	Habitual Offenders
IFS	Indian Forest Service
IoT	Internet of Things
IT	Information Technology
IUCN	International Union for Conservation of Nature
LEM	Law Enforcement Monitoring
MIST	Management Information System
MoEF	Ministry of Environment and Forests
MSTrIPES	Monitoring System for Tigers-Intensive Protection and Ecological Status
NGO	Non-Governmental Organization
NTCA	National Tiger Conservation Authority
OBC	Other Backward Class
RFA	Ranger Federation of Asia
SC	Scheduled Caste
SLM	Samajvadi Lok Manch
SMART	Spatial Monitoring and Reporting Tool
ST	Scheduled Tribe
STPF	Special Tiger Protection Force
TRAFFIC	The Wildlife Trade Monitoring Network
UN	United Nations
UP	Uttar Pradesh
USAID	United States Agency for International Development
VGSM	Van Gram Sangharsh Morcha
VSS	Van Shramik Sangh
WCS	Wildlife Conservation Society
WII	Wildlife Institute of India
WLPA	Wildlife Protection Act 1972
WWF	World Wildlife Fund
ZSL	Zoological Society of London

DECLARATION OF MATERIAL BASED ON A PUBLISHED PIECE OF WORK

Some elements of the following chapter were recently published as a chapter in an edited book – Conservation technology (Wich & Piel 2021). The book chapter is called Digital Surveillance Technologies in Conservation and their Social Implications (Simlai & Sandbrook 2021). I conceived and wrote the chapter, with suggestions on the structure and some minor editing by my PhD supervisor Dr. Chris Sandbrook.

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CHAPTER 1

Digital Surveillance Technologies in Conservation and their Social Implications

1.1. Introduction

Digital technology is rapidly changing economies, societies, cultures, and lives throughout the world. Indeed, many commentators and scholars have argued that human society has entered the 'Information Age' (Castells 2018). Large amounts of public and private information now flow through digital networks created by the internet and other communication technologies, resulting in new modes of governance, business, and communication. The emergent digital and technological revolution has had a considerable impact on the social practices of individuals and organizations involved in nature conservation. From tracking the movement of wild animals to detecting illegal wildlife trade online (Sonricker Hansen et al 2012), digital technologies and applications are gaining increasing prominence in nature conservation and are reshaping the discourses of conservation science and practice (Newman et al 2012, Joppa 2015). These technologies are rapidly influencing how scientists, government officers, and members of the public think, perceive, and engage with nature (Kahn 2011, Verma et al 2015). Moreover, as these technologies borrow heavily from military research (Duffy et al 2019), their use for law enforcement and policing feeds into the green militarization (Lunstrum, 2014) discourse that can have serious negative outcomes for local communities and undermine long term conservation goals (Duffy et al 2019).

Researchers, conservationists, and policymakers often welcome such technologies, as they promise large amounts of data, accelerated processing speeds, better access to information, unique visual representations, and efficient decision-making capability (Arts et al 2015). However, some have argued that there is a downside to this story, due to the practical challenges and the social consequences created by using new technology (Humle et al 2014, Maffey et al 2015, Sandbrook 2015, Sandbrook et al 2019, Wich et al 2017). This thesis explores and unpacks some of the downsides related to these technologies. Through a prolonged place based ethnographic analysis, I make an important and novel contribution to the debates in conservation social science and surveillance studies. This thesis brings new insights into these debates, by revealing the impacts of

digital technologies on entrenched social and political inequalities, that affect local communities, and people who participate in deploying these technologies.

In the following sections, I set the scene by reviewing some of the discussed social implications of these digital technologies. I argue that digital technologies are not the panacea for all conservation-related problems, and interventions based on these technologies must be carefully reviewed before use. I also argue that it is important to consider and reflect on who controls, benefits from, is affected by and pays for these technologies. Before turning to the specific case of conservation technologies, I begin by introducing some of the broader issues raised by the social lives of digital surveillance technologies.

1.2. Privacy, Civil liberties, and Freedom

The growing intrusion of surveillance by state and corporate actors into the citizens' daily lives all around the world is increasingly common knowledge. However, many people remain unaware of the extent of this intrusion, and the social, political, and ethical issues that surround it. Foremost among such concerns is the possibility that surveillance may constitute an invasion of privacy. A widely accepted definition of privacy is still being debated. Some scholars have called it 'an unusually slippery concept' (Whitman 2004 pp. 1151–1221), while some have referred to it as a 'concept in disarray' (Solove 2008 p. 12). The question of what is and is not private varies culturally and geographically. For example, entering a room without knocking on the door might be considered a serious privacy violation in one culture yet permitted in another. Privacy hence may not be understood as a universal given but as a social construct, which changes according to cultures and geographies (Shapiro & Baker 2001, Moore 2008, Gomes de Souza 2015). However, consensus exists on the fact that privacy is comprised of multiple dimensions that are specified as privacy of a person, personal behaviour, personal data, and personal communication (Clark 2006).

Despite debates over its definition, privacy is recognized as a basic human right, just like freedom of speech and freedom of assembly. Article seven of the European Charter of Human Rights (The European Commission 2000) and Article 12 of the United Nations Charter of Human Rights recognize the right to privacy as a basic human right (United Nations 1948). The right of the state to protect itself and its community at large, as opposed to the right of an individual to privacy, has always been marred with tension throughout recorded history (Bannister 2005). Today, digital technologies are changing at remarkable speed the scale and dimensions of how scientists, researchers, hobbyists, and the state inquire into the lives of individual citizens. For example, drones have been used to take pictures of high-profile individuals like television celebrities relaxing

on beaches, sportspersons in training, and even politicians without their consent (Hyde 2016; Berkowitz 2017).

A key contemporary debate around technology and privacy relates to the use of digital surveillance technologies by the private sector. The case of Cambridge Analytica's theft of Facebook user data that was subsequently used to profile people and influence their political decisions brought to light the larger context of surveillance in modern day capitalism (Manokha 2018). It has been argued that user data on digital platforms is fast becoming a 'fictitious commodity' that is being used in large amounts by commercial market entities as 'raw material' (Zuboff 2019). Modern digital intelligence collection is increasingly relying on private companies (Joh 2017). Data sets of interest to state enforcement agencies and state security agencies are being collected and generated in large amounts by private companies through a multitude of digital software that range from social networking applications to fitness and health applications (Manokha 2018). These data sets are created and owned by private companies and can be purchased, legally compelled, or hacked, resulting in enormous consequences for privacy and civil liberties.

Surveillance technologies do not only raise privacy concerns, but they also affect civil liberties (Lyon 2001). The use of surveillance technologies is known to discourage or deter individual participation in social movements or activities of dissent, leading to the inhibition of an individual's freedom of assembly or freedom of expression (Cunningham & Noakes 2008). Using surveillance technologies can also reinforce existing social inequalities, particularly marginalization along the lines of race, class, gender, age, and sexuality (Coleman & McCahill 2011). Surveillance technologies can also adversely affect an individual's freedom of movement; it is argued that surveillance systems enable privileged mobility of some individuals over others, leading to what has been called social sorting (Lyon, 2010). For example, certain social groups are targeted over others through surveillance and subjected to random security checks, body scans, and paperwork at airports and immigration queues (Graham & Wood 2003). These restrictions can disproportionately impact some groups of already marginalized travellers, such as Muslim women, for whom participation in body scanning systems impinges on their religious beliefs (Rohen 2010).

Privacy, like freedom, is a valued good, which is traded voluntarily by citizens for other goods and benefits such as public services and security. In conservation practice, the use of surveillance technologies to monitor local communities living inside or next to protected areas (whether deliberately or inadvertently) may seem like a small thing to ask in relation to the benefits gained overall for the protection of certain species; however, it is precisely an accumulation of such small

judgements that may cumulatively affect the perception of infringements of people's privacy, liberty, and freedom. In the following sections, I suggest that the use of surveillance technologies for conservation provides a clear example of this phenomenon, raising serious concerns about civil liberties and privacy.

1.3. Digital Technologies and Surveillance

A wide range of digital devices now readily available for nature conservation were originally developed for surveillance and law enforcement. This has opened a scholarly discussion on the impacts that these devices can have on human well-being. Academic discourse on the impacts of surveillance exists as an entire branch in criminological research called surveillance studies, which will be discussed in detailed in chapter 2 (Lyon 2001, Ball & Haggerty 2005). However, these discourses have not investigated the impacts of surveillance or surveillance technologies when used in the field of environmental conservation.

Surveillance has often been associated with a dystopian world where the Orwellian 'big brother' is always watching subversive behaviour (Lyon 1994). However, the debate around surveillance often tends to overlook certain useful tendencies of surveillance in shaping and ordering modern citizens and societies (Lyon 2001). In other words, not all surveillance is bad. It has been argued that like other digital technologies, surveillance technologies are value-neutral until they are applied towards specific uses (Ferenbok & Clement 2012). However, the research revealed in this thesis contests this notion, and I demonstrate in the latter part of this thesis that surveillance technologies may never truly be value-neutral, and that it largely depends on who is doing the surveillance and their objectives for doing so.

New digital surveillance technologies are transforming the possibilities of how surveillance itself is practised due to reduced costs, flexibility, and increased efficiency, ushering in a new era of geographies of surveillance (Dobson & Fisher 2010). Digital devices such as remotely triggered acoustic sensors, cameras, and drones open new dimensions in how individual people are recorded. The potential to identify and track people through artificial intelligence and facial recognition algorithms increases the ability of states to enforce law and exercise power through a security apparatus—in effect, creating a new kind of conservation surveillance regime, it is to such a regime that I now turn.

1.4. Conservation Surveillance

Photographs of people taken by digital technologies such as camera traps have the potential to change the nature of conservation law enforcement and give rise to new regimes of surveillance such as- 'conservation surveillance', 'that may be defined as keeping a watch on some- one or something for natural resource management and preservation' (Sandbrook et al 2018: p. 494). Such conservation surveillance technologies (CSTs) are used in nature conservation primarily as a means to monitor wildlife populations. These technologies are shifting the paradigm of biodiversity conservation and management by helping conservationists and managers around the world to monitor wildlife, vegetation, and environmental degradation with precision and efficiency. The monitoring of wildlife includes studying and keeping track of animal movements, studying, and estimating populations, habitat condition and loss, and the identification of potential threats to wildlife such as poaching and human– wildlife conflict. The development of devices such as camera traps, radio collars, and drones for conservation has ushered in a new era for wildlife monitoring and management (Pimm et al 2015). The use of these devices is rapidly changing the way conservation is perceived by citizens, particularly in protected areas (Shrestha & Lapeyre 2018) and even more so outside them (Simlai, 2015). Modern technologies are known to mediate human–wildlife relations and in turn shape the way conservation policies are chosen and implemented (Büscher, 2016).

Surveillance technologies not only contribute to the intensification of conservation territorialization by demarcating spaces for people and nature, but also intensify management of the resulting boundaries (Adams 2017). For example, tracking tigers using GPS collars or remote cameras can result in a change in management strategies when the tiger crosses protected area boundaries (DeFries et al 2010; Carter et al 2012). The public can see animals that are monitored by digital tracking technologies as the responsibility of those who monitor their movements (Cooke et al 2017). For example, considerable outrage is generated when individual tigers that are collared or monitored using remote cameras raid livestock—or worse, kill a human— around the protected areas of India (Lenin 2014).

Another implication of CSTs is their contribution towards coercive conservation strategies (Peluso 1993). Surveillance and control measures can be used on people as well as animals; in fact, digital tracking devices are currently being widely used to monitor anthropogenic activities inside protected areas, and there is a growing call for them to be extensively used to monitor poaching, illegal logging, and collect evidence to catch offenders (Hossain et al 2016). Moreover, the use of

surveillance technologies is central to the militarization of conservation (Duffy 2014, Lunstrum, 2014, Büscher & Ramutsindela 2015, Duffy et al 2019). The Kenyan Wildlife Service regularly uses surveillance technologies such as drones, camera traps, and helicopter- mounted infrared cameras to combat (increasingly sophisticated and organized) poaching (Haslam 2016). The ease with which surveillance technologies can shift objectives between tracking animals and monitoring people or between warfare and securitized conservation is crucial in understanding how conservation is being increasingly drawn into narratives of global security (Duffy 2016). In fact, intensive surveillance regimes have now been identified as an integral component to conservation governance in tandem with other intelligence gathering techniques based on classic military-styled counter-insurgency methods (Duffy 2016). The perception of threat of physical enforcement exacerbated through surveillance has been argued to be as important as actual violence (Lombard 2016).

It can be argued that conservation actors use CSTs as part of a wider strategy to create disciplined conservation actors (Sandbrook et al 2018) and establish new forms of governance (Agrawal 2005). However, these processes and the resultant responses towards them may occur differently according to varying cultural contexts. It is important to highlight here that a large proportion of work on surveillance theory, and the social impacts of surveillance, is from the global north, while CSTs are most widely used in the global south. This thesis makes an important intervention here and provides one of the first few studies that examine such impacts in the global south.

Conservation interventions exercise rules that constrain and restrict people's movement and rights and enforce rules that are aided by the use of CSTs. These practices exercise power over people and attempt to turn them into subjects that support conservation objectives decided by the state or private organizations. In some cases, this might be justified by the local context—for example, discouraging people from entering strictly protected areas from which they are forbidden. In others, any social harms associated with surveillance may not be a price worth paying for any real or perceived conservation benefit. In the following sections, I will discuss the social and political implications of some CSTs in detail and according to certain relevant themes they fall under.

1.5. Conservation Surveillance Technologies

Camera traps or motion-activated cameras are perhaps the most widely used surveillance technology in conservation and ecological research (Karanth & Nichols 1998, Rovero & Zimmerman 2016, Adams 2017, Caravaggi et al 2017). Although camera traps are normally deployed with the objective of taking images of wildlife, they are often triggered by humans

(Sandbrook et al., 2018). The collection of human images in camera traps is often accidental or unplanned (Butler & Meek 2014)—a phenomenon that has been termed 'human bycatch' (Sandbrook et al 2018). However, camera traps have also been specifically deployed to monitor human activity for conservation goals such as quantifying anthropogenic pressure on ecosystems (Betts 2015), monitoring human–wildlife interactions (Pusparini et al 2018) and for anti-poaching (Hossain et al 2016) and there are increased calls for their use in these sectors.

The use of Drones or Unmanned Aerial Vehicles (UAVs) has rapidly evolved and developed in the past decade after being primarily designed for military use. Drones are now used for a range of purposes, from disaster management and relief to biodiversity conservation and management. In the context of direct conservation applications, drone use has been advocated predominantly for law enforcement and the monitoring of illegal activities (Sandbrook 2015). Examples include patrolling protected area boundaries (Mulero-Pazmany et al 2014), gathering evidence of illegal logging (Koh & Wich 2012), photographing ongoing illegal activity with a high- resolution camera as evidence to secure prosecution (Snitch 2014) and functioning as a deterrent (Schiffman 2014). Although the use of drones in the conservation sector has a wide range of potentially relevant applications, their use has largely been experimental to date (Sandbrook, 2015). However, it seems highly probable that drones will be used for the above-mentioned applications regularly, as there are several examples of conservation agencies and research institutions actively engaged in developing their use (Vidal 2013, Gorman 2014, Wilkie & Rose 2014). In the following subsections, and by using a thematic approach, I discuss the various social and political implications that can arise with the use of such CSTs.

1.5.1. Infringement of Privacy and Consent

The use of CSTs for processing data on human activities raise concerns about civil liberties, freedom, and infringement of privacy. For example, camera traps set up in the woods of the Austrian state of Carinthia captured images of a local politician engaging in sexually explicit behaviour (Day 2012). Pebsworth and LaFleur (2014) identify ethical concerns with the use of surveillance technology related to how best to protect people's identities, their privacy, and what to do with images of people engaging in illegal behaviour. Using camera traps as a tool for the surveillance of people in the context of conservation also follows the rise of a larger surveillance discourse in wider society, particularly in global security discourse and policing by the state (Sandbrook et al 2018, Duffy et al 2019).

Camera traps may not seem as pervasive as drones in terms of surveillance, but they replicate the same intensification of conservation enforcement and governance regimes (Sandbrook et al 2018, Shrestha & Lapeyre 2018). When deployed in and around protected areas or even outside protected areas in human dominated landscapes (Karanth & Defries 2010), camera traps are often used to inform research, law enforcement, and management activities that may adversely affect people who may not have consented to be photographed. For example, in the Rajaji and Corbett National Parks in India, a network of camera traps monitored the presence of tigers, other wild animals, and people belonging to a particular indigenous and pastoral community called 'van gujjars' (Simlai 2015). The data gathered were used to estimate daily activity patterns and population of wild tigers and their prey species, and also quantify human presence and their activity as 'anthropogenic pressure' or 'illegal human presence'. Furthermore, processed results from the data went on to inform conservation policy that subsequently led to displacement of the 'van Gujjar' community from both National Parks (Simlai 2015).

The potential of conservation drones to support data collection and law enforcement is well established, however, this itself should not be regarded as adequate justification for their extensive adoption (Sandbrook 2015). Civil and military applications of drones have attracted much discussion on their social and ethical implications in which they might lead to pervasive restriction of civil liberties and infringe upon privacy (Sparrow 2009). Concerns have been raised about whether monitoring people from the air, without their consent or knowledge, is ethically acceptable and at what point might these cross boundaries and become an infringement to privacy (Finn & Wright 2012). The small and subtle nature of drones can make them access areas and spaces that might otherwise be considered private (Luo et al 2014). Conservation drones and UAVs used for natural resource management are very likely to collect information about human activities and about human presence, leading to identification at an individual level. In the case of law enforcement, this is done deliberately and with the intention to prosecute. It has been suggested that drones should be used to monitor vehicular activity on public roads near protected areas to deter and detect illegal activities (Snitch 2014). It has also been suggested that drones should be used covertly to observe potential illegal hunters (Mulero-Pazmany et al 2014). These practices are ethically questionable when taking place on public land particularly when certain groups, often marginalized and vulnerable, are targeted (Sandbrook 2015, Duffy et al 2019).

1.5.2. Psychological Well-being and Fear

CSTs can also lead to considerable fear and confusion, generating hostility among people that are being monitored (Campbell & Verissímo 2015, Sandbrook 2015). Many areas of conservation importance are in remote regions of developing countries where communities of people have little exposure to modern technologies. This may generate suspicions and conspiracy theories about these technologies and the reasons for which they are being operated. Drones can carry an image of warfare and destruction, which could mean people having misconceptions about their purpose. Indeed, their use in areas of conflict, or in areas with histories of violence could lead to people believing they have been sent by militaries, terrorist groups, or private companies, further fuelling conflicts or creating new ones (Simlai 2015, Sandbrook 2015, Duffy et al 2019). Many such areas in the world have long standing difficult relationships with state interventions and could very well transfer such suspicions to any new technology introduced to the area.

The extent and determination with which camera traps are vandalized or damaged in theft attempts, even when they are code-locked, has been well documented in Australia (Meek 2017). Similarly, a survey of camera trap users in Australia and the United States revealed that a large proportion of them experienced some or the other form of damage to their equipment (Butler & Meek 2014). In a more recent survey, over 75% of respondents reported objections to or direct interference with deployed camera traps confirming resistance or opposition to them (Sandbrook et al 2018). These attacks on camera traps suggest that people on the ground are sufficiently concerned about them to attack them, although research on motivations is lacking.

Camera traps and drones increase the power of conservation governance by providing evidence of illegal activities and in turn help enforce the traditional ideas of distinction between spaces for nature and spaces for people (Bluwstein & Lund 2018). When camera traps are deployed by non-state actors such as non-governmental organizations, they extend power and authority and governance structures beyond the state. Discussion on the possible social implications of camera traps for conservation is very limited in academic literature in contrast to the number of scientific papers that base their research on camera trap surveys (Sandbrook et al 2018). Some studies that use camera traps have mentioned negative effects such as theft and vandalism of people on camera traps (Bernard et al 2014, Clare et al 2015), however, very few mention the negative effects of camera traps on people (Rupf et al 2011, Villaseñor et al 2014).

The use of surveillance technology in most spaces without publicly agreed rules and collective transparency could provoke conflicts among community members (Paneque-Gálvez et al 2014).

Conflicts arising out of such use can affect partner organizations and in turn conservation in the long term. In some places, conservation organizations have a history of conflict with local communities resulting from repetitive evictions and exclusionary policies (West et al 2006). It seems that negative perceptions and resistance towards drone deployment in such places will be highly likely. In some cases, the use of drones can be used deliberately to create a climate of fear and as a deterrent against illegal activities (Simlai 2015, Sandbrook 2015, Duffy et al 2019). Demonstrations of drone use by local authorities and conservation agencies coupled with a media awareness campaign are done particularly to serve these ends as seen in South Africa and India (Mulero-Pazmany et al 2014, Simlai 2015). For example, the use of drones in the Balule nature reserve seems to have created a rumour among 'poachers' that machines in the sky are observing them continuously and even at night, reducing poaching incidents (Snitch, 2014). Such approaches may work in the short term, however, the use of 'fear' as a tool for conservation raises ethical questions does not always work and may shift illegal activities to an alternate location that is not under surveillance.

1.5.3. Wider Issues in Conservation Practice

Legislation specific to each country may lead to researchers who use CSTs themselves being prosecuted for disseminating images of humans, distributing them or for even deploying them in the first place (Butler & Meek 2013, Meek & Zimmerman 2016). For example, a group of Iranian biologists were prosecuted, charged, and face the death penalty under suspicion of espionage after they deployed camera traps to study Asiatic cheetahs but got caught in a power struggle between Iran's revolutionary guards and the relatively moderate administration under Iranian President Hassan Rouhani (Stone 2018). In some cases, government authorities specifically request images taken by camera traps to pursue leads on wildlife crimes, moreover, in some countries like India, handing over images to authorities is compulsory. Although this may seem to be in accordance with the law and help solve cases of wildlife crimes, it still raises serious ethical questions for researchers about using camera traps when there is a risk that government authorities might use the images inappropriately.

As well as having various impacts on resident human populations who are surveilled by CSTs, the same devices could have significant impacts on labour practices with- in the conservation movement. For example, an unintended effect of digital technologies that automate surveying and replace human effort could be 'de skilling' of natural history and loss of traditional ecological knowledge (Arts et al 2015, Shrestha & Lapeyre 2018). Where technologies replace activities that

were previously labour intensive (such as collecting ecological data or conducting foot patrols in and around PAs), they could result in job losses on the ground (Adams 2017). This would reduce local opportunities to benefit economically from conservation and might also take away an important point of contact between local communities and conservation staff, which can promote good relations and be a valuable source of information. Conservation practitioners often maintain that most low-cost conservation drones cannot replace boots on the ground due to their limited flight times and inability to penetrate forest canopy (Simlai 2015). Finally, surveillance devices used by park rangers can be used to surveil themselves as well as other people and wildlife, particularly if the device has a GPS unit. This kind of 'workplace monitoring' has been shown to be detrimental to staff well-being elsewhere (Ball 2010, Rodríguez et al 2012), but has not yet been investigated in a conservation context.

The use of drones is glamorous, fashionable, and may help connect the wider public to conservation issues by providing high-resolution images and other data. However, there is a risk that the use of drones may support misinformed, simplistic, and often counterproductive narratives about how conservation is practised among the public (Sandbrook 2015). Public comments made to an editorial in the Guardian newspaper (2014) titled 'In praise of drones' advocated for drones to be armed 'ideally with hellfire missiles' and sent to 'Africa' to deal with poachers. Such comments reveal that many people associate drones with military applications and warfare, an association actively promoted by some users of conservation drones (Sandbrook 2015). There is ample evidence suggesting that conservation problems such as illegal wildlife trade are highly complex (Duffy et al 2015, Duffy et al 2016), and the use of surveillance technologies such as conservation drones to address this problem may give rise to simplistic narratives that undermine the understanding of this complex issue (Humle et al 2014).

1.5.4. Data Security

There are also concerns about how data collected by CSTs may be protected and the risks of it being leaked. An argument can be made by a law enforcement agency for the use of CSTs to prevent poaching. However, what if the data being gathered is then sold on to a political or commercial entity such as a political party, business interest or an advertiser (Sandbrook 2015)? A state security apparatus may also use such data to curb civil liberties in sensitive areas and quell public protests (Macaskill & Dance 2013). Data from drones can also be stolen, as they are particularly susceptible to be shot down, recovered, and dismantled by those wishing to get access (Hartmann & Steup 2013). Protection of digital data is becoming an increasing concern throughout

the world following the recent revelations and cases of Cambridge Analytica, Facebook, and WhatsApp (Cadwalladr & Graham-Harrison 2018, Isaak & Hanna 2018). With such concerns about data use and security, it seems appropriate to ask whether people 'on the ground' whose data are captured by drones should be given the opportunity to consent to be surveyed from the air (Sandbrook 2015)? Consent processes are a standard requirement of social research ethics review committees in most academic institutions when considering traditional methods such as interviews but are rarely considered for remote surveillance.

1.6. Research Question and Structure of Thesis

CSTs have arguably revolutionized the scope of conservation science by providing insights into species behaviour, ecosystem processes and conservation solutions in ways which were not possible until a few years ago. Moreover, CSTs have been of particular interest to large global conservation organisations and governments, that have taken an interest in the application of these tools for law enforcement to combat the rise in poaching, or what has been called the 'war for conservation' (Lunstrum, 2014, Simlai 2015, Duffy et al 2019). The rush for the deployment of these technologies seems to overlook the potential social and political impacts that can arise out of their use. However, the nature and intensity of these impacts occurring due to the application of CSTs remains a relatively underexplored field of inquiry.

This thesis explores the social and political impacts of CSTs and the complexities that lie behind using them for conservation practice in India. Using the case study of the Corbett Tiger Reserve (CTR), the overall question I set out to address in this thesis is: **How does the use of Conservation surveillance technologies impact social and political structures and nature society relations in the vicinity of the Corbett Tiger Reserve?**

The analysis of my findings on the social and political implications of Conservation surveillance technologies (CSTs) in the Corbett Tiger Reserve (CTR) develops over seven chapters following this initial introductory chapter (see *Figure 1*). In Chapter 2, I give a description of the theoretical framework I have used to analyse the impacts of surveillance. I combine topics from surveillance studies, such as panopticism and biopower, with concepts in gender studies and labour studies, and with the political ecologies of conservation to provide an intersectional analysis of the impacts of conservation surveillance. Chapter 3 details my methodological approach to the research and provides a detailed account of my fieldwork. I highlight why and how I used a case study approach and a detailed ethnography to uncover the impacts of conservation surveillance in the CTR. I

provide a detailed list of methods that range from interviews to participant observations and subsequent data analysis tools. Throughout the chapter I reflect on my positionality and my many privileges that allowed me to gain access and gather data.

In Chapter 4, I provide a detailed contextual background to my study site and situate conservation surveillance in the current and historical socio-political processes of the region. I start with how colonial projects shaped forestry policies in the Tarai region, and the role played by hunter turned conservationists in shaping modern conservation policies. I also provide insights into regional resistance movements and how they shape current socio-political discourses in the state of Uttarakhand. Finally, I highlight the complexity of tiger conservation in India and its role in shaping conservation surveillance practices in the CTR.

The next three chapters form the main empirical contributions of this thesis. Starting with Chapter 5, I reveal the role CSTs play in contributing to surveillance by social sorting along caste and communal lines. I argue that CSTs have the potential to shape caste structures and exacerbate caste inequalities in a given space. I start the chapter by giving a contextual background on caste, and caste structures that are prevalent in India. This is followed by a description of the role of caste in Indian environmental politics and on caste blindness in Indian conservation practice. I also briefly describe the origins of surveillance practices on the basis of caste, by giving an account of the Criminal Tribes Act, and how the colonial project of intrusive policing produced criminalities in certain marginalised groups. I subsequently provide empirical information on casteist and communal practices in the forests of the CTR. Finally, I provide detailed empirical narratives and vignettes on the use of CSTs in the CTR that enable and reinforce casteist and communal structures of power.

In Chapter 6, I turn to the gendered dimensions of conservation surveillance. I start with providing a brief background and context to gender issues in conservation, by providing introduction to the literature on gender and the environment. Subsequently, I demonstrate how forests are extremely gendered spaces. Providing an empirical ethnographical analysis of the experiences of women forest produce collectors, I demonstrate the multiple ways in which forests are used. This goes beyond the common understanding of forests as spaces where subsistence needs are met, to spaces of freedom and liberation, away from the patriarchal gaze of society. Finally, I explain the impacts of CSTs on these gendered dimensions.

Chapter 7 is the final empirical section of this thesis and deals with the impacts of conservation surveillance on labour practices of frontline forest staff. I start with introducing the largely unexplored issues of conservation labour in India. I give a detailed background to the evolution of the role of a forest guard and the forest watcher, that are considered front line forest staff in India. Subsequently I provide an empirical ethnographic analysis of the prevailing structural inequalities that exist within the forest labour process. After reviewing several Ranger based law enforcement monitoring tools, I introduce MSTrIPES a tool to monitor forest labour and finally I demonstrate the impacts of this tool of surveillance on the labour process of forest staff.

I conclude the arguments of my thesis in Chapter 8, where I start with consolidating my empirical findings and linking them to the future directions that conservation surveillance practices might take. I also reflect on why there are no major resistance movements against surveillance and policing, in a region with a history of resistance against draconian forestry practices. I point out how conservation surveillance when used by the state contributes to the surveillance regimes of the Indian state, that aims to materially control and monitor marginalised bodies through intersectional markers of gender, caste, and religion. Finally, I explore ways in which CSTs can be used in more inclusive ways and provide recommendations for their ethical use.

Much of the work that critically examines the use of CSTs has largely been conceptual or have focussed on single technologies and its impacts on its users. This thesis aims to ask critical questions about the use of CSTs, and in the subsequent chapters provides empirical evidence that examine the social and political impacts of CSTs on a wide range of actors- from people who do the surveillance to people who are subjected to it. Furthermore, this thesis brings the role of social and political structures to the forefront, in the analysis of the impacts of CSTs. In the next chapter, I discuss the theoretical framework through which this research provides these insights.

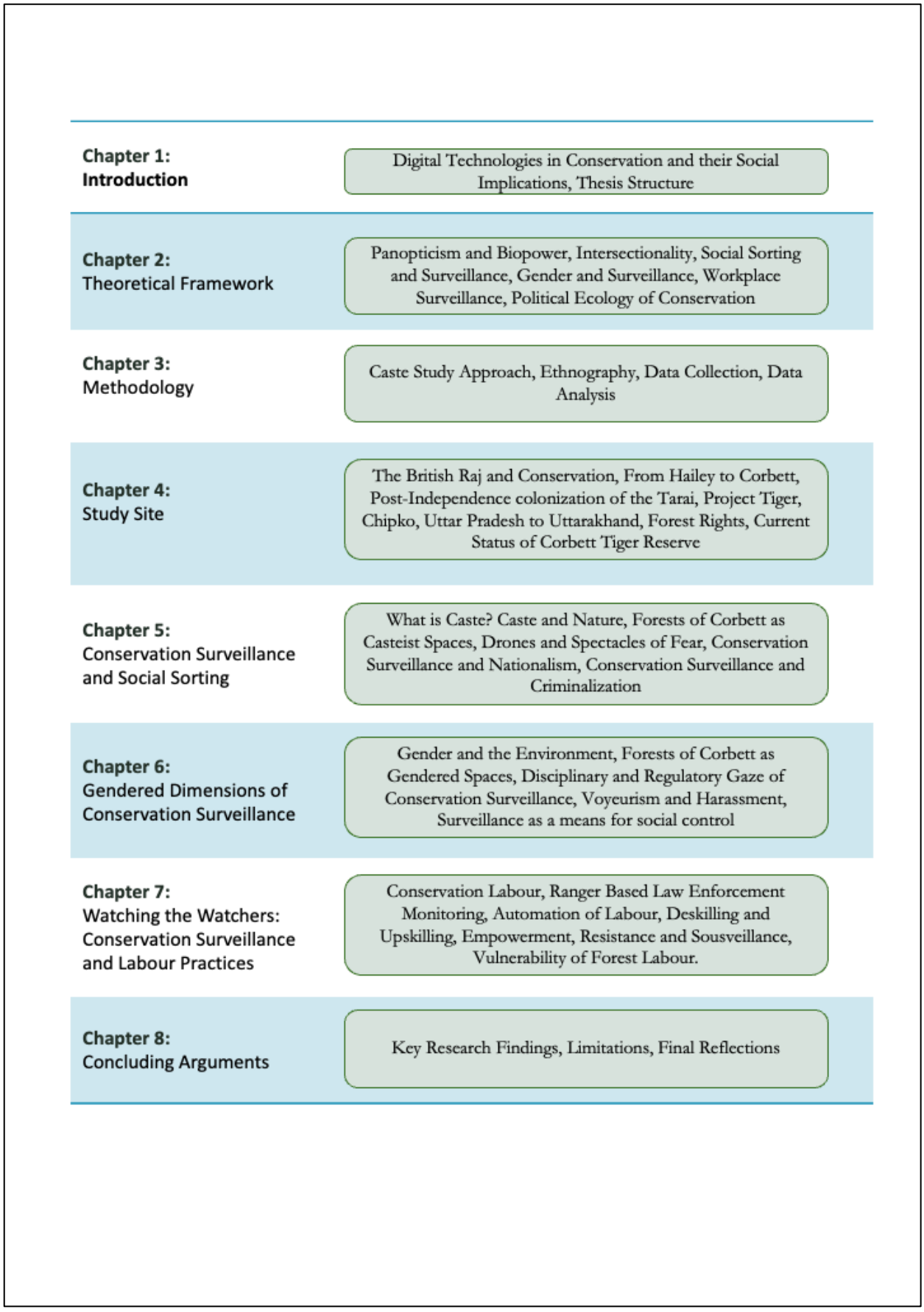

Figure 1: Diagrammatic representation of the thesis structure and chapter wise breakdown of various themes

CHAPTER 2

Theorizing Conservation Surveillance using an Intersectionality approach

2.1. Introduction

As described in the previous chapter, conservation surveillance technologies (CSTs) are being deployed in the practice of conservation. Camera traps, drones, satellite imagery, acoustic sensors, thermal cameras, and ranger-based law enforcement monitoring tools are now regularly used for conservation law enforcement, anti-poaching, and surveillance. However, CSTs also accidentally or unintentionally capture pictures of human activities, which has been referred to as 'human bycatch' (Sandbrook 2018). The normalization of the use of these technologies in conservation seems to overlook issues around the boundaries of privacy and pervasive surveillance (Sandbrook 2015, 2018, Sandbrook et al 2021). In many respects, surveillance is constitutive of modern society, especially in urban spaces in which it has been heavily discussed. However, surveillance has been less well studied or discussed outside urban spaces and particularly not in conservation spaces. Although the topic of surveillance has been of interest to scholars since the 1950s, the events of 9/11 burgeoned and consolidated the discipline of surveillance studies. The focus of surveillance studies has traditionally been on how and why certain populations are policed, governed, tracked, and profiled. It has also focused on the ways in which people who are subjected to such surveillance resist and negotiate these processes. Considering CSTs are increasingly being used for law enforcement (Duffy et al 2019, Adams 2019), it is hence important for surveillance studies as a discipline to incorporate the use of such technologies into its understanding and analyses. Furthermore, conservation as a discipline too can benefit from ideas and concepts within surveillance studies that could provide new perspectives to how CSTs are designed and deployed.

In the last few years, surveillance studies have become increasingly multidisciplinary and post structural in nature. Speaking to this, scholars studying surveillance must critically analyse the ways in which identity-based discrimination can impact the process of surveillance and the way it is experienced. Surveillance studies is gradually encouraging approaches that consider the ways in which the process of surveillance is impacted by intersectional identity markers such as gender, ethnicity, class, and sexuality. This chapter aims to discuss the theoretical foundations and literature upon which the arguments of this thesis are built. I start with introducing scholarship on surveillance studies and theories associated with it. Next, I introduce intersectionality as an approach through which to analyse the surveillance process. Subsequently I introduce literature

and theory on topics of social sorting, gendered dimensions of surveillance and workplace surveillance that provide the theoretical foundations for the subsequent empirical chapters.

2.1.1. Surveillance and Surveillance Studies

The word surveillance is derived from the French verb *surveillir* which literally means 'to watch from above' (Mann & Ferenbok 2013). It is related to the Latin term *vigilare,* that implies something threatening and sinister lurking beyond walls (Marx 2015), and that could be warded off by remaining vigilant. This ancient analogy is reflected in how surveillance is imagined today with the activities of militaries and security agencies. However, in contemporary society the term surveillance has had a much wider meaning in its interpretation. The word surveillance has been closely linked to several related activities such as watching, examining, supervising, inspecting, monitoring, gazing, viewing, and tracking amongst others (Lyon 2006, Marx 2015). Although each of these words may have subtle differences between them, the boundaries between them are increasingly being blurred, as is between conservation monitoring and conservation surveillance. Nonetheless, these words, as philosopher Wittgenstein (1953) suggests, reflect a family of meanings within a broader concept.

The study of surveillance addresses some of the most pressing issues in the contemporary world, often dealing with power, identity, culture, inequality, privacy, ethics, and resistance (Ball et al 2012). Scholars argue that the field of surveillance studies is new, only gaining traction in the last two decades (Lyon 2006). Although people have studied surveillance in the past, it has been done in isolated, disjointed, and unsystematic ways. Contemporary surveillance studies is made up of scholars with disciplinary backgrounds in the humanities and social sciences. The objective of surveillance studies as a discipline is to highlight the nature, impact, and effects of the surveillance process (Ball et al 2012). To observe and analyse the effects of such processes are mired with challenges, as they occur through a series of interlinked institutions, bureaucracies, and social connections, that are embedded in the daily lives of people (ibid).

The consolidation of surveillance studies as a discipline has come about over the past two decades, spurred by rapid parallel developments in governance regimes and the advent of new technologies (Lyon 2006). Scholars argue that the shift in the process of record keeping, from static fixed locations on to digital mediums, was the biggest single driver for the growth of surveillance studies (Dandekar 1990, Lyon 2006). The capacity of surveillance grew in several ways in parallel to burgeoning global corporations and the commodification of personal data by government outsourcing. In the latter part of the twentieth century many social scientists were investigating the

models of modernity and their relevance to social thought in the 20th century. The work of French philosopher Michel Foucault was central in foregrounding the prominence of surveillance during this period, and he remains the preeminent theoretical figure for scholars of surveillance studies. Foucault's (1979) *Discipline and Punish*: *the birth of a prison*, was central to the new debates in understanding surveillance, and has had a profound effect on the development of the field. It is to this scholarship that I now turn.

2.1.2. The Panopticon, Panopticism and Biopower

A key point of entry for understanding surveillance is the notion of the 'panopticon' developed by the English philosopher Jeremy Bentham (Bentham & Božvič 1995) and conceptualized further by Michel Foucault. Bentham's panopticon is an imaginative work of architecture that comprises a central tower surrounded by cells. In the central tower is a watchman, and in the cells are prisoners. Through the tower, the watchman sees all, but people in the cells cannot see the watchman and hence must assume that they are always under observation. The subject being observed is always at a disadvantage and is often oblivious to when s(he) is being watched, causing clear asymmetries in power distribution (Foucault 1977, Ferenbok & Clement 2012). Foucault further conceptualizes the panopticon and its watcher from an external entity to something that is more internalized and omnipresent. The gaze of the watcher is internalized by the inmates of the prison to such an extent that each prisoner becomes his/her own guard, leading to what Foucault calls 'Panopticism' (Foucault 1977).

Scholars argue that there is a difference between Bentham's writings on the panopticon and of Foucault's interpretation of it. Bentham's panoptic writings were published as a series of six letters that focus on and architectural advantages of the panopticon with evocative visual imagery (Bentham & Božvič 1995). Bentham focussed on the role of the "inspector" that occupies the centre of the tower and the efficient monitoring of prison inmates. In *Discipline and Punish*, Foucault (1977) inverts the governmental aspirations of the panopticon, by placing the panoptic subject at the centre of the panopticon. Elmer (2012) argues that this distinction moves the focus away from the architectural design of the building to the prisoners, from "the act of directly watching, to the probability of being watched" (Elmer 2012, pp 23). Foucault's interpretation of the panopticon was a metaphor not to be coupled with just the act of watching, instead it was to be viewed as a process. Calling it a "laboratory of power", Foucault (1977) not only highlighted the experimental nature of the panopticon but also its constant evolution in a search for improvement, or its "gains in efficiency". Most importantly, Foucault argues that the panopticon is a figure of political

technology that emphasizes the process of surveillance. For instance, unlike Bentham, Foucault's interpretation of the panopticon extends the power of surveillance to its own mechanisms by extending supervision upon the supervisors themselves.

"In this central tower, the director may spy on all the employees that he has under his order: doctors, foremen, warders, teachers; he will be able to judge them continuously, alter their behaviour and impose upon them the methods he thinks best; and it will even be possible to observe the director himself, enclosed as he is in the middle of this architectural mechanism"

(Foucault 1977: 204)

Elmer (2012) argues that Foucault's inverted panopticon extended the power of surveillance through an "all seeing all-registering eye", to a permeating form of institutional power, and a landscape that could at any time impart in an individual, the probability of surveillance. Although Foucault emphasizes internalization of power and the self-governing effects of the panopticon, only when combined with his theory on disciplinary power can we comprehend the full potential of panopticism. A closer observation of the differences between Bentham's panopticon, and Foucault's interpretation of it, points towards the fundamental political disparities between the two authors (Weinreich 2021). Literature within surveillance studies tends to focus on what Foucault borrowed from Bentham, while only a few authors point out Foucault's direct rejection of Bentham's liberalism (Gane 2013). Bentham argued that the panopticon induced autonomy for the managers of the prison, wherein they would not need to worry about direct interference from their superiors. Moreover, for Bentham the panopticon also liberated prisoners from coercive forms of violence. Foucault introduces the notion of discipline and unlike Bentham, still recognizes a coercive dynamic at play. Foucault suggests the presence of a "disciplinary society" where power operates through a whole range of applications, instruments, techniques, and procedures (Foucault 1977). These modalities move beyond the architectural prism of the panopticon to produce a more social, economic, and governmental form of subservience through internalization of power, creating docile subjects out of people (Elmer 2012, Galič et al 2017).

Foucault introduces the concept of biopower in his seminal work *History of Sexuality* (Foucault 1976). Biopower reveals the structures and practices by which political subjects are constituted and deployed. According to Foucault, biopower applies directly to bodies and what they do, instead of the land and what it produces. Biopower operates by manifesting itself in a host of disciplinary mechanism and institutions such as security apparatuses, in pedagogy, in medicine and at the level of labour (Ceyhan 2012). Working in tandem with disciplinary forms of power, biopower is

expressed through the regulation and tracking of demographic parameters such as birth rates, death rates, statistics on the economy, poverty rates, literacy rates and various other factors that operate at a population level rather than focussed on an individual living body (ibid). Such "biopolitics of the population" (Foucault 1976), comprising of disciplinary power mechanisms of the body and the regulatory mechanism of the population, constitute new forms of power relations termed as biopower.

Scholars use Foucault's notion of biopower to consider surveillance as a political technology of population management (Ceyhan 2008). In a Foucauldian understanding, surveillance is an apparatus of security working in tandem with an ensemble of other social, economic, and political apparatuses (Ceyhan 2012). Biopower is exercised through these many different apparatuses rather than a single device or technology. Within conservation surveillance, it can be manifested by connecting a physical security phenomenon such as poaching, with a series of reactionary law enforcement measures, that calculate risks, costs and predict event that are expected to occur and set acceptability parameters for a population using CSTs. For instance, forest rangers conducting routine patrolling can be monitored through tracking devices with "algorithmic surveillance" (Norris et al 1998) for optimal coverage of a protected area.

Bentham's panopticon, Foucault's panopticism, and biopower resonate well in relation to the use of CSTs. Users of CSTs are watchers behind the technologies and cannot be seen, while people subjected to conservation surveillance by these technologies have a notion of the all-seeing gaze. As I will demonstrate in my empirical chapters, this gaze often works in tandem with other instruments of governance, such as laws associated with forest use, moulding citizens into behaving in a certain desired way, becoming docile subjects as per the desired norm. However, docility is not a given, it intersects with other socio-economic and socio-political markers of identity and history. These processes shape the ways in which the conservation surveillant gaze is negotiated, by not only the subjects of surveillance, but also by those who deploy them. Such intersectional approaches to surveillance go beyond the traditional analysis of surveillance, wherein the panoptic gaze holds precedence, by disarticulating the subject from other social forms of power. This causes an oversimplification of the surveillance process and does not consider conflictual social relationships or closely knit communities that may react differently to the surveillant mechanism.

2.2. Intersectionality

Intersectionality has been defined as an analytical framework through which a person's social and political identities collide to create differential forms of privilege and discrimination (Crenshaw 1989, 1991). Surveillance studies as a discipline is increasingly starting to consider the role of intersectional identity markers such as gender, ethnicity, socio economic status, sexuality, and ability (Monahan 2009, Dworkin 2006, Henne & Troshynski 2019, Van Oort 2018). However, conservation as a discipline has seen very limited applications (Emel 1998, Yarbrough 2015) of intersectionality to empirical case studies (McCubbin & Patter 2020). Although an inquiry in political ecology examines unequal power equations within environment-society relations, only with the rise of feminist political ecology has it recently embraced intersectionality (Mollet & Faria 2013, Nightingale 2011, Sultana 2021). In this section I give a brief introduction to intersectionality as an analytical tool and its significance.

Emerging from the social activism by women of colour in the United States in the late 1960's-70's, intersectionality was institutionalised as a form of critical inquiry and praxis by Crenshaw (1991). Intersectionality brought attention to the charged dynamics of difference and solidarities of sameness in the context of racial discrimination, heralding black feminist thought into academia (Collins 2020, Mollett & Faria 2018). This shifted focus away from the white, western, heterosexual, middle-class women who were the standard subjects of feminism. Over the past two decades, Intersectionality has exposed how knowledge production and struggles for social justice based on a single axis thinking has undermined these processes. The insistence of intersectionality to investigate how power dynamics influence social relations, across diverse societies has played a major role in facilitating the consideration of race, class, gender, ethnicity, age, sexuality, and other axes of power in a wide range of academic disciplines. Intersectionality as an analytical tool views categories of these axes as interrelated and mutually shaping and influencing one another.

The emergence of intersectionality in several discursive spaces has led to the convergence of what now is a fast-growing academic field of intersectional studies. However, intersectionality is not a new phenomenon, nor is it only limited to nations in the global north. Scholars and social reformers in the global south have used intersectionality as praxis and as an analytical tool often without naming it as such (Pan 2021). For instance, Savitribai Phule, a Dalit social reformist in nineteenth century colonial India, used an intersectional lens to confront patriarchy, and the subjugation of women across social divisions of caste and religion (ibid).

It is well established that modern day surveillance tends to comprise a male dominated surveillant gaze reproducing patriarchy through its control over the bodies of women (Monahan 2009). Accompanied by colonial and racist perspectives, a male dominated surveillant gaze shapes the way data is produced through surveillance. Using an intersectional analysis to examine surveillance processes makes visible certain blind spots, that shift the focus from the impacts of individual surveillance technologies to the power relations that underpin surveillance regimes. The empirical chapters of this thesis aim to demonstrate these phenomena, by highlighting interrelated and mutually shaping intersectional axes that reinforce the impacts of CSTs. I focus particularly on three topics that emerged as critical in my work, namely surveillance by social sorting, gendered dimensions of surveillance and workplace surveillance. In the next section, I introduce these topics by engaging with the relevant literature within surveillance studies on these topics and describe their fundamental concepts.

2.3. Surveillance and Social Sorting

For many years, surveillance studies was a discipline of research that primarily revolved around the language of privacy and freedom. While these issues are still significant topics of research, it has become increasingly evident to scholars that surveillance goes beyond just prying eyes and snooping cameras. Lyon (2003) argues that in contemporary society, surveillance sorts people into categories that are assigned risks and worth, having real consequences in the way they live their lives. Surveillance is now a form of social sorting wherein it has become a powerful tool that creates and exacerbates social differences in society (ibid).

The practice of surveillance is an omnipresent phenomenon in modern societies; however, surveillance as social sorting categorizes a select population as non-conforming or deviant. These populations are then placed under enhanced surveillance, driven by a particular set of markers that are deemed undesirable and unwanted in a given space. Surveillance has often been presented as an effective way to reduce crime due to its ability to control and discipline bodies (Gilliom 2001, Foucault 1977). Although this assertion has not been adequately established with evidence (Skinns 1998), it continues to be regularly used in discourses of law enforcement and security. McCahill (2002) argues that surveillance is thus more than a tool to fight crime, it is a means by which spaces are sanitised of perceived troublemakers or deviant others.

Mobility within public communities is a differentially distributed global commodity. Surveillance systems control this publicly prized phenomenon by deciding who can move freely and who's mobility is restricted (Bigo & Guild 2005). It has been argued that the primary social impacts of surveillance are establishing and reinforcing social borders (Coleman & McCahill 2011). These borders are manifested in the form of racial and ethnic categories of people, wherein surveillance practices particularly target people that belong to marginalised and often disadvantaged communities. For instance, research has shown that surveillance practices in the USA and UK disproportionately target young black men (Norris & Armstrong 2020, Goold 2004).

Patel (2012) argues that such surveillance practices are used to satisfy a social ordering agenda that is politicized in specific ways across time and space. States often make linkages between prevention of terrorism and prevention of illegal immigration, that are framed by cultural or racial borders. For instance, Spanish speaking people of central American or south American origin are often constructed as illegal immigrants and subjected to heightened levels of employer and border surveillance. Similarly, people of Middle Eastern and South Asian origin are often constructed as potential terrorists and subjected to enhanced surveillance in their day-to-day activities. It is argued that such surveillance racializes these groups, reducing their mobility, access to public spaces and to employment opportunities (Wright-Neville & Halafoff 2010).

Existing research on surveillance by Closed circuit television cameras (CCTV) has shown that a particular set of markers are used to identify groups of bodies that are deemed undesirable (Smith 2004). These bodies are identified by simple and easy to understand markers such skin tones, dress, or occupation to aid those undertaking surveillance. (Patel 2012). Surveillance in this sense becomes much more than crime control, and functions as a social sorting tool that produces categories of people that may be sorted and given differential treatments (Lyon 2006).

Social sorting through surveillance results in stigmatisation that can have long term repercussions for certain communities. In white dominated societies of the west such as the UK, black and minority ethnic groups are often seen as a threat. In India, it is the Muslims and Bahujan communities that are often treated as undesirable and as threats. Over the years, the continuous representation of these communities as threat symbols have triggered a range of panics in society bringing further victimisation of these groups (Patel & Tyrer 2011). Cohen's (2002) work on 'moral panics' states that panic is triggered in society by the construction of suitable enemies that are presented as a threat, and harmful to society. Cohen (2002) further argues that such panics emerge

out of a sense of fear which lead to actions that legitimizes surveillance and policing against such imagined enemies. Scholars argue that such surveillance consolidates and expands the power of the state by rendering certain populations that resist hyper-visible and vulnerable to state interventions (Graham and Wood 2003, Lyon 2003, Lyon 2006). In chapter 5 of this thesis, I engage with topics highlighted in this section, and demonstrate how caste and religion become structures through which conservation surveillance sorts populations and makes certain bodies more vulnerable than others.

Regimes of surveillance and the 'surveillant assemblage' (Deleuze & Guattari 1987, Haggerty & Ericson 2000) are constantly evolving and spreading. Khoury (2009) has argued that modern day surveillance technologies enable ethnic discrimination, while research from India has shown that social sorting through surveillance is driven by an entrenched caste system and prejudice against marginalised communities including religious minorities (Bokil et al 2021, Prabhakar 2020, Parikh & Miller 2019). In the next section, I engage with feminist surveillance studies to describe another dimension of social difference which is also subject to sorting by surveillance- that of gender.

2.4. Gender and Surveillance

The practice of surveillance is constituted of multiple power relationships including aspects of gender. Literature on the gendered dimensions of surveillance has a long history, even if often not explicitly labelled as such. Social and moral customs have propagated gendered surveillance long before the advent of contemporary surveillance technologies (Koskela 2012). Within the broader disciplines of gender and cultural studies, topics such as "ways of seeing" *(Berger, 1972)*, "practices of looking" *(*Betterton 1987*),* "the male and female gaze" *(*Mulvey 1975, Gamman & Marshment 1989*),* "ways of appearing" *(*Conor 2004*)* and other gendered surveillance practices have been established topics of discussion. The work of Michel Foucault (1977) on disciplinary power and social control has been profoundly influential in surveillance studies, as discussed above. However, Foucault's work has been largely gender-neutral and has been critiqued for failing to address or perhaps even recognise the importance of gender in the practice of power *(*King 2004, Diamond and Quinby 1988, McNay 1992*)*. Bartky (1988) argues that although Foucault acknowledges how women like men are subject to the same disciplinary practices, he is blind to how those practices produce different modalities of docile bodies of women that are more docile than the bodies of men. Speaking to this, Rosalind Gill (2019) has argued that surveillance studies has remained largely male dominated focussing on men both as objects and actors. Gill argues that surveillance is in

fact a feminist issue. By highlighting emerging work in feminist surveillance studies, Gill moves beyond top-down theorizations of surveillance and explores the links between neoliberalism and new digital technologies that are producing novel, powerful and regulatory gendered 'gazes.

In the next three subsections, I examine some of the important concepts within feminist surveillance studies, that are of relevance to arguments presented in this thesis.

2.4.1. Embodied impacts of surveillance

The field of vision is extremely gendered (Nast and Kobayashi 1996) and even the seemingly harmless practices of seeing and being seen are gendered (Rose, 1993, Gardner, 1995). Monahan's (2009) foundational work explores how surveillance technologies have gendered outcomes. By exploring the gender dimensions of surveillance systems in public domains like healthcare, social welfare and transportation, Monahan has argued that such systems "artificially abstract bodies, identities, and interactions from social contexts in ways that both obscure and aggravate gender and other social inequalities" (Monahan 2009, 287). Dubrofsky and Magnet (2015) make an important intervention to address this in mainstream surveillance studies. By drawing from critical race studies, gender studies and queer theory they set out the commitment of feminist surveillance studies to projects that are intersectional and interventionist in their orientation (Gill 2015). This work examines top-down surveillance and the ways in which it intersects with gendered, classist, racist and colonial systems of exclusion. For example, studies have shown how surveillance of sex workers and their clients (Wright et al 2015, Khan 2015), airport scanners (Hall 2015), reproductive technologies (Dasgupta and Dasgupta 2015, Roberts 2015) and even birth certificates (Moore and Currah 2015) authorize some bodies, while criminalising and marginalising others through ostensibly neutral technologies.

Bodies of women have been violently dismembered and reconstituted using new visual technologies. They have been subjected to institutional scrutiny, regulation, and surveillance. For example, research on beauty practices and body image reveals how appearances of women are subject to intense discipline and regulation even when beauty practices are seemingly freely chosen (Bartky 1990, Gill 2017). Furthermore, visualization technologies have been used for heightened surveillance and gendered policing by state institutions especially in the area of social welfare. For instance, it has been noted how electronic benefit transfer systems in the U.S had consequences on the individual budgeting strategies and choices of poor often racialized women (Monahan 2010). Similarly in India, social security schemes such as the 'Aadhaar' monitor

women's pregnancies and abortion details, leading to a risk of social ostracization in case of a privacy breach. This digital trail of choices made over one's body is created under the vision of the state, which in turn hampers the autonomy of women over decisions related to their own bodies (Chadrashekhar 2018).

2.4.2. Video surveillance and Voyeurism

Research done on video surveillance has provided the basic framework for addressing gender issues in surveillance practice. Surveillance by video has been broadly interpreted as part of "male policing" (Brown, 1998). Such research has pointed out the voyeuristic uses of video surveillance where men sitting comfortable in control rooms have the power to monitor unsuspecting women and others from a distance. Studies have shown that voyeurism is one of the primary motivations for surveillance operators to watch women (Norris and Armstrong 1997). Koskela (2000) calls such voyeuristic practices through video surveillance as the masculinization of space, where women are subjected to increased scrutiny without necessarily receiving any protection from sexual assault or harassment. Hillier (1996) describes a 'scandal' in the city of Perth, Australia, where some male operators monitoring cameras located in women's toilets and changing rooms had zoomed in on images of women's exposed body parts and circulated such images in local house parties. Local newspapers reported the incident under a headline "rape by camera" causing major public outrage and widespread debate on the use of surveillance technologies (Hillier 1996). Similarly, newspapers in Sweden had reported how Swedish military conscripts were entertaining themselves by monitoring topless women on the beach near their military base, with high-resolution cameras meant for military purposes (Helsingin Sanomat 1997). The incident triggered massive public outrage and was investigated as a crime. The two incidents described reveal a clearly gendered setting where 'men' are watching 'women', confirming the possibilities in which surveillance becomes gendered and a tool for harassment. By playing an active role in harassment, surveillance reproduces the sexualisation of women and further contributes to the masculinization and militarization of space (Koskela 2000).

2.4.3. Cultural Context, Gender and Surveillance

Murray (2018) argues that surveillance results in women conforming to gendered expectations and are acutely aware of the consequences of not doing so. Murray's analysis reveals that surveillance exacerbates structural violence against women by determining their every move even when they manage to stay safe from direct physical violence. Such surveillance practices are closely connected

to stalking and can have extremely serious consequences that perpetrate violence against women. In their landmark paper on surveillance and violence against women, Mason & Magnet 2015 have demonstrated how surveillance technologies reflect the cultural context in which they are deployed. These contexts are often rife with entrenched gender inequalities and violence against women. Yet, the implications of surveillance technologies on physical and structural violence against women are understudied within the discipline of surveillance studies, barring a few notable exceptions (Eubanks 2006, Southworth et al 2005).

Surveillance technologies leading to voyeurism and violence against women may be the clearest point for feminist critique. However, a cause for greater concern is surveillance that leads to control over bodies through abstract representations that result in social contexts being indiscernible (Monahan 2009). For instance, Egan (2004) found how surveillance cameras were used to enforce control over women working in strip clubs by their male managers, making certain that they do not take unreported tips by performing sexual acts. Such forms of surveillance and disembodied control are embedded in all spheres of public life, facilitating state control and normalizing inequalities. When society and social contexts are already marked by patriarchal power structures, surveillance technologies tend to exacerbate those tensions and structures. In chapter 6, I highlight the gendered dimensions of conservation surveillance by engaging with concepts described in this section. I argue that CSTs contribute to establishing control over the bodies of women and become tools for voyeurism and sexual harassment.

2.5. Workplace Surveillance and Control

Pervasive surveillance of workers by their employers has been a central characteristic of workplace power dynamics. Such ubiquitous employer surveillance has a long and rich history that can be traced through many significant eras in human history such as slavery, warfare, colonialism, and globalization (Ball 2010, Ajunwa et al 2017). Trends in worker monitoring processes, fragmentation of their tasks and a division of mental and manual tasks were first brought to notice by Karl Marx and his contemporaries Babbage, Owen and Ure (Schaffer 1994). The regimentation of work, the creation of factories and assembly lines for increasing profit and reducing labour unpredictability was expressed by Marx as the subordination of labour to capital (Marx 1976). In the studies of labour processes this phenomenon is known as the deskilling and disciplining of labour and remains central to the discussion on workplace surveillance (Zureik 2005).

Early processes of workplace surveillance and control are also traced to Taylorism- a practice developed by Frederick Taylor who introduced scientific methods to assign tasks to workers they performed best, and established modes of control to eliminate the practice of 'lazing' by workers. In his book The Principles of Scientific Management, Taylor (1911) argues that the management should control the knowledge of the labour process that is traditionally controlled by the labour, giving management better control to determine the quantity and quality of labour. Taylor also argues that the conception of work should be limited to the management, and the execution of it to the labour. This separation of conception from execution results in increased worker efficiency. Most importantly for Taylor, managers cannot rely on the workers' initiative to efficiently complete tasks, and hence it is important to withdraw the control of the labour process from the hands of the labour power.

Current discussions on workplace surveillance can be traced to the publication of Braverman's seminal work- *Labour and Capital: The Degradation of Work in the Twentieth Century* (1974). Using the concepts developed in Karl Marx's foundational theoretical text- Capital (Marx 1867), Braverman argued that the deskilling of the labour process in a capitalist economy was a systematic effort to efficiently control and co-ordinate the labour force to maximize profit. Through his book, Braverman provides a scathing critique of Taylorism. He refers to scientific management of Taylor as not a "true science because it reflects nothing more than the outlook of the capitalist with regard to the conditions of production". He goes on to state that scientific management "enters the workplace not as the representative of science, but as the representative of management masquerading in the trappings of science". One of Braverman's central arguments is that workers have an interest in conserving energy while the capitalist has an interest in expending it and hence there is a fundamental antagonism between capitalism and workers. This assumption by Braverman has been criticised by Burawoy (1978) as an objectivist analysis through the Marxist lens that does not consider the agency of the worker in the capitalist process and resistance by workers to surveillance and control. Nevertheless, Braverman's work remains a benchmark in the discussion on disciplining labour and on initiating serious attention to the topic of workplace surveillance for the first time (Zureik 2002).

Through his book *Contested Terrain*, Edwards (1979) acknowledges the subjective elements of work and the role of worker agency in resisting systems of control. Through his work, Edwards demonstrated a transition from Tayloristic methods of bureaucratic control to an expanded form of control that used computerized monitoring. Now, numerically controlled machines and

playback tapes allowed for a more efficient control over the bodies of workers, the rate at which they work, and their levels of productivity as opposed to the case with direct visual monitoring and the division of labour. Edwards argued that employers obtained desired behaviour from their labour by using three kinds of control mechanisms- direction, evaluation, and discipline. Direction involves the specifics of the tasks that need to be achieved, for example in the order it is executed, how accurate it is and in what time period it is completed. Evaluation involves a review process in which managers can assess the performance of workers and identify non-efficient workers. Finally, discipline involves the penalization of non-performing workers and rewards for efficient performers, so that workers comply with the employer's direction of the labour process. Edward's work emphasized how workers, to maintain some autonomy over the labour process, used resistance tactics as a response to stricter employer control. Chapter 7 of this thesis directly engages with Edward's perspective, to demonstrate how forest managers, supported by conservation researchers, use digital technologies to maximise the value of conservation labour.

Many modern sociologists interpret the power dynamics of surveillance and control in the workplace through the Foucauldian lens of panopticism. Referring to case studies that combine the work of Braverman with Foucault (Webster & Robins 1993), Sewell (1998) provides the most serious and innovative attempt to develop the panopticism perspective of surveillance within the labour process tradition. Sewell argues that new forms of horizontal monitoring are now replacing the top-down vertical surveillance associated with Taylorism. This horizontal form of surveillance comprises of computerised monitoring by work teams who evaluate their own performance on a peer basis and is premised on enhancing worker autonomy and empowerment (Li 2021, Cirillo et al 2021, Ball 2005, Sewell 1998, 1999). Sewell uses Foucault's notion of 'biopower' (Foucault 1977) to demonstrate how two forms of control manifest in a "chimerical" fashion to shape worker subjectivity and render the worker compliant, docile, and useful. As I will describe in Chapter 7, the use of patrolling software to monitor conservation labour is often similarly premised on empowerment and autonomy of forest rangers.

Critics of using Foucauldian discourses in workplace surveillance and control argue that it is class relations that govern the labour process in the capitalist marketplace. Furthermore, the constant restructuring of economies, specific state policies and globalisation have direct consequences on the workplace and on the future of work (Thompson & Van den Broek 2010). It is argued that Foucauldian discourses often ignore quotidian encounters between workers and management resulting in both employee consent and resistance (Thompson 2003). Workplace subjectivity

studies often neglect the surrounding political and economic environment by focussing their investigation just on the 'shop floor' (Zureik 2002). While this makes visible the politics of worker-management relations it does not consider the political economy of the labour process (ibid).

Resistance to surveillance is an understudied aspect in workplace surveillance studies (Sanchez 2009, Martin et al 2009). Although the notion of resistance to surveillance broadly encompasses multiple dimensions (Marx 2003, Fernback 2013), the most popular lens to view resistance to surveillance has been the concept of 'sousveillance' or 'watching from below'. Popularized by Steve Mann (2004) sousveillance can be defined as a form of inverse surveillance through which the surveilled monitor the surveillors to challenge the surveillance state. Wearable computing devices, cameras, smartphones, and personal broadcasting tools allow the wearer to observe, record and distribute events (Fernback 2013). For example, studies have shown how some workers have used smartphones to record abusive behaviour by their employers during performance evaluations (Koeppel, 2011). Furthermore, Koskela (2004) argues that resistance through sousveillance can be empowering and subvert Foucauldian panopticism. It can be argued then that use of the word 'surveillance' in the workplace may obscure some of the power differentials and practices that are being enabled by sousveillance. In chapter 7, and using empirical examples, I will show how conservation labourers resist being mere victims of panoptic surveillance, instead they use sousveillance to challenge concentrated power in the hands of the surveillors.

The literature on workplace surveillance largely demonstrates that organisations watch their labour primarily to protect their assets, and this surveillance has consequences on the wellbeing of labourers, affecting their work culture (Ball 2010). The deployment of new surveillance technologies in the workplace has different outcomes that are driven by power relations (Zureik 2002) and the effects of such surveillance are not homogenous (Yar, 2003). The introduction of broader debates around rights, power and social structures highlight how workplace surveillance may be contributing to perpetuating existing social and economic inequalities or creating new ones (Ball 2010). The proliferation of new technologies and the global capitalist drive towards increasing productivity and competition is giving rise to new kinds of workplace surveillance. In current times this is emerging as one of the most contentious issues being faced by workers, unions, legal experts, and employers (Zuboff 2019). Chapter 7 of this thesis engages directly with concepts and themes described in this section.

2.6. The Political Ecology of Conservation Surveillance

Primarily this thesis draws from the above-mentioned framework of intersectional surveillance studies. However, to complement this approach I also draw on literature and concepts in the political ecology of conservation. The idea that environmental problems and strategies to resolve them can only be understood in conjunction with the social, economic, and political dimensions that underpin them is central to political ecology (Robbins 2004; Adams 2009; Bryant and Bailey 1997). This indicates that to provide a comprehensive explanation of conservation interventions such as the deployment of CSTs, it is imperative to consider and study the various political, social, and economic factors that either drive or impede them.

Political ecology's central principle of a "politicized environment" emerged as a response to the "apolitical environment" as practiced by human ecology in the later years of the 1960's (Vayda & Walters 1999). Human actors were treated as static and homogenous through the study of human ecology, while political ecology recognized the heterogeneity and complexity of people's relationships with the environment (Robbins 2004). Three key assumptions form the basis of a political ecology inquiry. First, in a heterogeneous society the costs and benefits of environmental change are distributed unequally among different actors (Bryant & Bailey 1997). Second, existing social and economic inequalities are either reinforced or weakened by the inequitable distribution of costs and benefits. This assumption emphasizes that the political and economic status quo is affected by "any" change in environmental conditions (Bryant & Bailey 1997). Finally, the unequal distributions affect the power equations between different actors. This implies that while a change in the environment could create wealth for some, it could invariably lead to deprivation in others. These unequal distributions are fundamental in elucidating the interactions between society and the environment (Bryan & Bailey 1997; Robbins 2004; Adams 2009). These points are however mostly focussed on earlier structural thinking in political ecology. More recently political ecology has seen a discursive turn with the emergence of post structuralist political ecology, wherein the focus is on discourses and practices of knowledge production and its politics (Escobar 1996, Fletcher 2010)

The political study of conservation strategies has been a major theme of political ecology research. Borrowed from the work of Foucault (1982: 790) the term "governmentality" is defined by a condition where social technologies and social institutions are used to obtain consent from the governed and self-impose rules. These institutions and technologies not only impose rules on people but also decide what is socially desirable and what ecological outcomes are considered

appropriate (Bryant 2002, Robbins 2004). Many studies grounded in the political ecology of conservation have adapted the governmentality framework, through which governance is exercised over populations living within conservation spaces in various ways (Agrawal 2005, West 2006, Murray Li 2007, Fletcher 2010). For instance, Agrawal (2005) uses the term environmentality originally coined by political scientist Timothy Luke (1999), to examines the ways in which interconnected aspects of knowledge production and politics together transformed the perceptions and subjectivities of people's practices in the forests of Kumaon Himalayas.

Fletcher (2010) builds on the work of Agrawal to propose multiple forms of environmentalities through different socio-economic and socio-political mechanisms. Fletcher (2010) argues multiple environmentalities are produced through mechanisms of neoliberalism, disciplinary power, and sovereignty. Neoliberalism generates incentives through which desired behaviours from a population are achieved as benefits derived, align with their self-interests. Certain disciplinary mechanisms lead people to internalize norms and conform to them due to a fear of punishment. Finally, mechanisms of sovereignty are established through direct threats of punishment. These interconnected mechanisms govern the ways in which people's subjectivities are manifested.

This thesis engages with some of these themes within political ecology and combines them with intersectional surveillance studies. I draw attention to the ways in which CSTs as tools of the government, influence the practices and cultures of populations living alongside the CTR. Foucauldian governmentality frameworks assume that such tools of the government inherently result in docile subjects, however my research shows that such docility is not a given, and depends on local socio-political processes and on intersectional markers of caste, gender, and class. Drawing from concepts in political ecology, allows me to provide a historical and empirical account of who holds power, and reveal tensions existing between different groups in the CTR.

2.7. Conclusion

In this chapter, I have introduced the theoretical framework through which I will examine the social and political dimensions of CSTs in the Corbett Tiger Reserve. Building on the bodies of theory and literature reviewed in the sections above, my research attempts to make original contributions in the field of surveillance studies and the political ecology of conservation surveillance. The impacts of surveillance technologies have largely been examined in urban spaces, however there is very limited literature on their impacts in rural areas and even less so from conservation spaces.

I extend Bentham's panoptic gaze and Foucault's panopticism to CSTs. However, I argue that docility arising out of disciplinary power is not a given and is driven by several context dependant social and political processes. I contribute to the studies on surveillance and social sorting by demonstrating the impacts of CSTs on caste and communal structures from a conservation space. Other than Prabhakar's (2020) thesis on surveillance through biometrics there is no work that analyses the impacts of surveillance technologies on caste and communal structures in India. This makes my contributions very timely given the rise of Hindu fundamentalism and the increase in rise of violence against marginalised groups.

I also contribute to the literature on gender and surveillance by examining the gendered dimensions of the impacts of CSTs. Although there has been a proliferation of studies on gender and surveillance, and even the rise of a sub discipline called feminist surveillance studies (Dubrofsky 2015), there is little empirical work on the impacts of surveillance technologies from rural spaces and on marginalised women. Furthermore, studies within conservation that implicitly examine interventions from a gendered lens are rare. Using an intersectional approach, my research reveals how interrelated and mutually shaping axes of caste and gender drive the social impacts of CSTs.

Finally, I contribute to the field of labour studies and that of workplace surveillance, by examining the role of a digital ranger-based law enforcement monitoring tool on forest labour. Unlike classic workplace surveillance sites such as factories, shop, and call centres, I examine labour process theory, Taylorism, resistance and sousveillance in the 'forest', pushing the boundaries of these disciplines and revealing intersectional structures within forest labour in India.

In the next chapter, I provide a comprehensive account of my methods, giving details of why I chose a single case study and the use of ethnography as the main methodological approach. I will also detail how I gained access, built trust, and reflect on my many privileges and positionality that helped me to gather the empirical data which forms the foundation of this thesis.

CHAPTER 3

Methodology

To answer the research questions addressed by this thesis, it is important to understand how surveillance is experienced and understood by a range of actors. It is also important to situate these lived experiences in the larger geographical context and within the power laden socio-political processes entrenched within a space. Anthropologists, sociologists, and geographers have relied on in depth ethnography as a medium of enquiry to understand and unravel such complex processes. Comprising mixed qualitative methods, ethnographic enquiries have provided an in-depth perspective into a range of conservation issues (Paige 2006, Murray Li 2007, Greiner 2012, Kiik 2018). I deployed such ethnographic methods to focus on a specific case study, that of the Corbett Tiger Reserve (CTR)[1] and its adjoining areas. This chapter describes my methodology in detail. I begin by justifying the use of the case study approach and of ethnographic methods. I then provide details of how my fieldwork was organised and how I navigated the corridors of power in gaining access and permissions to work in and around the CTR. I discuss how consent was acquired, the ethical safeguards I followed, and the steps taken to maintain the anonymity of my respondents. Finally, I provide details of the specific ethnographic methods I used and the process of data analysis and dissemination. Throughout the chapter I will highlight the role played by the various layers of my identity, positionality, and privilege in shaping the research and data collection process.

3.1. The Case Study Approach

Research conducted using a case study approach has steadily grown in reputation as an effective method to understand and explore complex socio-political issues in real world settings (Harrison et al 2017). According to Flyvbjerg (2011) the case study approach as a research strategy "has been around as long as recorded history" (p.302). Until recently, a case study approach was thought to be useful only in the preliminary stages of an investigation, to arrive at a hypothesis by conducting a detailed examination of a single example, that may then be tested systematically with a larger number of cases (Abercrombie et al 1994). However, it has been argued that such conventional wisdom on case study research is misleading and oversimplified (Flyvbjerg 2006). A host of intensive and in-depth case study research has demonstrated that preconceived hypotheses,

[1] See chapter 4 on study site for a detailed account

concepts, and assumptions were often inaccurate, and the 'case' compelled researchers to revise their questions on essential points (Wieviorka 1992, Ragin 1992, Campbell 1975, Geertz 1995, Ragin 1992, Flyvbjerg 2001). This also holds true in the development of this PhD, wherein I had not expected to analyse the social implications of conservation surveillance through the lens of caste, gender, and labour until my in-depth case study revealed the role of such social structures. In this respect, Ragin (1992) has argued that even single case studies are multiple in nature as ideas and evidence may be linked in many ways as shown in the empirical chapters of this thesis.

The focus of a case study approach is to conduct a detailed inquiry of a unit of analysis as a relatively bounded system (the case) (Flyvbjerg 2011). The versatility of case study research is demonstrated by its ability to adapt and address a wide range of questions that explore the why, what, and how of an issue and help researchers explain and theorize complex issues (Stake 2006, Yin 2014). Furthermore, case studies often contain a considerable narrative element that approach the intricacies and paradoxes of real life, which may be difficult or even impossible to summarize into statistical equations or models (White 1990, Mitchell & Charmaz 1996). Critics of a case study approach have often seen this as a drawback, however a particularly hard to summarize narrative is often the sign of a study that has uncovered a multitude of complex layers and problems (Flybjerg 2001).

Critics also argue that case studies do not allow for a comparison with a counterfactual or a control site (Mahoney & Barrenechea 2017). However, scholars have argued that when the goal of research is to collect a significant amount of information on a given problem, a random sample or a collection of samples may not be the most suitable strategy (Flyvbjerg 2001, Merriam 2009). Instead, a single case or a sample that has been studied intensively reveals more information as they make visible often hidden actors, social structures, and processes. Furthermore, they reveal deeper causes and its consequences as opposed to a mere description of the symptoms of a problem and how frequently they occur. For instance, preliminary reading and opportunistic pilot interviews I conducted during the initial stages of the PhD led me to identify general themes of inquiry such as infringement to privacy and fear as social impacts of conservation surveillance. However, my in-depth research of the case and its context revealed underlying social and political processes that helped me situate those themes in a more robust manner. A research strategy that employs taking random samples for representativeness will rarely achieve such levels of insight. With this justification I employed a case study approach to uncover the social and political impacts

of conservation surveillance. I based my case study in the Corbett Tiger Reserve in the north Indian state of Uttarakhand, of which a detailed account is provided in the next chapter.

3.2. Doing Ethnography

I chose to conduct an ethnographic inquiry in a single case study site to uncover complex issues arising out of the use of CSTs. Like other methodologies, ethnography too possesses different variants and hence has been difficult to define (Hammersley & Atkinson 1983). In an ethnography, there are no distinct stages of hypothesis building, theorising, data gathering and hypothesis testing. Instead, the research progresses through constant interaction between the problem or subject of inquiry, collection of data and the analysis of data. The process of data analysis feeds into research design, informing data collection and the emergent theory. Subsequently this emergent theory strategically guides subsequent data collection and the methods used for its collection. Ethnography also involves a range of methods for data collection that enables genuine social interaction in the field by direct observations of relevant events and social processes, formal and informal interviewing and even the collection of documents and artifacts. Ethnography enables a researcher to spend considerable time observing and interacting with multiple social groups. These interactions enable the ethnographer to make sense of what groups take for granted and understand how groups develop a web of relations and the cultural structures that keep the web together. Close observation of a group's activities over extended periods provides ethnographers an irreplaceable insight into a group's daily activities, and within the context of the social and political processes they are embedded in (Herbert 2000).

Researchers who conduct ethnographic enquiries participate in the activities of social groups in varying degrees. For instance, some researchers adopt the social role they are studying, as Buroway (1971) did as a factory worker or as Rubinstein (1973) did as a police officer. This allows the researcher to immerse themselves in the worldviews and practices of those they study. Some researchers however strive for a more indifferent relationship, although some interaction is inevitable (Hammersley & Atkinson 1983). Most ethnographic research takes place at the margins of these two approaches where a researcher shuttles between the roles of an insider and an outsider (Lofland 1976). Scholars have argued that an ethnographic enquiry, unlike other approaches, enables the researcher to explore and understand the complex connections social groups establish with one another and with the spaces they inhabit.

Ethnographic enquiry is also used to improve upon existing theory. At first a notion is developed of what existing theory suggests, and what might develop in the case that is to be studied. Observations in the field are then evaluated to determine whether emerging narratives corroborate or contradict what theory predicts. To improve the scope of theory, it is imperative to enter the field mindful if what theory would predict and consequently evaluate observations. For example, surveillance theory and panopticism (Foucault 1977) suggests that governance through surveillance creates docile and self-disciplined subjects (Lyon 2006). However, the methodological approach I used in the field revealed complex social structures related to caste and gender, that determined which bodies remained docile and what caused them to do so.

An ethnographic investigation enables the analyses of social and political processes at macro and micro scales and at their junctures. Geographers have consistently demonstrated how spatial analysis draws attention to these intersections, and that spatial contexts shape the ways in which they occur. Such research is a matter of significance for geographers who are interested in how landscapes are construed and lived. If the intersections of the macro and micro merit investigation, taking an ethnographic approach is indisputable. Ethnographic analysis reveals the complex and contextual nature of a myriad of social and political processes that quantitative methods like surveys are simply unable to do. Hence, it has been argued that research in geography that seeks to understand how socio-political structures and human actors interact in everyday spatial contexts must embrace rigorous ethnographic approaches (Herbert 2000). Using ethnographic methods was thus appropriate for my research, as the impacts of CST's were intertwined with socio-political structures and entrenched spatial contexts.

3.3. Official Permits

Conducting research in India as an Indian national did not require me to follow any strict visa protocol or to apply for any research permits. This process is significantly different for non-Indian nationals, especially from overseas academic institutions. The advantages arising through these circumstances saved me a lot of time which I could redirect towards fieldwork. However, when it comes to doing research on conservation that entails interviewing Forest Department staff and entering the boundaries of a protected area, permissions are required thorough relevant authorities within the Ministry of Environment Forests and Climate Change (MOEFCC). At first and during the initial stages of my fieldwork I did not have plans to conduct interviews and participant observations with frontline forest staff or with residents inside the boundaries of the CTR. This

was mainly due to the requirement of a long often ardent process of permits that are issued by the Chief Wildlife Warden of the state of Uttarakhand. However, while interviewing the Chief Wildlife Warden, I was encouraged to expand my respondent groups or interview sample to include frontline staff of the CTR. After receiving my formal permission application, the officer expedited the process and granted me a research permit that gave me legal access to spend time interviewing and observing frontline forest staff within the boundaries of the CTR and residents who lived or collected forest resources within the CTR. This did challenge my presumptions of the forest bureaucracy, which is largely seen as a rigid and guarded structure when it comes to critical research on conservation. Although, this may be more of an anomaly rather than a norm and not least guided by the fact that the officer held a PhD with interests in political ecology. Nonetheless, this aspect of acquiring permissions was decisive and played a central role in generating the rich ethnographic material that has been analysed and presented in this thesis.

3.4. Ethnographic Data Collection Methods

A combination of interviews, participant observations, focus group discussions and document analysis conducted over a prolonged period are the primary data collection tools in ethnographic inquiries (Adler & Adler 2008). These methods have been used in various kinds of conservation scholarships (West 2006, Nygren 2004, Moreto et al 2017, Massé 2019) and within surveillance studies (Webb & Palmer 1998, Green & Zurawski 2015). My research was conducted over a prolonged period of 14 months that facilitated an intense immersion within the social and political settings of the CTR. However, a few days were also spent away from the CTR to conduct interviews within government offices and affiliated institutions based in the national capital- Delhi, and the state capital- Dehradun. My main data collection methods were a combination of 'active' and semi structured interviews, participant observations and focus groups discussions. In total my research was informed by 270 interview respondents, over 90 hours of participant observations and 16 focus group discussions. In this section, I will describe my methods in detail and provide justifications for their use. I start by describing how I gained access and built trust with my interviewees and research participants.

3.4.1. Trust Building and Access to Interviewees

It has been established that trust is essential for researchers conducting ethnographic inquiries with groups that are vulnerable or hard to reach (Emmel et al 2007). Scholars have considered the importance of empathy, credibility and building a rapport to generate trustful relations between

researchers and their participants (Elliott et al 2002, Kuebler & Hauser 1997). These relations are built through immersion at a research site, wherein researchers spend considerable time with communities. Researchers involve themselves in their daily lives with the objective of what Sixsmith et al (2003) refer as "to be there and to be seen". Furthermore, it has been argued that building trust is a continuous process and is part of the researcher-participant relationship. Access to participants and subsequent trust building is a privilege which is cemented through acts of reciprocity (Rist 1981). These acts are characterised by actions that equalize the relationships of power that exist between a researcher and the participant. To gain valuable insights into the everyday lives of participants while maintain trust, a researcher needs to constantly address the psychosocial distance between them and the participants. It has been argued that as 'outsiders' to a community and depending on context and social situations, researchers need to continuously negotiate their relationship in ways which allows them to occupy social positions as 'insiders' and vice versa (Sixsmith et al 2003). In this context, as a researcher I too was both an outsider and an insider at varying times of my fieldwork, making access to my respondents a complex process of managing social relationships. In the section below, I describe how I negotiated such relationships and personal impressions.

During the first two months of my fieldwork, I spent considerable time living and interacting with residents in the different villages adjoining the CTR with the intent of building rapport and gaining trust. This was initially facilitated by my contacts in some villages who took on the role as my unofficial gatekeepers. I refer to them as unofficial gatekeepers because they had very limited control over my mobility in the area and who I chose to interview. Their role was to introduce me to potential contacts they would have within their village or in other villages in the landscape. For instance, a gatekeeper from the village of Shyami introduced me to their relatives that lived in the village of Dhimka. Through such snowballing from contacts, I built a rapport with individuals from the villages where I conducted interviews, focus group discussions and participant observations. In this process I enlisted the support of two local advisors who would prove to be invaluable in helping me gain access to my respondents. I particularly use the word advisors and not the more commonly used assistant to avoid its hierarchical undertone. These advisors were residents with a keen interest in conservation and social activism in the CTR landscape. The advisors accompanied me throughout my fieldwork and often came up with strategic recommendations due to their deep knowledge and experience from the area. Moreover, I deployed the 'being there and being seen' approach (Sixsmith et al 2003), which not only provided opportunities to generate leads to potential participants, but also allowed a certain amount of

respect, credibility and subsequent access to a more inclusive sample that went beyond what gatekeepers, or their networks could enable.

As mentioned above, ethnographers often build relations with their participants through immersive fieldwork and acts of reciprocity to be noticed. I used common gathering places in villages as the first point of contact to establish such relations and gain an insight into the news and events of a village. Tea points or Chai Dhabas in each village was one such gathering place. Most villages around the CTR had a Chai Dhaba which also doubled up on occasions as the local convenience store. Village residents would often make at least one stop at these tea points to drink tea, buy groceries or discuss a myriad of news and issues. I spent many hours a day at such tea points during the initial stages of my fieldwork to strike up conversations and introduce myself to residents.

Learning about me being a student doing a PhD at a University overseas would often arouse curiosity amongst residents, who would then invite me to households for breakfasts and lunches or for another cup of tea. I consciously avoided talking about the specificities of my research topic on such occasions, as I first wanted to build trust and establish a relationship with individuals that could become my potential respondents. Instead, conversations on such occasions revolved around national and state politics, education, tourism initiatives and wider conservation issues. I would also on occasions attend village gatherings and events such as a marriage, a *Jagar*[2] or a farmer's workshop and subsequently establish contacts at those gatherings. Marriage gatherings and *Jagars* were particularly effective in getting access to groups of women respondents.

I established rapport and built trust with my respondents by engaging and participating in activities that were of mutual benefit. Some of these activities were chance encounters while others were prearranged. For instance, helping repair a motorbike of a resident who would later become a respondent or by offering to provide company to a farm owner by staying up through the night guarding a farm from crop raiding herbivores. I also interacted with village youth by participating in local cricket matches as an umpire, that were often held against a visiting team from a neighbouring village. Such activities led to the identification of many respondents and enabled further snowballing.

[2] A religious ritual practiced in the hills of Uttarakhand

At this juncture, I must reflect on how my many privileges of being an upper caste Hindu[3] male with language fluency, logistical and financial support affected my access to research respondents. Pahari society is deeply patriarchal in nature and Hindu traditions and rituals are particularly dominant in the villages of Uttarakhand. My male privilege led me to assimilate easily into a male dominated society and gain access to local institutions and gatherings without gendered judgment that many women researchers must face while doing fieldwork. For instance, my male privilege allowed local men to share details with me in a more frank and comprehensive manner. This was demonstrated by the noticeable difference in how the same male respondents spoke to me in comparison to another female researcher working in the area at the same time. My upper caste privilege led to easier assimilation in villages with dominant upper caste groups. For instance, getting invited to marriage ceremonies and *jagars* on many occasions was preluded with subtle questions that led to residents identifying my caste. Finally, having the logistical and financial means for extended fieldwork meant I could allocate time for trust building and prepare for access across a large sample of residents.

3.4.2. Interviews – Active and Semi Structured

Active Interviews and Semi Structured Interviews were the two main data collection methods I used for my research. Active interviews are part of what has been called an 'ethnographic imaginary' (Forsey 2010). Interviewing with an active approach is aimed at revealing the cultural, social, and political context of an individual's lives. To conduct active interviews is to ask questions beyond the immediate objectives of the research question. Active interviews probe the biography of the interviewee and seek to locate the influence of cultural and socio-political structures on their lives. This is then linked to the pursued research objective and in the inductive spirit of ethnography to even modify the research objective (Forsey 2010). Active interviewers converse with respondents in ways through which alternate considerations to an issue are brought into play. For instance, while interviewing residents of villages where land rights were not settled, I actively engaged the respondents by asking questions about the politics of forest rights.

During my fieldwork, I also actively followed activity on local social media and WhatsApp groups looking for incidents and issues that may be relevant points of discussions, and that may trigger alternate considerations. For example, details from a viral video of a police official using

[3] My rejection of following the Hindu religion does not take away from the fact that I still benefit from having a Hindu identity attached to my surname which provides privilege.

discriminatory language against marginalised groups became an important conversation starter, that then led it to inform the topic of caste in my research. An active interview is often a conversation between the interviewee and the interviewer wherein the objective is to not to dictate responses, but to provide a conducive environment that enables the production of a myriad of complex meanings that address relevant issues. I prepared by being up to date with the local politics and having knowledge of both longstanding and fresh local issues that resulted in a conducive environment, making the respondent engage more actively.

My research was the first investigation of its kind into CSTs, and questions and discussions on the topic had never previously been conducted with local actors, whether those who deploy CSTs or those who are subjected to surveillance. Active interviewing proved to be a very effective tool in revealing the themes of caste, gender and labour that now form the three empirical chapters of this thesis. A typical active interview I conducted lasted on average 67 minutes and were mostly conducted in Hindi, in which I have complete fluency. Respondents for my active interviews were largely recruited through face-to-face interactions during the trust building stage of my fieldwork. These interview sessions sometimes had more than one participant but not more than three, to facilitate meaningful conversations. Active interviews were conducted with residents, daily wage forest watchers, local conservation practitioners, some forest guards, social rights activists, researchers at academic institutions and some staff of conservation NGOs. *Figure 2* shows all the categories of my interview respondents. I chose this group of respondents for active interviewing as creating a conducive environment and engaging with the respondent's biography was easier, as compared to government officials for whom I used semi structured interviews.

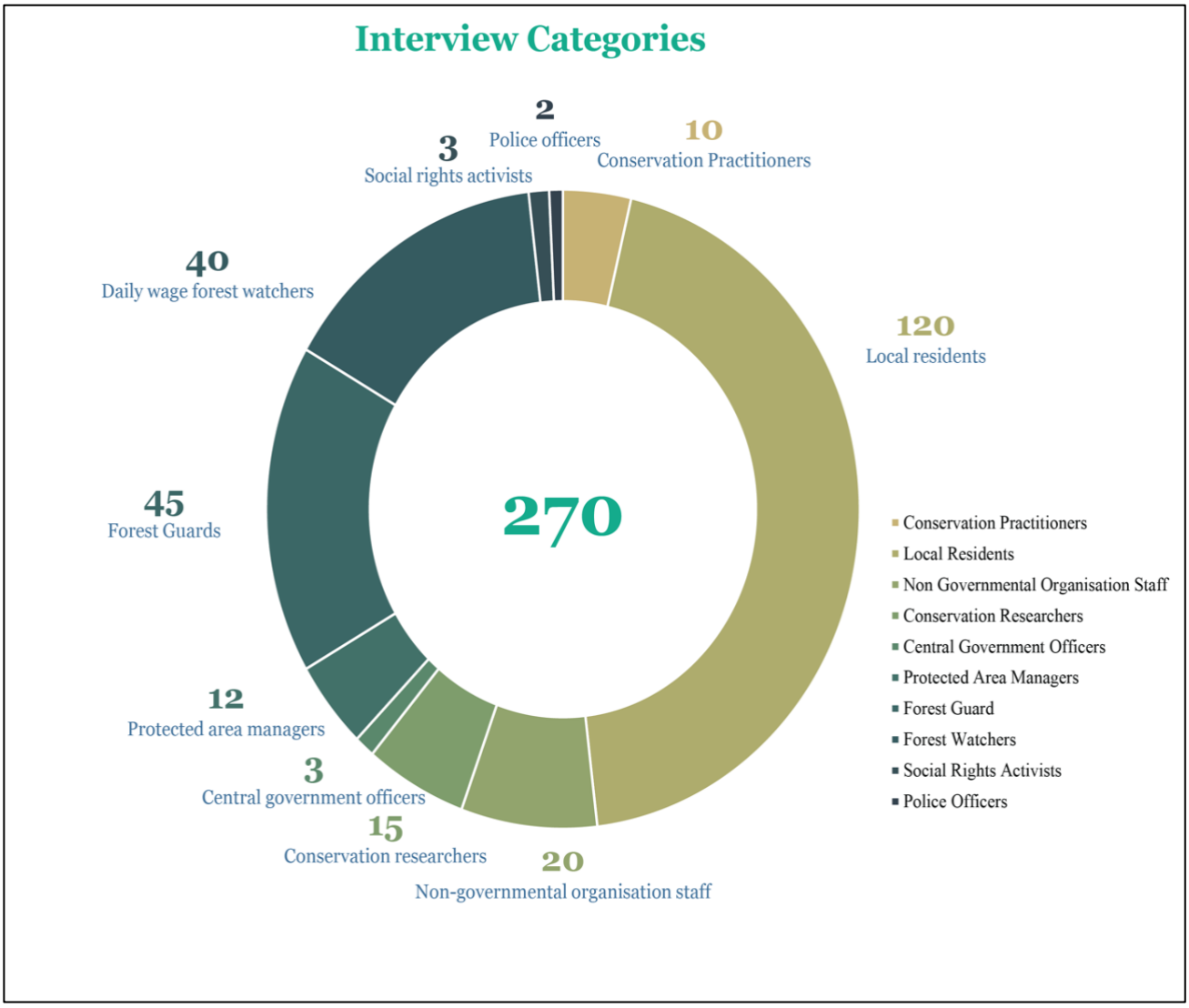

Figure 2: Diagrammatic representation of my interview categories and proportions of interviewees

Semi structured interviews or informal interviews was the other main data collection technique used in this study. These interviews were one to one interactions with key informants, of whom some had been already identified before the commencement of fieldwork. These included some project staff of conservation NGO's, officials at the NTCA, some local conservation practitioners, senior officials of the CTR and police officers from local police stations. Although I did produce a checklist of themes and an interview guide, which were referred to frame my interview questions, their sequence was not pre-determined. The questions were not specifically worded, to allow for significant flexibility, and to facilitate a conversation that could result in new topics and questions raised by the interviewees themselves. This process has been argued to be particularly effective when the researcher is trying to dig deeper into complicated relationships and slow evolving phenomena (Hoggart et al 2002). While semi structured interviews provide detailed accounts and rich information, the data can vary substantially from one interview to the next (Kitchin and Tate 2000). This has led to many critics raising issues about the general nature of the findings. However, Glaser and Strauss (1967) argue that the idea behind using interviews as a method is not just to find representative information, but also to gain access to the hidden nuances and cultures of assumptions through which an individual interprets the world.

During all my interviews, I started conversations with a standard protocol in line with ethical considerations such as informed consent, confidentiality, and data security. My approach was informed by training workshops such as 'Introduction to ethical issues in the arts and humanities conducted by the University of Cambridge's researcher development programme and a similar internal training on research ethics conducted by the Department of Geography. My research methods and approach were also assessed and approved by the Department of Geography's ethics committee prior to the start of fieldwork in July 2018. Prior to the start of each interview, informed consent was sought verbally as opposed to a written and signed consent form. Research on qualitative methods has shown that written consent forms can cause apprehension in respondents leading them to withdraw as a participant or result in severely restrict responses during the interview process (Miller et al 2012). Furthermore, it has been noted that ethical principles and standards of informed consent procedures must be adjusted for culturally and politically diverse settings (Upvall & Hashwani 2001, Lakes et al 2012). Written informed consent in many societies such as my field site can rouse suspicion or concern as signatures are often reserved for formal transactions associated with major life events. Signing any kind of document before having a conversation on a politically and socially charged topic such as surveillance or conservation conflicts can even be interpreted as a threatening ploy. Verbal consent was taken by detailing

procedures to maintain anonymity of the participants, objectives of the research, plans of publication and risks of potential interventions in the future. I made audio recordings for a vast majority of my interviews after obtaining the permission from participants. The recordings allowed me to provide undivided attention to maintain a flow in conversations especially during active interviews and enabled me to capture subtle meaningful emotions and nuances of the conversation. Only a few respondents refused to have their interviews recorded and these included some residents, particularly members of the Rai Sikh community, police officers and some forest officials.

3.4.3. Participant Observation

Arguably the richest material that informs the arguments made in the empirical chapters of this thesis comes from participant observations. This standard ethnographic method involves the relatively unstructured studying of people as they go about their daily routines and activities. A researcher conducting participant observation accompanies an individual or a group of people to essentially observe what they do and say, and although not necessary, participate to varying degrees in the activities that are being observed. Participant observation can provide a context for sampling guidelines and inform intensive interview guides (Dewalt and Dewalt 2002). Participant observation is particularly helpful in establishing a rapport with communities and learning to act in such a way to blend in within the community, leading to members acting naturally in the presence of the researcher (Bernard 1994). However, care must be taken to not see the community as a single homogenous block, and attention should be paid to why certain members act differently (Agrawal & Gibson 2001). Participant observation as a method of data collection provides researchers with strategies to check for non-verbal expression of feelings and understand how respondents or participants communicate with each other. It can also determine how participants interact with one another or with the phenomena that is being studied (Schmuck 1997). It allows the researcher to observe events that respondents may be hesitant to talk about due to their nature of being sensitive or controversial. It also allows for the researcher to observe situations or events that respondents have described in interviews or focus group discussions, allowing for the researcher to check for distortions or inaccuracies in the information provided (Marshall and Rossman 1995).

I conducted participant observations with actors in multiple settings by taking on the role of what has been called a 'partially participating observer' (Bryman 2015: 436). Such a role allows the researcher to join certain activities without necessarily participating in them. I conducted many hours of participant observations with women forest produce collectors, daily wage forest

watchers and forest guards on duty, the drone team of the CTR, and forest staff operating the e-Eye system amongst others. Access to forest staff was sought through official research permits which I will detailed in earlier of this chapter. Like the interviews I conducted, informed consent was verbally sought, and the objectives of the research were made clear prior to starting participant observations. During all my participant observations I sought permission to take notes as the observed group went about their daily activities. Whenever possible I kept digital records of all my participant observations by either making voice memos or by typing what I had observed during the day.

Participant observations with women forest produce collectors were arranged with the help of my local advisors and through snowballing from interview contacts. I followed women forest produce collectors as they went about their daily activities collecting forest resources. I particularly made observations on the nature of conversations between women and the changing behaviours, body language and dialog when women came across CSTs. Interviews that I had conducted with many individual women had acted as icebreakers and made it easier to gain access and build trust. Although women were conscious of my presence during the initial stages, they later opened up and became comfortable with my presence. I attribute this to the constant presence of my female field consultant, the trust building stage of my fieldwork and the active interviews I conducted in parallel with the participant observations with the women.

While conducting participant observation with women, I was particularly conscious of tensions relating to my positionality and privilege as a cis man, studying the lived experiences of women in a gendered space such as the forests of the CTR. In this light, I hold my own work open to critical questions that must be asked of any man doing research adopting a feminist outlook. I accept that conducting a credible and thorough ethnographic inquiry in such gendered spaces is difficult to achieve. Therefore, any contributions made to topics that highlight issues of gender in a male dominated society must undergo a process of continuous reflexivity to undermine the signs of gender privilege from field to text (Levinson 1998). As a cis man I am not in a position to argue or judge whether the contributions of male ethnographers in a women's world such as the forest spaces of Corbett are necessary or not. However, I could only suggest as shown in chapter 6 that such work when properly conceptualized and reflexively executed may still reveal issues that are deemed significant.

I also conducted participant observations with frontline forest staff, drone security force and staff operating the e-Eye system. These were arranged after getting official permissions from the chief wildlife warden of state of Uttarakhand. To elicit unbiased responses from frontline forest staff, I would go to different forest chowkis and anti-poaching camps directly instead of setting up appointments through the central office. This circumvents the scope of gatekeeping by senior forest officials, who would only suggest interviews with conforming forest staff, while withholding access to more critical and non-conforming staff members. For the first few weeks, I made visits to various forest chowkis and gathered information on staff members including daily patrol schedules and contact numbers. During participant observations of frontline forest staff, I particularly paid attention on the nature of conversations between forest guards, the practice of patrolling, conversations during patrolling and the process of recording information using MSTrIPES on, before, and after a routine patrol. With the drone security force, I would accompany the team as an observer as they went to different villages conducting their routine drone patrol. Having official permissions from senior forest officials made the team initially put on a display of their work that could be performative in nature, however this normalized over a period. To avoid bias, I also arrived at the locations of drone surveillance independently and observed the process from a distance. I also conducted parallel interviews with residents subjected to surveillance to corroborate the observations I made while accompanying the drone team.

3.4.4. Focus Group Discussions

The final ethnographic method I used for my data collection was focus group discussions with frontline forest staff, local resident communities and women forest produce collectors. A focus group discussion involves an interaction between a moderator (researcher) and a group of respondents (between 3-10 individuals) discussing a particular topic. Focus group discussions add further value to a research project when complemented with other methods such as semi-structured interviews and participant observations (Newing 2011). These group discussions have the potential to reveal feelings and opinions that interviewees may not have articulated during one-to-one interviews. These discussions can also offer a platform for arguments and debates through their inherent interactive nature (Hoggart et al 2002). For instance, I observed that women respondents were more vocal in a focus group discussion when asked questions about restrictions on forest produce collection and the role of CSTs. Similarly, members of the Buxa scheduled tribe were more participative, responsive, and felt safer in a collective environment (Kitchin & Tate 2000) as opposed to individual interviews.

Group dynamics can also work negatively with some participants who are reluctant to voice their opinions due to being shy, having a fear of embarrassment and retribution from other participants, or being apprehensive about the group's reaction. For instance, the first focus group discussion I conducted with frontline forest staff were prompting responses only from forest guards and not daily wage forest watchers who are more marginalised and vulnerable. In such circumstances, I conducted focus groups again by dividing the participants. Like the ethical standards of other methods mentioned earlier, prior informed consent was sought from each individual participating in a focus group discussion. When this was not possible due to some individuals joining the discussion late, consent was sought later, or their responses were not used. Before starting each focus group session, permission was sought for making an audio recording of the entire discussion. I conducted a total of 16 focus group discussions, topics of which were informed from emergent themes and data generated from interviews and participant observations. These topics ranged from specific incidents such as increased surveillance on the van gujjar community or on the topic of M-STrIPES application for ranger-based law enforcement monitoring. While conducting focus group discussion, I also used visual material to stimulate the discussion and steer the conversation on a particular topic. For instance, I showed participating front line forest staff and residents what the e-Eye camera sees through its sensors, inducing interesting responses that proved to be of value.

There are some ethical issues that are specific to the interactional nature of focus group discussions. For example, focus group may result in the harassment or intimidation of some participants by other participants or even the researcher (Green et al 1993). During some of my focus group discussions, I tried to avoid such a situation rising by breaking the discussions through a break for refreshments or by changing the topic when conversations started heating up between groups or participants. My local consultants helped in steering the discussion by making sure participants were not speaking over each other and bringing my attention to someone wanting to make a point but lacking the opportunity to do so by others. I also considered the importance of the venue to hold such discussions. Focus group discussions with women forest produce collectors for instance were conducted in established women self-help group shelters which provided a safe space for women to express their thoughts without being interfered by men from their families.

3.4.5. Questionnaires

It has been argued that combining in depth qualitative methods with quantitative surveys enhances the contributions of both methods, providing a richer pool of data with significant analytical power (Newing 2010). The use of qualitative and quantitative methods in complementary ways has been demonstrated in many studies both theoretically and empirically (Brewer and Hunter 1989, Tashakkori and Teddlie 1998). My participant observations and active interviews helped me formulate questions to be included in the questionnaire survey. The questions were formulated to provide supporting and complementary information to the themes emerging out of my ethnographic inquiry. I conducted rapid questionnaire surveys with each of my interviewees after the end of an active or semi structured interview. The questionnaire was designed to consist of a series of specific short, closed questions that were asked verbally by me and answered by respondents. Each question was designed to elicit information on a specific quantifiable variable that supported the emerging data arising out of my qualitative methods. I conducted such interviews only with residents across villages and with frontline forest staff. I gathered quantitative demographic information based on relevant social markers such as gender, age, and caste. This was followed by more specific closed questions on items as shown in Tables 1 and 2. As mentioned before, the questionnaire survey was conducted only to gather supporting information for visual representation on graphs complimenting my qualitative data. During the analysis stage, data gathered from questionnaire surveys was exported and arranged in an excel sheet and was subjected to statistical analysis using the R package.

Table 1: Local Resident Questionnaire items and types of Responses

Questionnaire Item	Types of Responses
Respondent Demographics	Age, Gender, Caste, Education level, Village
Visits to Forest	Regularly, Occasionally, Rarely, Never
Frequency of Encounter with CST's	Regularly, Occasionally, Rarely, Never
Reason for the deployment of CST's	Monitor Wildlife, Monitor People, Both, Don't Know
Reason for People Damaging CST's	Illegal Behaviour, Fear, Anger, Don't Know

Table 2:Frontline Forest staff questionnaire items and types of responses

Respondent Demographics	Post (Guard or Watcher) Age, Caste, Education level, Years of Service
Has MSTrIPES increased risk of animal attack	Agree, Strongly Agree, Neutral, Disagree, Strongly Disagree
Is MSTrIPES a tool of surveillance	Agree, Strongly Agree, Neutral, Disagree, Strongly Disagree
Has MSTrIPES increased workload	Agree, Strongly Agree, Neutral, Disagree, Strongly Disagree
Is MSTrIPES useful for the management of the park	Agree, Strongly Agree, Neutral, Disagree, Strongly Disagree

3.5. Data Analysis: Transcribing and Coding

The core activity in any ethnographic qualitative analysis is to build a narrative account describing and interpreting the findings of the research conducted. The data I gathered through the methods described above was intensively examined for common threads and patterns and then written as a narrative describing the findings. This process started with transcribing my interviews that were audio recorded, voice memos of myself reflecting after participant observations and making digital records of all notes taken. The process of transcribing is more of an interpretive act than a technical procedure (Dresing et al 2015, Bailey 2008). It entails the close observation of unanticipated phenomena by listening intently to the recorded data which can bring data alive by the way things have been said. I listened to each of my recorded interviews intently and multiple times to represent the full complexity of human interaction on the transcript. However, representing the human interactions derived out of recorded interviews with an average length 67 minutes is a very time-consuming process. To address this, only the features of the audio directly relevant and important to my research were transcribed. I used f4transkript transcribing software which allowed me to control the speed of the recording without changing the pitch of the audio. Moreover, it also allowed me to insert time stamps which eased the process of going back to a particular point of the recording considerably. All audio recorded interviews and focus group discussions were transcribed only by me due to the sensitive nature of the topic, risk involved in maintaining the anonymity of my participants and to maintain the contextual detail necessary to interpret the data. Completed transcripts were stored in password protected secure folders and given numbers or anonymised names to protect identities.

The next phase to data analysis of my observations was the coding process. A code is a summative and essence capturing word that is symbolically assigned to transcribed textual data (Saldaña 2016). The process of coding is an intermediatory phase connecting the data collection phase with the data analysis phase. Saldaña (2016) argues the process of coding is not an exact science with right or wrong answers. It is instead a heuristic, exploratory and interpretive process requiring a judgement call from the researcher with a problem-solving outlook (Saldaña 2016). This makes it important for the researcher to identify and be aware of their predispositions and privileges in the research process. For instance, at every step of the coding process I attempted to reflect constantly on how my age, caste, gender, and social class may affect my analytical lens. During the coding process, I identified patterns in the data and organised them into themes of inquiry.

I used a combination of different coding styles in the process of my data analysis. The first approach was that of Versus coding (Saldaña 2009) which was used to look for patterns of power distributions within individuals and social groups in relation to how surveillance through CSTs was experienced. Versus coding reveals tensions and conflicts between social groups highlighting the different power dynamics at work. The use of versus coding ensured a wide representation of views in my dataset and allowed for identifying the patterns of social domination, hierarchy, and social privilege. Versus coding allows for the examination of power structures that holds such patterns in place and how actors accept, resist or struggle against them.

The second approach I used was that of structural coding. This method applies a conceptual phrase representing a topic of inquiry which then serves as a labelling and indexing device, allowing for quick access to data that is likely to be relevant to a particular analysis for a large data set (Namey et al 2008). Coding by this method results in the categorizations of commonalities, differences, and relationships in the overall data repository. This in turn results in the identification of broad topics within the data set that can then be subjected to an in-depth analysis (Macqueen & Guest 2008). I used short phrases or words to summarise recurring topics discussed by my interviewees leading to the identification of important elements that I had not expected to find in the beginning. This included broad topics such as the forest as a gendered space as described in chapter 6, issues around low wages and commensurate labour as described in chapter 7, and matters related to social sorting using CSTs as described in chapter 5.

Narrative coding was the final approach I used for coding my data. This method of coding is appropriate for investigating interpersonal and intrapersonal participant experiences, to gain a perspective on the human condition through a narrative. Such narratives are argued to have their own legitimate epistemology and do not need to be accompanied by theory or critique (Hatch & Wisniewski 1995). Narrative coding draws from concepts in the humanities and social sciences to investigate underlying sociological and cultural perspectives emerging out of data (Cortazzi 1993, Daiute & Lightfoot 2003). The analytical units for narrative coding are often large amounts of text or "entire stories" (Daiute & Lightfoot 2003, 2). I reflected on participant experiences of surveillance in the backdrop of ongoing social and political events at the time through careful reading of my transcripts. This resulted in rich descriptive and storied details of my research that depicts how and why a particular outcome from the impacts of surveillance occurred. Narrative coding deliberately aims to evoke further questions rather than provide closure with definitive answers (Poulos 2008).

Using the combination of the above-mentioned coding approaches on my interview transcripts, voice memos and notes, I created overarching themes and analysed their relation to one another. This required constant relabelling of codes and pairing some overlapping codes together. This process, merged with preliminary writing and with the development of main themes, informing the argument of this thesis. Due to the large quantities of generated codes, I used f4analyse qualitative evaluation software to maintain a codebook summary. This codebook had a list of all codes, their descriptions and examples of data that matched the code.

3.6. Anonymity and Visual Aids

Respondents participating in research that is sensitive in nature often ask for certain assurances before answering questions or revealing details that are sensitive in nature. These assurances are often promises to ensure anonymity. These undertakings are important to protect research subjects from harm that may directly or indirectly be subjected upon them for their comments and actions (Coffey et al 2012, Murphy & Dingwall 2003). However, it is increasingly being acknowledged that guaranteeing complete anonymity in ethnographic and qualitative research is virtually an unachievable goal. Researchers often undermine the role and power of shared knowledge, especially when their research is limited to a single case study as it is in this thesis. Even after an attempt at assimilation and efforts at building trust, the presence of a non-local individual asking questions is always taken a note of. As mentioned before, I took verbal consent from my respondents after informing them about the details of the project and the strategies in place to protect their anonymity. However, on many occasions my respondents were themselves keen on their names being used for quotes or in descriptions of events in my narratives. This was particularly and surprisingly common with members of vulnerable communities who were keen to have their voice recorded while I interviewed them. In fact, some researchers claim that through anonymity voices of research participants are lost and are not amplified enough and in effect appropriated by researchers (Weinberg 2002, Van Den Hoonard 2003). As I conducted fieldwork in hierarchical setting with deeply entrenched social inequalities, I found ethical demands of maintaining confidentiality conflicting. I was in an ethical dilemma about causing no harm to my respondents while at the same time respecting their agency and crediting respondents especially from vulnerable groups who wanted their voices to be amplified.

Keeping these issues in mind and given the sensitive nature of my research, I have tried to take a balanced approach wherein I have anonymised the names of all the village sites and of my respondents by using pseudonyms, while still giving an indication of either their hierarchical

position, social class, gender, and economic condition. In cases where respondents particularly requested to be quoted, I took a decision on a case-to-case basis by carefully reviewing the impacts of doing so, as their comments or actions could potentially be harmful for others from similar backgrounds.

Although I took many photographs during my fieldwork, I have not used any in this thesis to maintain anonymity[1]. However, I commissioned a professional illustrator to create illustrations of incidences I witnessed and of the observations I made while conducting my research. Using illustrations and visual methods such as these are increasingly gaining traction in ethnographic research (Alfonso et al 2004). The illustrations I commissioned are accurate representations of events that I have described in my empirical chapters and are intended to communicate visually and evocatively what is being narrated in the text. The use of illustrations also meant that I could maintain anonymity and protect the identities of people who could be implicated if photographs were used instead.

3.7. Conclusion

In this chapter, I have detailed why I used a case study approach using ethnography as the primary methodological tool of inquiry to explore the social and political impacts of CSTs. I have described how and why I based myself for a prolonged period at a single site in the CTR and used ethnographic data collection methods to uncover a wealth of information on the impacts of CSTs. I also highlighted how I negotiated access and built trust amongst my respondents by dedicating considerable time to the process of 'being there and being seeing'. As will be demonstrated in the forthcoming empirical chapters, CSTs exacerbate already prevailing inequalities of caste, gender, and class. I would not have been able to find such novel information on the impacts of CSTs without considerable access and prolonged fieldwork at a single site. To uncover the links between social inequalities and the use of CSTs, I used a mixture of various ethnographic methods such as active and semi structured interviews, participant observations and focus group discussions. These methods informed the formulation of a questionnaire survey that complimented my qualitative methods and provided additional supporting demographic information. Data gathered by my methods and its subsequent analysis, not only revealed the impacts of CSTs on social and political structures but also shed light on other various issues that are made invisible in the conservation

[1] Some photographs have been used from the same landscape for representational purposes only and are not actual photographs of villages I visited.

sector. For instance, my participant observations revealed how forest spaces were gendered, and acted as spaces of freedom and liberation for women.

By using such an approach and methods I was able to produce rich and novel empirical material on the impacts of CSTs. The forthcoming chapters will detail the empirical and original contribution of this PhD thesis. I will start with the theme of caste and demonstrate how CSTs contribute to social sorting through their surveillance and produce criminality based on casteist and communal structures.

CHAPTER 4

Situating Conservation Surveillance in the Social and Political History of the Corbett Tiger Reserve and Conservation in India – an Overview of the Study Site

4.1. Introduction

Before exploring the social and political implications of conservation surveillance technologies in the Corbett Tiger Reserve (CTR), it is necessary to provide a contextual background and situate it in the larger socio-political and historical context of the region. In this chapter, I provide this contextual basis upon which the rest of the chapters in this thesis are built. I do this by providing an overview of the colonial and post-colonial history of my study site while situating it within the complexities of conservation in India. I will delve into the origins of contemporary conservation interventions in India by highlighting the significance of certain pieces of legislation and the ways in which they are enforced. I will also provide brief overviews of the multiple institutions and actors that are mentioned in the empirical chapters of this thesis. I will then discuss the specificities of the landscape I conducted my fieldwork in by detailing aspects of land ownership, resident local communities, and current conservation conflicts in the region.

Most of the information presented in this chapter is drawn from existing extensive literature on the social and political history of the region and of conservation in India. However, I have also made use of information that emerged out of my primary data while conducting fieldwork for this thesis. Such primary data were drawn from oral histories and snippets of information narrated by my interview respondents. I have described the methods used to collect these data in more detail in Chapter 3.

4.1.1. The British 'Raj' and Conservation: Forestry and Technologies of Rule

Forest spaces in India are sites of highly charged contestations and conflicts. The origins of these contestations can be traced back to the ideologies and technologies of power of the British Colonial administration, whose post-colonial legacy continues to shape forest management issues in India (Sivaramakrishnan 1995). The history of the imperial Government's interest in India's forests dates to the early 1800's. However, it was their search for railway timber in the 1850's that

led to the first systematic surveys of forest resources. The colonial Government established the Imperial Forest Department in 1864, and recruited officers trained in the forestry schools of Germany and France to lead it. Scholars argue that what the British were doing through the forestry sector in India was but a manifestation of the larger orientalist project of making a colony comprehensible by representation (Sivaramakrishnan 1995,1999). Technologies of rule such as surveys and census operations were initiated to fragment societies, households, and communities into statistical units (Prakash 1990). While human communities were being sorted according to the social structures of castes and tribes, forests themselves were being arranged into categories of species and genera. Such sorting sanctioned the colonial development project, wherein human and natural resources were being controlled and exploited for imperial purposes using technologies of rule (Sivaramakrishnan 1995).

The determination of the imperial Government to sustain high levels of timber production from the forests of India led to questions of ownership and forest rights. The Imperial Forest Department brought together a body of legislation which became the foundation for the Indian Forest Law of 1878. The law categorized forests into 'reserved forests' that were to be managed for timber production, and 'protected forests' that were to be set aside until they could be assessed, and their value ascertained. The law led to the development of detailed working plans that initiated various forest management initiatives such as fire control measures, regulating access of villagers to forests, controlling grazing, and undertaking plantations. Timber management under the colonial regime also comprised large-scale replanting of harvested forests. For this, a large workforce of largely unpaid and bonded labour was enlisted. These labourers, derogatorily referred to as 'coolies', were settled by the colonial administration into temporary or forest villages called 'Tongiyas' or 'Khattas' (Rawat 1993). This labour force mainly comprised peasants from lower caste or indigenous Adivasi communities. Such forest villages exist even today and within the case study site of this thesis. Their unsettled land rights and the denial of a formal (revenue) village status continues to be a flashpoint in village forest relations throughout India.

The 1878 Indian forest law resulted in direct conflict between traditional and subsistence forms of agriculture practiced by village communities and the methods of timber management of the Imperial Forest Department. These contestations over space resulted in multiple acts of resistance by communities who came to see the Imperial Forest Department primarily as a "machinery of repression" (Tucker 1984, 344). These contestations and acts of resistance have been well documented from the forests of the Kumaon region where the CTR is located (Guha 2000,

Agrawal 2005). The Forest Department responded by building a policing force of forest guards to fine and prosecute cases of forest offences. Voices outside the Forest Department raised concerns about harassment of villagers and corruption within the Forest Department in collusion with timber merchants (Sivaramakrishnan 1995). Such tensions intensified the severity of multiple peasant resistance movements particularly in the Kumaon. Broader surveys conducted by the colonial Government between 1878-1900 revealed rapid deforestation and ecological change throughout the Indian subcontinent, making the Forest Department review its forest policies (Rangarajan 2012). Subsequently, in the early twentieth century interest grew amongst forest officers, sportsmen interested in game hunting, planters, and other colonial administrators on the preservation of wildlife and vast areas of what were perceived to be pristine wildernesses, giving rise to a new conservation ethos.

4.1.2. Colonisers, Hunters and Conservationists

Conservation of wildlife in India during the colonial period has been typically linked to the actions of individual foresters and administrators, who initiated change in the attitudes of the colonial Government by promoting the preservation of animals (Arnold & Guha 1995). However, this popular notion has been challenged by scholars who argue that the colonial politics of wildlife preservation was central to the sustenance of the Empire (Mandala 2015). It has been pointed out that the management and preservation of big game was a means of British annexation of marginal areas and an extension of colonial political hegemony. From the beginning British game hunters and officials prized the prospect of 'Shikar' or bagging big game in India while at the same time admired wildlife and promoted its preservation. Sramek (2006) has argued that big game hunting, particularly that of the tiger, represented a form of Imperial domination of not just India's politics but also of its natural environment.

The beginning of the 20th century saw a perceived change in the attitude of colonial officers and hunters towards an appreciation of nature and of wild places. As narratives of rapidly declining populations of big game took hold, the protection of wildlife became important to the British officer-hunter, albeit only to secure the future of game hunting (Mangan & McKenzie 2008). Advancements in colonial scientific forestry and the exploration of Indian flora and fauna led to an increase in written works by British officers on the status of Indian wildlife and its natural history (MacKenzie 1988). Colonial foresters, naturalists and hunters assumed superior scientific understanding of nature while native knowledge systems were dismissed as sub-standard. Local

communities were blamed for poaching and threatening the stock numbers of wild game (Mandala 2015), and their practices of hunting were labelled as cruel and barbaric (Stebbing 1920).

The scientific documentation of Indian flora and fauna marked a fundamental shift in British attitudes and has been described as a moment of historical reconciliation, where the officer-hunter became a conservationist, game became wildlife and preservation became conservation (Mandala 2015, Guha & Gadgil 1989). Such developments in wildlife conservation were also observed elsewhere in the empire, particularly in British Africa (Prendergast and Adams 2003). Colonial officer-hunters who were now leading advocates of wildlife conservation promoted ideas of preservation to curb dwindling numbers of wild animals. This led to the enactment of multiple pieces of legislation, such as the Wild Birds and Animals Protection Act of 1912, that were aimed at imposing open and closed hunting seasons and mandating a license to hunt (Mandala 2015). During this period a few individual foresters, along with hunter-conservationists were advocating creation of protected areas devoid of all forms of hunting including the 'Shikar' (Strahorn 2009). Such colonial advocacy resulted in the creation of many wildlife sanctuaries including the Hailey National Park, now known as the Corbett Tiger Reserve. The creation of these protected areas resulted in restrictions or even abolition of customary rights to land and forest resources of traditional forest dwellers dependant on them. Evictions of forest dwellers from these protected areas was met with resistance in the form of retaliatory hunting and intruding on forest land, which was labelled as poaching and encroachment by Imperial Forest officials (Lewis 2003)

4.1.3. Edward James 'Jim' Corbett and the Materialization of a National Park

My study site – the Corbett Tiger Reserve – is named after Edward James Corbett, a hunter turned conservationist and a popular figure in India's conservation history. In this section, I will provide some context and history on how this came to be and its association with contemporary conservation in the Corbett Tiger Reserve. The beginning of the 20th century saw many colonial officer-hunter turned conservationists promoting ideas of preservation and protection of Indian wildlife. Some of the most influential amongst them were the foresters F.W Champion, E.A Smythies and hunter-conservationist Edward James Corbett or 'Jim' Corbett. A pioneer of wildlife photography using tripwire equipment, Champion was arguably the first to use an early form of

camera trap device. In his book, 'With a Camera in Tigerland', Champion (1927) revealed never seen pictures of wildlife in their natural environment.

During this period, Jim Corbett was emerging as a saviour of the hill folk or the Pahari community in the Kumaon, for his shootings of man-eating tigers and leopards (Jaleel 1997). Historians have analysed the life of Corbett in many divergent ways. While many scholars have acknowledged the role of Corbett as a pioneering hunter turned conservationist (Rangarajan 2005, Jaleel 1997) others have critically challenged the 'Corbett Myth' and pose him as a typical imperial hunter fulfilling the agendas of the empire and reinforcing the image of a benevolent saviour (Das 2009). More recent work on Corbett's life provides a more nuanced analysis and situates him along a spectrum of multiple identities, that of a hunter and conservationist, a protector and a killer, a ruler and saviour (Mandala 2014).

Corbett's interest in conservation matured through his connections with colonial forest officers such as F.W Champion and E.A Smythies. It was as early as the year 1907 that the idea of an establishment of a game reserve in the Tarai region of the Kumaon was proposed by the two foresters. This was initially turned down by Percy Wyndham the then commissioner of Kumaon on the concern of it reducing opportunities for 'Shikar' (Strahorn 2009). Smythies had argued that the location for the National Park was ideal as "nowhere else was nature as unspoilt by the contact of man" (Smythies 1936). However, this has been strongly contested, as indigenous communities such as the Buxas, Tharus, Van Gujjars had settlements in the area much before Smythies initiated his surveys (Strahorn 2009). Furthermore, Wyndham and Corbett had both hunted in the area and timber contractors of the Imperial Forest Department had used the area for logging on a limited scale (ibid). The assertion of Smythies was in concurrence with colonial narratives of 'pristine wildernesses' popular during the time. It was only after the appointment of Sir Malcolm Hailey as the governor of the United Provinces and his interactions with Corbett and Smythies on hunting and fishing trips in the present-day location of the CTR that the objective of creating a reserve was realised (Mandala 2014). Historians note that despite the opposition from the higher echelons of the colonial administration, Smythies and Corbett were successful in convincing Hailey to establish a National Park (Strahorn 2009). Named after the governor himself, a reserve forest of 323.75 square kilometres came to be established in 1935, and was called the Hailey National Park, becoming India's first National Park.

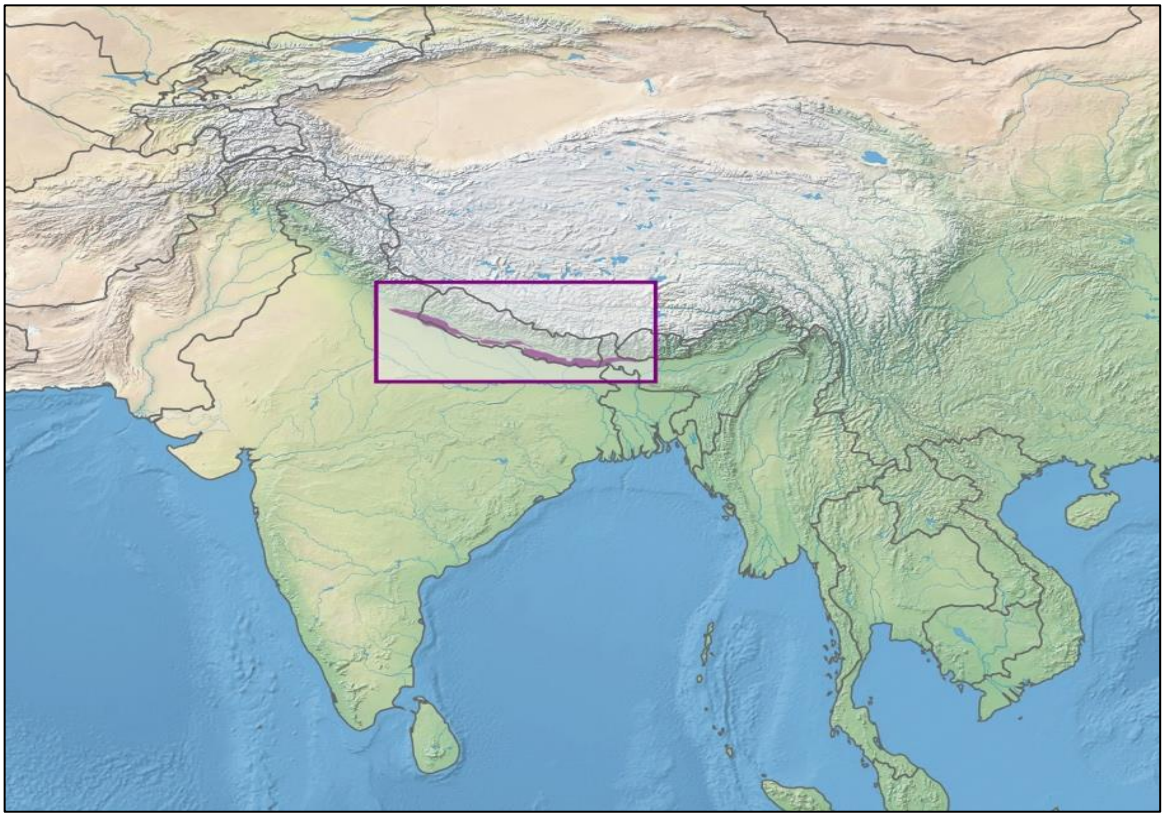

Figure 3: Map showing the Tarai Region in India. Courtesy: Tom Patterson, US National Park Service. Natural Earth 2 (public domain)

4.1.4. Hailey to Corbett National Park

Post declaration of the Hailey National Park all forms of hunting, including 'Shikar', was prohibited from the park boundaries. Malcolm Hailey had spent considerable time on mission in Africa and was the author of 'The African Survey' (Hailey 1938), a report on colonial reforms south of the Sahara. It has been argued that his time in Africa had made him advocate for similar models of management in the protected areas of India. For instance, the bill for the creation of the Hailey National Park was modelled after the Kruger National Park in South Africa. F.W Champion was given the responsibility to further consolidate the boundaries of the National Park and was in-charge of the park as a divisional forest officer between 1937-1940 (Sinha 2018). Following the Kruger model, large scale evictions of human settlements were carried out within the boundaries of the Hailey National Park (ibid). These settlements were particularly those of the Buxa community along with some temporary settlements of the nomadic Van Gujjars and the 'Gaddis'. During my research, interviews and conversations with officials associated with the Corbett Tiger

Reserve, these histories of evictions were interestingly absent, even within the official management plans of the tiger reserve.

"My village was in the area they call Dhikala, on the banks of the Ramganga where all tourists go today, our huts were burnt by the 'janglaat' forest officials"

(92-year-old Buxa Woman, Interview No. 157)

Even after the creation of the Hailey National Park regular forestry operations were carried out as per working plan prescriptions. The formation of the National Park did not completely stop the practice of Shikar that continued to be organised during visits by high-ranking officials of the Empire (Strahorn 2009). However, F.W Champion and Jim Corbett both continually advocated for officials to take up photography over hunting. For instance, Corbett in a 1932 newspaper article wrote that there was an "unrestricted slaughter of game" by shikaris as well as by villagers (Corbett & Hawkins 1989).

After India's independence in 1947, a wave of nationalism resulted in the renaming of various landmarks and places throughout India. India's first Prime Minister Jawaharlal Nehru after his visit to the park in 1949 proposed the name to be changed to Ramganga National Park after the river Ramganga that flows through the park (Singh et al 2007). Between 1950-1955, the park was called the Ramganga National Park. After 1947, Jim Corbett had relocated to Kenya from where he wrote multiple books on his shikar exploits and on bushcraft in the Indian Jungle. It has been argued that Corbett introduced the exotic *Tarai* and the *Kumaon* to a larger international audience through his books (Strahorn 2009). For instance, in 'Man-Eaters of Kumaun', Corbett describes his adventures of hunting down tigers and leopards benefitting villagers who's lives had been severely disrupted by the terror of man-eating big cats (Jaleel 1997). Most of these adventures occurred in the hills of the Kumaon, although the Tarai was prominently featured.

Corbett not only hunted in the Tarai, but also lived in the village of Choti Haldwani near the present day CTR, where he was a rent collector from upper caste tenant farmers from the hills (Strahorn 2009). Before relocating to Kenya, Jim Corbett distributed his land to these tenant farmers, bolstering his 'saviour' image in the region particularly within the upper caste 'pahari' community. Becoming international bestsellers, Corbett's books communicated an image of a wild and exotic place on the edge of civilization represented by man eating tigers, bandits, shikaris and beleaguered villagers (Strahorn 2009). In the year 1955, Corbett died in Kenya, and as a mark of

respect and honour the Government of India renamed Ramganga National Park to Jim Corbett National Park (Singh 1989). While this was contrary to the ongoing pattern of decolonising national landmarks, this could be explained as a strategy by the Government of India and some elite conservationists to attract international tourism to the National Park.

4.2. Colonization of the Tarai and post-independence socio-politics:

After independence, the United Provinces of Agra and Oudh was renamed Uttar Pradesh taking the role of a federal State and referred to with is acronym UP. Independence brought in multiple concerns for both Government of India and for the State of UP. There was severe food shortage and a refugee crisis triggered by the Partition of India (Pande 1961). Furthermore, post-World War 2 the Indian army had demobilised thousands of soldiers who had no civilian occupations to return to, increasing risk of social instability in the region as India approached independence (Pant 1996). These factors led to the Government of UP to prioritise the conversion of what were deemed 'wastelands' into arable land to provide livelihoods and accommodate settlers and refugees (ibid).

The Government of UP had come to see the vast swamps, grasslands, and forests of the Tarai region as a potential food granary and a source of land to settle refugees (Strahorn 2009). Land reclamation was initiated soon after independence and a dedicated colonization department was created to pursue agricultural colonization. The reclamation project required labour that was fulfilled by creating temporary settlements for partition refugees (Rawat 1993). The Government also initiated the removal of traditional forest dwellers such as the Buxas and Van Gujjars from the areas to be colonised. Some of these forest dwellers had already been evicted during the creation the Hailey National Park and were subject to further displacement (Singh et al 2007).

The area around present day CTR was a patchwork of cultivated fields and grasslands occupied primarily by Buxas, which were confiscated by the UP Government under their colonization plan (Hasan 1978). In return Buxas were given land elsewhere which was grabbed by settlers colonizing the Tarai (ibid). During this period land alienation was a rising problem for indigenous populations and scheduled caste communities throughout the State of Uttar Pradesh (Pande 1961). Hasan (1978) notes that a major problem for traditional forest dwellers like the Buxas and Van Gujjars in UP was the non-recognition of their scheduled tribe status, which inhibited them from legal protection until much later. Currently, a small colony of landless Buxas reside as tenants within one of the villages I conducted interviews in on the border of the CTR. Conversion of the Tarai

into agricultural land and colonization by settlers had also restricted the nomadic practice of the pastoral Van Gujjar community. Currently, a few sedentary settlements of Van Gujjars exist within the boundaries of the CTR and in its fringe areas and were part of my ethnography.

As agricultural colonization intensified in the Tarai, a narrative around crop raiding wild animals and 'dangerous beasts' predating on cattle gained traction (Strahorn 2009). Furthermore, ministers within the UP Government lobbied for hunting to be permitted inside the Hailey National Park (ibid). It was argued that conservation measures had overcrowded the park and crop raiding herbivores were attacking crops in the Tarai colonization area (Singh 1965, Randhawa 1980). This proposal led to a fierce confrontation between the colonization department and the Forest Department that vehemently condemned the proposal (Strahorn 2009). The Forest Department maintained that crop depredation was being exaggerated and instead a rinderpest epidemic had drastically lowered herbivore populations throughout the Tarai (ibid). In response, colonists argued that the Forest Department was only interested in the revenue being generated out of timber and social forestry from the forest divisions along the National Park and were ignoring livelihood losses of recently settled farming communities (Randhawa 1980). This dispute was settled by the then Chief Minister of the State, who rejected the demand for the denotification of Hailey National Park but directed relevant bodies to provide firearm licenses to settlers and farmers (Kashyap et al 1988). According to some conservationists this led to disastrous consequences for wildlife populations throughout the region (Shukla 1995, Singh 2004).

The easy availability of firearm licenses in the Tarai gave rise to changes in demographics that are still having repercussions in the region. Settler farmers not only acquired guns in large numbers but also employed daily wage labour to protect crops and shoot raiding wildlife (Strahorn 2009). Sikh immigrants from Punjab brought in such labour in the form of lower caste Sikhs known as Rai Sikhs (Gandee 2018). The community of Rai Sikhs were notified under the Criminal Tribes Act as hereditary criminals by the colonial administration (Major 1999, Gandee 2018). Before the partition of India, Rai Sikhs were largely tenants of Muslim landowners who migrated to Pakistan resulting in their eviction from agricultural land that was declared as evacuee property by the Government of India (Singh 1952). The migrations of Rai Sikh daily wage labourers to work on settler farms in the Tarai was quickly conflated with an increase in reported crime, particularly theft and dacoity[1] (Gandee 2018). These developments were seemingly exemplified during police

[1] Anglicised version for the word '*daaku*', meaning banditry in the Indian Subcontinent.

crackdowns on Rai Sikhs in the areas around present-day CTR in the year 1953 (ibid). Present day narratives around 'criminal' Rai Sikhs around the CTR have their origins in these processes, resulting in increased surveillance and perceived criminality of the community as will be demonstrated in the empirical chapters of this thesis.

4.3. Wildlife Protection Act 1972 and Project Tiger

The topic of wildlife conservation was of low priority for the Government of India post-independence. Rapid conversion of forest land into cultivation, coupled with unregulated hunting boosted by easy availability of arms licenses, raised concerns amongst Indian foresters and conservationists (Panwar 1982). These concerns were further exacerbated by large scale infrastructure projects taking precedence over forest conservation. Between 1950-1975, India was investing heavily in the construction of large dams to generate hydroelectricity (Rangarajan 2006). Such dams on rivers in the forested landscapes were submerging large tracts of forests, displacing human communities and wildlife. One such dam was that on the Ramganga river within the Corbett National Park. This reservoir was envisioned to supply water for irrigation in the Tarai colonization area. The Ramganga reservoir submerged large tracts of forests within the Corbett National Park, mobilising conservationists from across India to advocate for strict laws dedicated to wildlife conservation (Singh et al 2007).

In 1969, Indira Gandhi became India's first woman Prime Minister. She was said to have deep connection with issues related to wildlife, forests, water, and environmental degradation (Ramesh 2017). Historians argue that this was due to her experiences and networks with a range of elite conservationists, ornithologists, and environmentalists in her formative years (Rangarajan 2006). That year also saw the tenth annual conference of the International Union for the Conservation of Nature (IUCN) being hosted by the Government of India in New Delhi. During the conference, the Bengal tiger (Panthera tigris) was listed in the IUCN's Red List as an endangered species (Panwar 1982). A senior minister in Indira Gandhi's Government attended the conference and reportedly persuaded the Prime Minister to constitute an expert committee that would directly report to her office (ibid). This expert committee comprised members known to the Prime Minister. For instance, Kailash Sankhala, who would later become the first director of Project Tiger is known to have been closely associated to the Prime Minister (Rangarajan 2006). Sankhala chaired this expert committee that also comprised authors, hunters turned conservationists and descendants of royal families interested in conservation. This committee examined the various

causes for the decline of wildlife populations and recommended an immediate ban on hunting and urgent steps to curb the approaching extinction of some species (Panwar 1982, Damodaran 2007).

The Government of India under the leadership of Indira Gandhi responded with the passage of the Wildlife Protection Act of 1972. The Act was conceptualized and drafted by MK Ranjitsinh, an Indian administrative service officer with significant influence (Rangarajan 2001). It has been argued that the formation of the Act was a significant moment in India's conservation history, as the power centre of conservation shifted from hunters turned conservationists and biologists to bureaucrats of the Indian administrative and forest services (Lewis 2005). The Wildlife Protection Act of 1972 (WLPA) resulted in a complete ban of shooting, trade or collection of any species included in the four schedules of the Act, inside or outside protected areas. The WLPA also created a criterion for the establishment of new National Parks and wildlife sanctuaries. According to the Act, the management of these protected areas would be the sole responsibility of the Indian Forest Services.[2]

The WLPA also paved the way for a task force that was set up to investigate causes for the decline of tiger populations and recommend strategies for conservation (Panwar 1982). The task force recommended the launch of a national level initiative called Project Tiger (Futehally 1972). Launched in 1973, the goal of the project was to prevent the destruction of tiger habitats. For its implementation, the task force initially identified nine sites as 'tiger reserves', that were already National Parks or wildlife sanctuaries (ibid). Under the project, core zones and buffer zones were delineated in these protected areas. Core zones were devised as inviolate areas having no human disturbance, while buffer zones would allow for some limited human activity. Project Tiger was inaugurated in the Corbett Tiger Reserve (CTR), making it the first of the nine areas to be included.

4.4. The Chipko Movement

While narratives around wildlife conservation were gaining ground after the passage of the Wildlife Protection Act in the 1970's, a ground up people's struggle for forest conservation was emerging in the Kumaon and Garhwal hills of India. Colonial forestry practices in the hills had adversely affected traditional practices and were significantly resisted by local communities (Pant 1922, Guha 1989). Post-independence, colonial legacies of forest management continued to largely neglect the

[2] The Indian Forest Services has three divisions – Wildlife, Territorial and Social Forestry. The management of protected areas and matters related to wildlife conservation is the responsibility of the wildlife division.

forest dependent needs of residents. Furthermore, the Forest Department intensified commercial use of forests in partnership with private contractors causing environmental impacts that were detrimental to the lives of hill communities in the Kumaon and Garhwal (Guha 1989). In 1973, the Forest Department auctioned hundreds of trees to a large sports company sparking a series of organised demonstrations and protests. Protestors placed themselves between loggers and trees and by embracing the trees prevented loggers to proceed (Bandyopadhyay 1999, Guha 1989). This act gave the movement its renowned name- 'Chipko' which in Hindi literally translates to 'stick to'.

Over the next decade, these protests spread across the hills of the region[3] in which the participation of women was especially prominent in protecting forests from contractors (Guha 1989). This spoke to the gendered division of labour and to the gendered nature of forest spaces in the Kumaon, where women conduct the vast majority of subsistence forest work. The history of women's involvement in resistance and struggles against the State in the hills of Kumaon is particularly relevant as a contextual background to chapter 6, in which I highlight the gendered impacts of CSTs. It is important to mention here that there have been several populist accounts of the Chipko movement (Shiva & Bandyopadhyay 1986) that only highlight the movement's ecological consciousness or paint it as a purely conservation movement (Mawdsley 1998). However, scholars have demonstrated that the Chipko movement was far more complex and developed primarily as an economic struggle and as a struggle for people's rights and agency to benefit from forest resources (Agarwal 1994, Mawdsley 1998). Furthermore, the popular and overly romanticized image of women hugging trees promoted a particularly ecofeminist perspective of Chipko, making invisible anti-logging demonstrations in town and the significant contributions of men, students, and leftists in the movement

4.5. A New State: From Uttar Pradesh to Uttarakhand

Throughout India's post-independence history, there was an active demand for a separate federal State within the union of India in the hill regions of Uttar Pradesh (Mawdsley 1996). These demands were based on geographic[4], linguistic, and cultural differences. Furthermore, the tarai colonization project was perceived as a form of internal colonialism by the dominant 'pahari' hill communities. The Uttarakhand agitation was largely an elite movement between the 1960's-1980's

[3] Particularly in the village of Reni.

[4] Uttarakhand primarily has a hilly and mountainous terrain compared to the plains of Uttar Pradesh.

but suddenly took a more active turn resulting into mass movement in the year 1994. This was due to the passage of legislation in the Uttar Pradesh Assembly which intended to provide 27 percent reservations[5] in Government jobs for communities belonging to the Other Backward Classes[6] (OBCs) (Mawdsley 1996). This decision would have brought the total percentage of reservations in the State to almost 50 percent. However, upper castes such as Brahmins and Rajputs dominated caste compositions in the region of present-day Uttarakhand (Berreman 1973). The decision to provide reservations to OBCs along with already existing reservations for Scheduled Castes and Scheduled Tribes would have had a considerable impact on upper caste communities excluding them from economic and social mobility (Mawdsley 1996). The reservation issue was the trigger for the Uttarakhand movement to transform into a 'jan andolan' that went beyond electoral caste politics and highlighted many issues related to development, ecology, and regional autonomy (Kumar 2011). Several violent incidents during the movement also led to a call for a consolidated 'pahari' identity and a deep disdain for the people of the plains of Uttar Pradesh. Consequently, in July 2000, Uttarakhand came into existence as the 27th State of India.

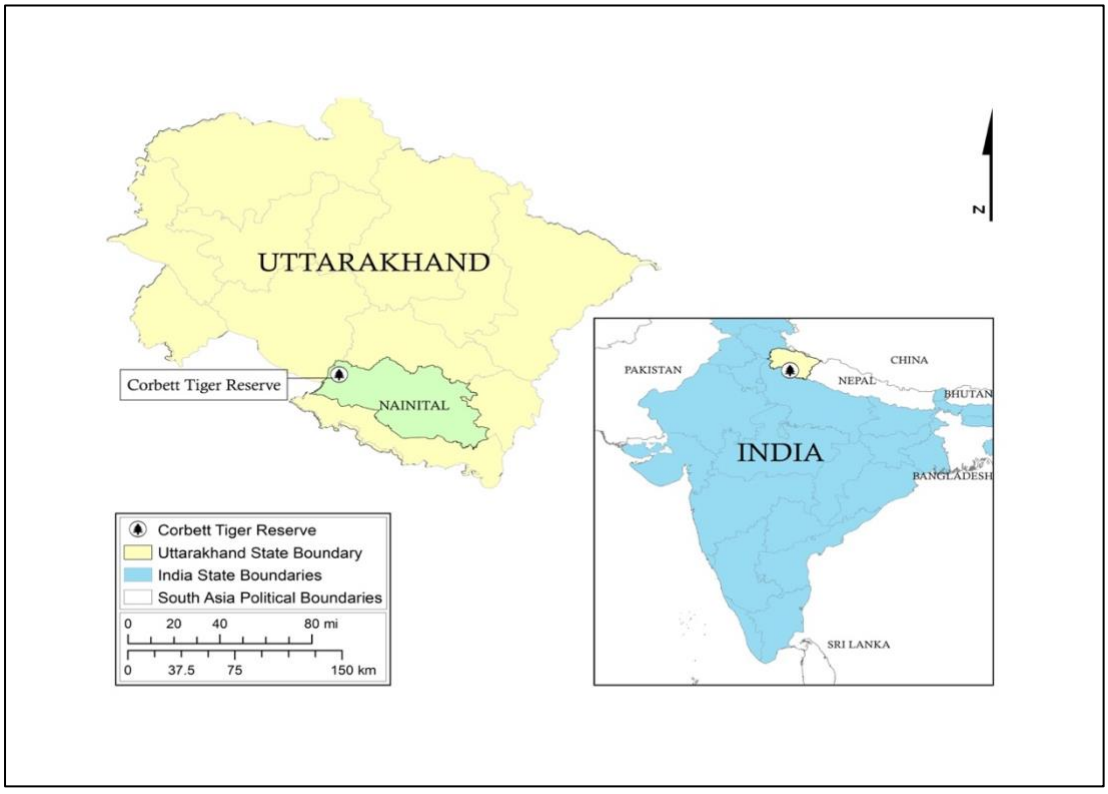

Figure 4: Map of Present Day Uttarakhand showing the location of the Corbett Tiger Reserve

[5] A system of affirmative action that aims to provide representation to historically disadvantaged groups through quotas in Government jobs, education, and other institutions.

[6] OBCs is a collective term used by the Government of India for a vast majority of artisanal and agricultural castes that also comprised of 52 percent of India's population in that period.

Leading up to the formation of the State of Uttarakhand, many landless peasants from scheduled caste communities were settled across political constituencies (Kumar 2011). Electoral caste politics led to a three-time sitting chief minister settling a community of landless Dalit peasants in his constituency of Ramnagar. The community was settled on forest land on the border of the Corbett Tiger Reserve and Ramnagar Forest Division along a State highway. Land rights promised to the community were never settled and over time the community became squatters on forestland. This village, named Khalsur, is now referred to as an encroachment by the Forest Department and is subject to all forms of policing including surveillance through CSTs as will be demonstrated in Chapter 5. The separation of Uttarakhand from Uttar Pradesh meant that the Corbett Tiger Reserve no longer occurred in Uttar Pradesh, although it still shares its entire southern boundary with the latter as show in figure 5. As I will demonstrate in my empirical chapters, this boundary is subjected to the most intensive and military style surveillance, not least due to the complex and sensitive history between the two States.

4.6. Conservation Narratives Post Project Tiger

Two decades into the implementation of Project Tiger, India's protected area network was expanded, and the governance of National Parks took a neoliberal turn in the form of growing tourism (Rastogi et al 2012). A 'fortress' conservation (Brockington 2002) model was followed in these tiger reserves that resulted in many villages and settlements being evicted and settled in alternate lands, often without any compensation (Shahabuddin & Bhamidipati 2014). This resulted in a curbing of forest rights and access to resources of millions of traditional forest dwellers, creating resentment against the Forest Department (Agrawal & Redford 2009, Kabra 2009, Rangarajan & Shahabuddin 2006). In parallel, wildlife science was being promoted in academic institutes such as the Indian Institute of sciences and particularly at the Wildlife Institute of India (WII) (Lewis 2005).

The WII was born out of an Indian Forest Services (IFS) training program at the Forestry research institute with an aim to train IFS officers in wildlife biology and conservation (ibid). This led the IFS to assert complete control over ecological studies and research in Project Tiger reserves. Lewis (2004) describes this as a form of ecological nationalism that kept most international conservation organisations away from India. For instance, the Smithsonian foundation tried their best to get permissions for American scientists to do research on tigers in the Corbett Tiger Reserve but were denied by the Forest Department. Officers in the IFS believed that Indian scientists were capable enough to conduct research without an interference from 'foreign' agencies. Although there was continuous pressure from international organisations like the World Wildlife Fund (WWF), Smithsonian and the Bombay Natural History Society (BNHS) to conduct research on tigers, the Indian Government did not bow down to it (Lewis 2005). Such mistrust of foreign research in tiger reserves persists in India and is exemplified by the rejection of the SMART law enforcement monitoring tool, with authorities preferring a 'made in India' MSTrIPES tool that forms the basis of Chapter 7.

The Forest Department in project tiger reserves focussed their research and monitoring towards population counts of tigers through a method called the pugmarks census[7]. This method however had biases and was open to manipulation (Karanth et al 2003). The annual population counts conducted in tiger reserves were reported to be controversial as forest officers were pressurised to

[7] Elabourated in Chapter 7.

demonstrate a steady improvement in tiger numbers each year (Vaidyanathan 2019). By the early 1990's natural history documentaries, particularly the BBCs 'Land of the Tiger' had conveyed a narrative about the success of Project Tiger and that India had arrested the decline of its population. However, a spate of organised poaching in India's high profile tiger reserves occurred between 1995-2003. The gravity of it was only revealed after an investigation by an independent journalist reported that Sariska Tiger Reserve had lost all its tigers (Mazoomdar 2005). During this time, the CTR also saw an increase in organised poaching, particularly with targeted killings of elephants along the southern boundary of the park.

The Sariska tiger tragedy as it was called, became a national issue, and led to the then Prime Minister Dr. Manmohan Singh taking cognizance and declaring a conservation emergency. A tiger task force comprising of eminent environmentalists, scientists, conservationists, and IFS officers was constituted to reflect and provide a roadmap for tiger conservation post the crisis (Taghioff & Menon 2010). The task force acknowledged that growing resentment amongst local communities towards conservation policies had driven poaching. Furthermore, the report argued that a faulty and fudged system for tiger population monitoring resulted in a complete oversight by forest authorities, who could not comprehend a pattern in tiger disappearances (Tiger Task Force 2005). In a series of actions for the future, the task force recommended to convert the Project Tiger directorate into a statutory body under the Ministry of Environment Forests[8] (MOEF). This body is now known as the National Tiger Conservation Authority (NTCA). Furthermore, they asserted for a complete overhaul of tiger population monitoring methods by replacing the old pugmark census with scientific capture recapture using camera traps. This event was significant in the history of the use of CSTs in India, as the use of camera traps proliferated after they were made mandatory for tiger population counts throughout India.

The task force was arguably the first Government body which stated that the forests of India were not pristine wildernesses, but also habitats of people. However, it has been argued that their approach even after the recognition of this fact went against the interests of traditional forest dwellers and others dependent on forests (Mohanty & Singh 2020). For instance, the task force in its recommendations advocated for the relocation of forest dwellers from tiger reserves albeit with appropriate compensation (Tiger Task Force 2005). Furthermore, they argued for the formation of a wildlife crime bureau and modern law enforcement mechanisms for better policing of tiger

[8] Now known as Ministry of Environment Forests and Climate Change.

reserves. Post formation of the NTCA and the ratification of the recommendations of the task force into management plans of tiger reserves, the CTR administration invested intensively in surveillance technologies and in creating a paramilitary force to patrol its borders.

4.7. The Forest Rights Act

While conservation discourses post the formation of the NTCA were advocating for 'voluntary resettlement' of forest dwellers, a landmark piece of legislation aimed at correcting historical injustice subjected to forest dwellers was being debated in the parliament of India. 'The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Rights) Act, 2006' also known as the Forest Rights Act (FRA) was passed in both houses of the parliament of India in 2006 and came into force in 2008 (Kumar & Kerr 2012). The law aims to settle land rights for forest dwellers who have been living on forestland without any formal recognition of ownership of land. Furthermore, it seeks to provide rights over non timber forest products and rights to claim and manage community forest reserves.

Over a decade after coming into force the implementation of the act throughout India has been slow and disappointing (Sarap et al 2013, Lee & Wolf 2018). This has been particularly the case in the State of Uttarakhand, where the implementation of the act has been stalled due to a lack of political will and bureaucratic contentions between the Forest Department and tribal welfare department (Chakravartty 2017). The implementation of the FRA is especially contentious in and around the CTR. There are several forest villages on CTR land that could claim forest rights but have not been able to do so due to Government apathy, lack of awareness, and expertise available to interpret and correctly file their claims. The 'Khatta' of Horloki was one of my field sites in the CTR where the process to file claims was initiated but failed due to multiple reasons elabourated in chapter 5. As will be demonstrated in that chapter, the CTR administration have been vary of activists and organisations mobilising villagers to file claims under the FRA. Over the course of my fieldwork, two villages in the adjoining forest divisions of the Pawalgarh conservation reserve had initiated the process to claim rights under the FRA.

4.8. Current Social and Ecological Status of CTR

The Corbett Tiger Reserve currently is spread over an area of 1288.3 sq. kms with a core area of 822 sq. km and a buffer area of 466 sq. kms (Sinha 2015). Two rivers- The Ramganga and the Kosi

flow within and in the vicinity of the park. Towards the east and alongside the Kosi river is the Ramnagar Forest Division, a reserve forest that comes under the territorial division of the Indian Forest Department. The newly formed Pawalgarh Conservation Reserve is in the South-East and serves as an important forest corridor between the CTR and forest divisions towards the south and east. Movement of people and collection of forest resources from the core area especially all along the southern boundary of the reserve is policed intensively by the Corbett administration. Although there are no permanent human settlements in the core area of the reserve, a large Government run tourist facility called Dhikala operates from within core zone almost at the very centre of the tiger reserve. This has been a major point of contention amongst conservationists and social activists, both point out that while restrictions and harassment are meted out to residents for entering the core zone for subsistence, a large tourist facility with hundreds of safari vehicles operates from within the park.

Several human settlements line the boundaries of the CTR. The most populous town in the vicinity of the CTR is Ramnagar, which harbours the headquarters of CTR administration and is also a major tourism hub (Rastogi et al 2012). Ramnagar is also a political constituency and an active space for social and political demonstrations. As mentioned before, upper castes dominate social compositions of settlements in the State of Uttarakhand. All revenue villages, wherein land rights are settled and have a panchayat, are dominated by upper caste Brahmins, while forest villages where ownership of land belongs to the Forest Department are dominated by communities classified as scheduled castes and scheduled tribes. Between the year 2005-2010, three revenue villages that were initially in Uttarakhand and along the southern boundary of the CTR were resettled on the Uttar Pradesh side (Sinha 2015). These villages comprised mixed caste groups and Sikhs from the plains that settled during the tarai colonization period (ibid). This allowed the CTR administration to expand its borders and conduct forestry activities on this land. This created tensions over access to forest resources in this area. A mixture of identity politics and resentment towards non 'pahari' people from the plains drives law enforcement and surveillance practices in this area. For instance, thermal cameras of the e-Eye system are deployed all along this boundary focussing on these villages (see fig below).

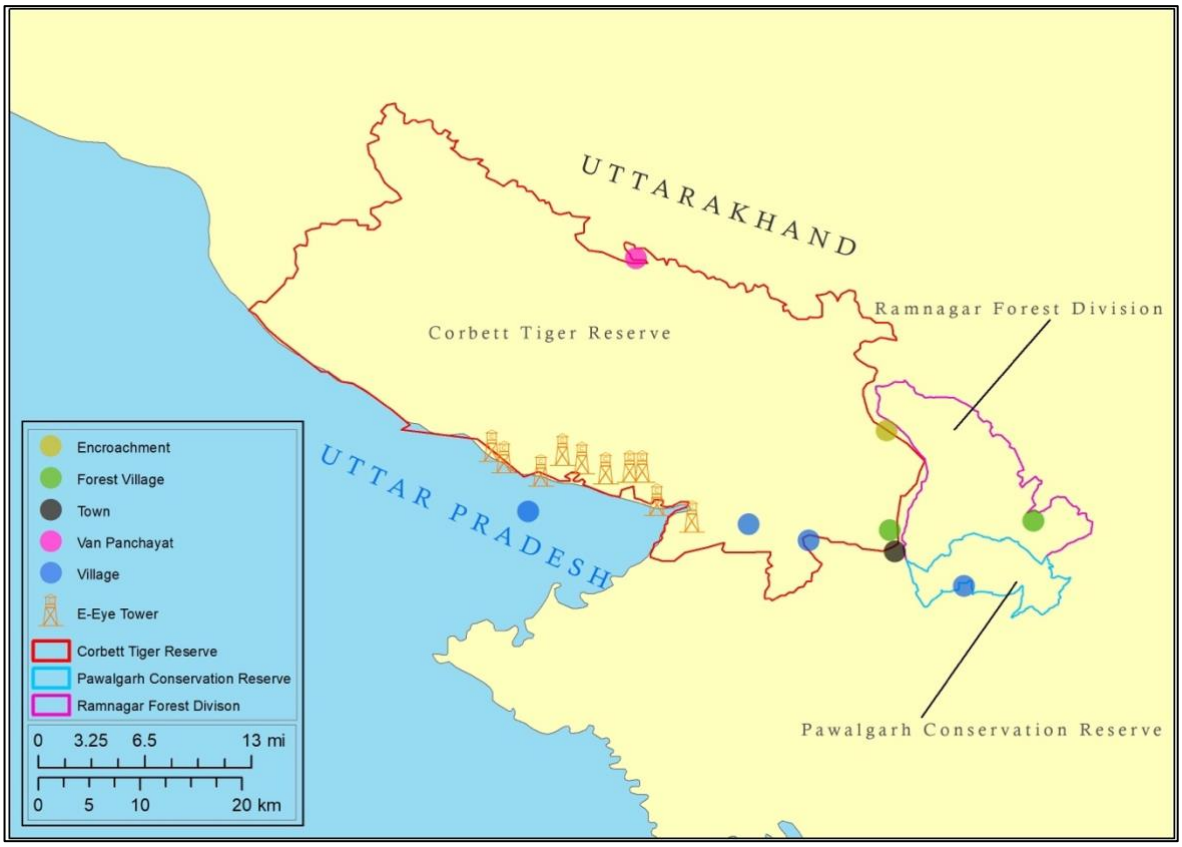

Figure 5: A map of the Corbett Tiger Reserve and adjoining forest divisions showing location of the e-Eye towers

The only settlements that are located inside the boundaries of the CTR presently are of the Van Gujjar community and that of Khalsur which is termed as an 'encroachment' by the CTR administration. Over the last ten years, there have been multiple attempts to resettle and provide alternate land to the village of Khalsur. These attempts have been mainly initiated by conservation NGOs in collaboration with the Forest Department. The scheme brought forward was offering alternate land and housing to individual households rather than the entire village. This however was not acceptable to the community, which preferred to move as a whole and not in clusters of a few households that would be settled in different areas. This contestation over land makes daily relations between the Forest Department and the residents of Khalsur confrontational and the situation remains tense.

Strict protection measures over the years have resulted in populations of herbivores and other wildlife increasing within the CTR (Sinha 2015). And as was the case during the period when CTR was Hailey National Park, crop raiding has become a major problem for villages along its boundary. This has been one of the reasons why communities are choosing to sell their lands to tourist lodges

and resorts, instead of bearing the burden of economic losses by continuing to practice agriculture. Although fatal attacks by large wildlife on residents are rare, a spate of attacks by an individual tigress between November 2010-January 2011 created an atmosphere of conflict that could have had serious consequences for long term conservation in the CTR. Six women and 1 man were killed in and around the village of Khalsur resulting in an intervention that would result in the shooting of the tigress involved. However, residents of Khalsur argue that if action by the Forest Department was taken right after the first killing, other lives would have been saved. Residents also argue that this apathy by the Forest Department was due to the status of 'encroachment' given to the village and the lower caste status of the people who had died. The killings of Khalsur were another major flashpoint of conflict between the Forest Department and its residents.

My fieldwork in the CTR coincided with the rigorous All India Tiger Monitoring Exercise which takes place once in four years. The present exercise entered the Guinness book of world records for the largest ever camera trap survey that covered an area of 121,337 km2 and snapped 35 million photographs of wildlife (Jhala et al 2020). The results of the exercise revealed that the CTR had the highest population of tigers at a single site in the world. It also showed that CTR landscape along with the Ramnagar Forest Division and the Pawalgarh conservation reserve had the highest tiger densities in India. Having a high tiger population comes with its unique set of problems for protected area managers. Media attention, tourism, and the presentation of the tiger as an icon for conservation has made the management of its population a political issue. Governments that come into power use the increase or decrease in tiger numbers as a political issue, highlighting the incompetence of the previous Government. Tiger deaths even of natural causes turn into political issues with parties highlighting the incompetence of local Governments. For instance, the present Prime Minister of India is on record connecting the rise in immigrants in the State of Assam with land available for conservation of rhinos and tigers.

Figure 6: Prime Minister releasing the latest results of the All-India Tiger Monitoring Exercise. Image courtesy- Press Information Bureau of India 2018

Such political attention given to a species promotes ecological nationalism that drives conservation interventions on the ground. For instance, conservation law enforcement in India is taking a steady turn towards militarisation. There are increasing calls for the deployment of paramilitary forces across India's tiger reserves even when organised poaching of tigers is at an all-time low (Simlai 2015). The formation of the special tiger protection force (STPF) in the CTR is one such intervention. Some tiger reserves such as Kaziranga National Park exercise a de facto shoot at sight policy that has resulted in several extra judicial killing (Barbora 2017). In February 2017, an acting field director of the CTR issued shoot at sight orders as part of a "tactical anti-poaching operation" after reports of a poaching gang seen in the vicinity (Upadhyay 2017). Furthermore, this led to the procurement of drones, camera traps, night vision goggles and the deployment of sharp shooters from within the STPF force. This decision was met with protest and yet again became political with opposition parties demonstrating against the Government in power. The field director was initially suspended and then transferred to a different forest division with senior authorities in the Forest Department claiming that no such action was officially authorised (Scroll India 2017). Conservationists and social activists familiar with the region argue that such extreme measures would never work in the region due to its caste and class compositions of powerful upper caste groups that have significant social and political capital. Post 2017, CTR administration has intensified its policing and surveillance mechanisms through the formation of a dedicated forest drone security force (see figure 7), expanding the network of its e-Eye system and a regular 'flag

march' aimed at creating deterrence and fear. A table listing all forms of CSTs in the Corbett Tiger Reserve is shown below (see figure 8).

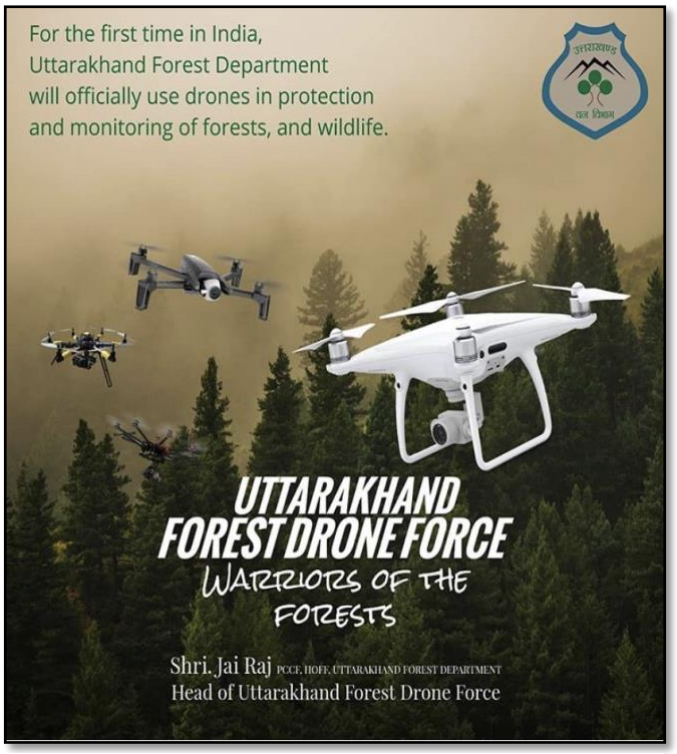

Figure 7: Uttarakhand Forest Drone Force Flyer

Technology	Year Introduced in CTR	Actors Involved
Camera Traps	2006	National Tiger Conservation Authority, Wildlife Institute of India
Drones	2016-2017	Uttarakhand State Government
Electronic Eye (e-Eye)	2016	Binomial Solutions (Private Tech Company), National Tiger Conservation Authority, Uttarakhand State Government
MSTrIPES	2018	Wildlife Institute of India, National Tiger Conservation Authority

Figure 8: Table Listing CSTs deployed in the Corbett Tiger Reserve

4.9. Conclusion

In this chapter I have attempted to provide a contextual background to support the empirical chapters of my thesis. Starting with the origins of the Imperial Forest Department, I have demonstrated how colonial authorities deployed technologies of rule to categorize forests into reserved and protected forests. By this I traced the origins of forest villages that were set up as 'tongiyas' or 'khattas' and provided the labour required to plant trees and manage them for timber.

I then provided a background of India's conservation history and traced the origins of contemporary conservation laws and the role played by hunter turned conservationists in their formation. Since the research is based in the CTR, it was important to provide an overview of how the park was named and formed. In this context I provided accounts of the role played by colonial foresters and by Edward James Corbett in exoticizing this landscape and its impacts on indigenous and nomadic communities.

By giving a detailed account of a changing landscape post-independence and through policies of settler colonization I have provided background information on how current demographics around the CTR came to be. Through a history of the WLPA and Project Tiger I have introduced certain conservation processes and actors that shape present day conservation narratives in the CTR. The sections on the Chipko movement and the formation of Uttarakhand as a separate state provide context on the significance of gender and caste in shaping socio-political processes in the region. By giving a background on the FRA and current conservation geographies I have highlighted contestations over forest resources and space. Finally, I have attempted to describe the complexity of tiger conservation in India by highlighting its political nature and the shift towards militarised practices of conservation. The forthcoming empirical chapters of this thesis build on the context provided in this chapter to establish the social and political impacts of CSTs. I start with the chapter on caste, criminality, and conservation surveillance.

CHAPTER 5

When Caste is Criminality: Social Sorting through Conservation Surveillance

"What are they trying to monitor by flying the drone where women from our village go to relieve themselves? Can they dare to do the same in the upper caste villages?"

(Local resident man, Interviewee no. 44)

5.1. Introduction

The practice of conservation has a long history of violence spanning the colonial and post-colonial periods. Conservation narratives have routinely promoted ideas of pristine wildernesses that are devoid of human presence and need protection (Harris 2014, Kepe 2014). Such narratives have led to forceful evictions of resident local communities who are often from indigenous and marginalised backgrounds (Brockington 2002). States and conservation organisations have often relied on discourses of otherness to validate security measures in protected areas around the world (Ybarra 2016). Scholars have argued that the close relationship between securitization and protected areas serves as a powerful tool for state territorialization (Brockington 2002, Devine 2014, Lunstrum 2014) often at the cost of indigenous communities and by the stigmatization of the peasantry (Bocarejo and Ojeda 2016). The production of protected areas and pristine wildernesses through racialized violence, dispossession and through the criminalisation of natural resource extraction, particularly by people of colour, has been noted in critical scholarship (Loperena 2016, Kashwan et al 2021). Although there has been some research that examines the role played by race in conservation interventions and policymaking, addressing issues of race is still considered an uncomfortable stumbling block (Kepe 2009). This reluctance to engage with issues of race has been attributed to race having fluid interpretations and contested meanings. Scholars have instead tended instead to include other axes of social difference such as gender, religion, culture, and ethnicity that are perhaps more significant than race in shaping inequalities (Kothari 2006).

One such axis of social difference that is predominant in South Asia is caste. Research in the fields of urban development and industry has shown that the response of residents to dispossession is contoured around caste, age, gender, and ethnicity (Dao 2015, Borras & Franco 2013). However, caste is rarely taken into consideration in topics related to ecology, environment, and conservation. In this chapter, I demonstrate how conservation surveillance technologies (CSTs) have the potential to impact caste structures and exacerbate already prevailing caste inequalities. I will start by providing a background on

the significance of caste in Indian environmental politics. Finally, using empirical material from my ethnographic fieldwork in the Corbett Tiger Reserve, I will demonstrate how the use CSTs is intensified in an around villages dominated by lower caste populations and how different caste groups experience such surveillance. I will also establish how criminality is produced through CSTs and then used by the state as a tool of repression against historically marginalised communities.

5.1.1. Caste Ecologies

Literature on the environmental and ecological history of India has extensively described the role played by colonial structures on establishing centralized, bureaucratic, and scientific systems of natural resource governance (Gadgil & Guha 1992, Rangarajan 2012, Swami 2003, Agrawal 2005). This in turn led to various struggles and resistance movements that have also been well documented (Guha 2000, Kashwan 2017). In India, political ecologists doing research on nature and society have brought attention to the increasing alienation and displacement of marginalised communities, issues of ownership, unequal access, the role of the state and market mechanisms (Rai et al 2018, Agrawal & Redford 2009, Menon & Rai 2019, Lele et al 2010, Ghate et al 2008). However, within this discourse, nature and its social history has rarely[9] been critically examined from a caste perspective even when caste has played a significant role in shaping Indian environmental politics. Caste and its relationship with the environment has a long trajectory in India and is closely connected to Brahmanical[2] Hinduism, yet the politics of caste in the realm of nature and its implications for lower caste groups has been a blind spot (Sharma 2017). Furthermore, the politics of caste in conservation is an even bigger blind spot with very limited literature available on the topic.

[9] Caste has been mentioned in Guha (2009) and significant commentary on caste, commons and natural resources exists in the grey literature, popular media and newspapers. Sharma (2017) work has been a major contribution within academia that highlights caste in Indian environmental politics. However, most academics and commentaries that have written on caste (including this thesis) have been written by upper caste scholars. Commentaries by lower caste scholars on nature and the environment are rare and this thesis has made an attempt to highlight them.

[2] Ancient Indian religious tradition emphasizing the status of the Brahmin (priestly caste) in its interpretations of Hinduism

5.1.2. What is Caste?

Before I delve further into this topic, let me briefly start with introducing caste terminology. The caste system is a form of social stratification that provides a hierarchy of social roles to enable certain forms of social and economic governance (Dirks 1989). A fundamental feature of the Hindu religion and derived from an ancient Hindu text called the *Manusmriti,* the caste system divides communities into strictly hierarchical social groups (*varnas*) where an implicit status is attached to one's caste (*jati*) which is fixed at birth (Deshpande 2010). This status is often associated with an occupation and is hereditary, restricting any kind of social mobility (Bayly 1999). For instance, individuals born into the highest varna are called Brahmins who have traditionally been priests and scholars, below them come the Kshatriyas which are associated with kings and warlords. Further below are the Vaishyas which are associated with the merchant class and finally the Shudras that are associated with labourers or the working class. These four categories together are referred to as the Savarnas. Below this hierarchical pyramid (see figure 9) are outcaste groups that are referred to as Avarnas. These social groups are considered to be so inferior that they are out of the varna system altogether. This excluded population has been historically referred to as the 'Dalits' or the 'untouchables' (Ambedkar 1925, Pick and Dayaram 2006). According to the government of India's ministry of social justice and empowerment there are an estimated 3000 castes and 25000 subcastes (Ministry of Social Justice and Empowerment 2017). Some scholars have argued that Indian caste hierarchy is based on purity and pollution where upper caste communities deem themselves purer than communities that engage in impure activities such as washing clothes, pick up animal carcasses or clean sewers (Doumant 1966).

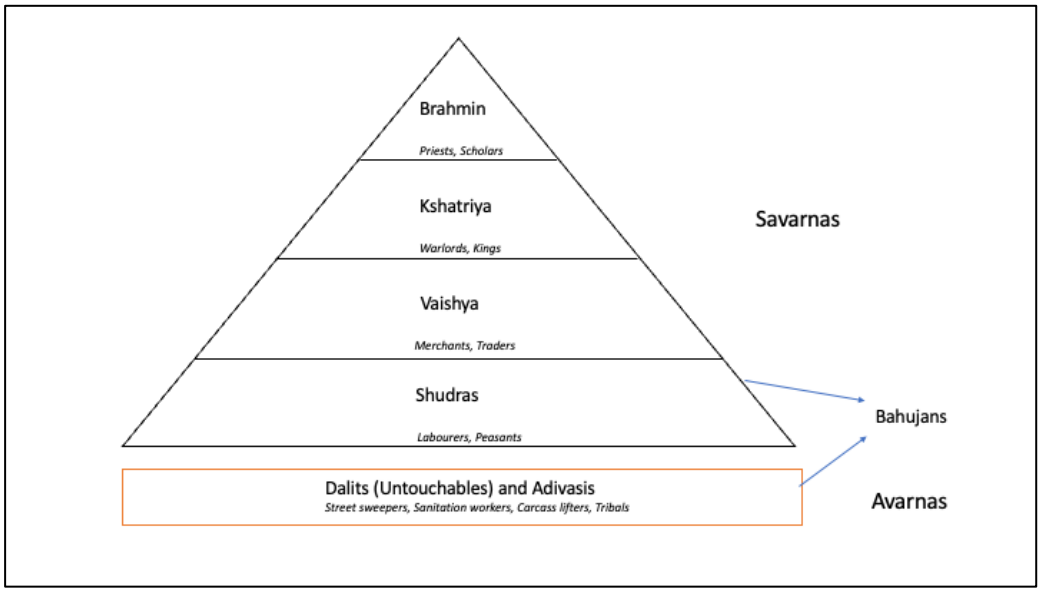

Figure 9: Caste Pyramid showing the Hierarchy of the different Varnas

The Manusmriti lays down strict laws on marriage, property, hygiene and even food. The worst form of sorting or discrimination is directed towards Dalits and other Avarnas. For instance, if an individual from the Savarna castes was to come in contact with the skin of a Dalit, they would have to undergo a strict purification ritual. Post-independence, the government of India introduced a categorization scheme as part of their affirmative action program. Under this initiative some castes from the Shudra varna and the untouchable castes were categorized as scheduled castes (SCs), tribal communities as scheduled tribes (STs) and disadvantaged castes as other backward castes (OBCs). The SCs, STs and the OBCs are provided economic and social benefits through reservations in jobs, education, and other social schemes (Sheth 1987, Gupta 2005, Dreze & Khera 2009). Upper castes or forward castes were classified into general[2] or open categories that required no reservations. Even after affirmative action and protection through legal mechanisms such as Article 14 of the Indian constitution and the prevention of the SC ST Atrocities Act 1989, the practice of untouchability and caste discrimination is still prevalent in contemporary India (Barman 2010). Discrimination and violence based on caste continues to be a regular occurrence in India. National crime statistics reveal that every day two Dalits are murdered, and three Dalit women are raped (National crime records Bureau 2006). Other forms of structural violence against Dalits manifests itself in continued social segregation, landlessness, ghettoization, and dispossession. Although the Dalit community[1] in India is perhaps the most oppressed, several other communities live under constant repression and face exploitation by upper castes. These include scheduled tribes or adivasis and castes from the Shudra varna, moreover these also include lower caste Muslims and Christians. Members of these subjugated and oppressed communities are also referred to as Bahujan (Palshikar 1994; Figure 1). Such terminology was introduced to assert the fact that the issue of caste in India is not merely a Dalit problem (Duncan 2008). Many years after social reformers and leaders like B.R Ambedkar issued a clarion call for the annihilation of caste (Ambedkar 1990), it continues to persist and dominate the socio-politics of Indian society.

[1] The category of Dalits are not a single homogenous unit with one voice or a singular narrative of oppression, multiple sub-castes exist and often discriminate against one another (Deshpande 2016, Sharma 2017).

[2] Term used in India to denote castes that are on average ahead of other castes socially and economically

5.1.3. Caste and Nature

Mukul Sharma's (2017) work 'Caste and Nature' is being seen as a foundational text that comprehensively examines and deconstructs the role caste plays in Indian environmental politics. Sharma argues that access to nature in India is entwined in the politics of alienation and exclusion that is fraught with casteist overtones. He argues that access to nature and its resources are an exercise of power in the hands of the Savarna castes who have historically oppressed Avarna castes through a process of environmental othering. Savarna castes and in particular the Brahmins segregated and subordinated lower castes by the imposition of hierarchies that regulated access to water, land, and forests. For instance, certain lower castes were associated with rearing pigs, an animal associated with dirt, filth, and social pollution. These castes were then pushed into traditional community (caste) based occupations of removing/hunting raiding wild boars on agriculture land owned by the Savarna castes or into occupations of removing dead animal carcasses. Traditional caste-based occupations continue to persist in contemporary India, and some conservation narratives have even appropriated these occupations by offering market-based incentives to some scheduled caste communities. These communities are now led to sell their traditional knowledge associated with wild animals to provide experiential learning for tourists. However, Dalit scholars have argued that it is precisely such initiatives that continue to support the ghettoization of lower caste groups into traditional occupations and do not empower them to improve their situation in civil society (Yengde 2021).

The history of caste in India has shaped Indian environmental history and politics in extremely profound ways but hasn't received much scholarly attention. Sharma (2017) argues that caste shapes environmental attitudes and perceptions of both Savarnas and Avarnas. Hierarchical boundaries of caste made it possible for savarnas, and for Brahmins to appropriate and exploit natural resources. Furthermore, caste boundaries led to Dalits developing their own understandings of nature and its resources, which Nagaraj (2010) describes as co habitations of sorrow, pain, joy, love, attachment and of alienation.

5.1.4. Eco-Casteism

Studies on Indian environmentalism and conservation, while emphasising certain intersectional identities such as ethnicity, gender, and class, have largely obscured the role of caste. More importantly, some discourses on Indian environmentalism have even provided a defence of the caste system. Contemporary environment and conservation discourses in India project ecological degradation because of the imposition of a western colonial practice, as opposed to an indigenous, spiritual Indian culture rooted in Hinduism. Sharma (2013) has argued that Indian environmentalism partakes in the glorification of the Hindu past and of Brahmanical traditions wherein nature existed in harmony with people, conserved by self-sustaining communities of forest dwellers, peasants, and women. Such discourses fall into a trap of romanticization and valorisation of tradition without considering their role in the maintenance of the caste hierarchies. Sharma (2013) labels such narratives as a form of 'Eco-casteism', which is often grounded in the justification of the caste system. For instance, some scholars have referred to the caste system as an ancient concept of sustainable development which disciplined society by partitioning the use of natural resources according to castes or occupations (Agarwal et al 1985). It was argued that such stratification created the right kind of society that used resources in a sustainable fashion (Dwivedi 1996).

Even seminal scholarly works on ecological history such as that of Guha and Gadgil (1992) have enabled the justification of caste by arguing that the caste system is a form of ecological adaptation wherein various caste groups form ecological niches in terms of the habitats they occupy and the natural resources they use. Perhaps the most provocative explanation of the caste system comes from the work of Kavoori (2002), where they argue that the evolution of the varnas followed the principles of natural selection and was essentially ecological in its logic. Kavoori compares the varna system with the ecological trophic system, wherein the Shudras are the autotrophs or primary producers with the vaishyas, kshatriyas and brahmins forming the rest of upper levels or primary, secondary, and tertiary consumers. Kavoori compares the dalit (untouchable) castes with decomposers in the trophic system and argues that the imposition of untouchability enhanced the competitive advantage of Dalits as specialised roles and occupations resulted from it. Sharma (2017) argues that such Eco-casteism is an upper caste representation of nature and environment that dominates and makes invisible lower caste narratives on environmentalism. It has also been argued that environmentalists, intellectuals, and civil society organisations have played an active role in enabling the politics of eco-casteism (Gosling 2001).

Dalit writings on environment and nature document multiple spatial geographies of caste, resource inequalities and traditional knowledge systems. However, the dominant nature of Brahmanical

environmentalism in India, has made invisible the diverse mosaic of Dalit-Bahujan ecological discourse. Even the most popular environmental movements such as the Narmada Bachao Andolan[1] have been critiqued by Dalit thinkers as an upper caste narrative highlighting the concerns of mainly the landowning castes (Kanth 2001, Gunvad Nilsen 2013). Dalits and Bahujans have participated in significant numbers in India's environmental movements and struggles, however most studies usually merge them under general categories of marginalised, migrant, vulnerable or displaced refugees. Sharma (2017) asserts that when questions of caste and Bahujan ecological politics are incorporated into environmental inquires, it complicates the dominant Brahminical narratives on the environment, and hence there is a prominent caste blindness in Indian environmental conservation discourse.

5.1.5. Caste and Conservation Practice in India

Caste blindness particularly extends to the discourse of biodiversity conservation in India. Research has shown that the social and political impacts of state territorialisation in biodiversity rich landscapes is unequally spread within local communities (Lasgorceix and Kothari 2009, Rangarajan and Shahabuddin 2010, Brockington and Duffy 2011). Such impacts are specifically visible when the creation of new protected areas results in the displacement of local communities. Conservation displacement in post-colonial India has been highly detrimental to the lives and livelihoods of forest dwellers (Iyer 2007, Rangarajan and Shahabuddin 2010). Literature on displacement that is induced by urban development, large scale infrastructure and industry acknowledges that the impacts on affected populations and their response to them are contoured around caste, class, age, ethnicity, and gender (Hall et al 2015, Edelman et al 2013, Dao 2016). For instance, Dwivedi (1999) highlights the internal differentiation along caste lines of the affected communities by the Sardar Sarovar Damn on the river Narmada. His work demonstrated how some castes such as the land owning Patidar, Jat and Rajputs chose to resist resettlement while land less Dalit peasants were attracted by the opportunity to own land after resettlement, and in turn an opportunity to escape everyday forms of exploitation by upper caste groups (Baviskar 1995).

Unfortunately, conservation induced displacement or what is now popularly known as voluntary resettlement has rarely been examined from a caste perspective. However, studies (e.g., Kabra 2020), local media reports (e.g., Sethi 2019, Kukreti 2020) and journalistic investigations (e.g., Namdev 2017) of some resettlement initiatives have shown unequal distribution of compensation and exploitation by bureaucrats and middlemen directed towards *Adivasis* and *Bahujan* communities. For instance, Kabra (2020)

[1] An Indian social movement in 1985 against a number of large hydroelectric projects on the river Narmada. It involved a number of demonstrations, hunger strikes and judicial intervention.

demonstrates the role played by caste-class dynamics in determining the distribution of compensation and new livelihood resources in a resettlement and rehabilitation program from Central India. Giving the example of a resettlement program in Kuno wildlife sanctuary, Kabra argues that dominant castes grabbed and established their hegemony over market-based opportunities provided by the resettlement package, while disadvantaged groups such as the scheduled castes and *Adivasis* were alienated from their forest-based means of production. Studies have also shown that post displacement economic and livelihood trajectories of forest dwelling communities and *Adivasis* continues to be linked with caste-based resource politics (Kabra 2009, 2013, 2014).

Conservation law enforcement in India is disproportionately directed towards *Bahujan* communities (Fanari 2019) resulting in the production of a certain conservation criminality (Gore 2017). The criminalisation of natural resource extraction from reserve forests in the colonial era and the branding of several hundred resisting *Bahujan* communities to squatters, poachers, thugs, and criminals left a lasting structural impact in the governance and policing structure of the Indian forest bureaucracy (Gadgil & Guha 1992). Conservation narratives that revolve around anti-poaching and law enforcement continue to specifically target these communities.

In 1871, the British colonial government in India branded over three hundred bahujan communities such as Rai Sikhs, Pardhis, Bawariyas, Katkaris and more, as hereditary criminals under the Criminal Tribes Act (CTA) (Major 1999, Brown 2004, Gandee 2018). The CTA was specifically used against nomadic pastoralists, hunter gatherers, forest dwellers and a wide variety of marginals who did not conform to the colonial vision and upper caste image of a settled, agricultural, and daily wage bonded labour (Arnold, 1979, Yang 1985). Inspired by a mix of racist criminal anthropology and the caste system, its aim was to establish state surveillance and control over these communities (Brown 2001). When colonial authorities failed in their objectives to explicitly control the Indian population through force, they adopted the strategy of selectively policing certain communities driven by social consensus on who was a criminal, which in turn was informed by the caste system (Sinclair 2008). This strategy filtered down to the Imperial Forest Department and its forest guards who were essentially a policing force. Thus, traditional semi-nomadic hunting communities such as the Rai Sikhs and Pardhis had become objects of policing under the CTA, whose way of life conflicted with imperial regulations on forest produce extraction, hunting and control over forests (Major 1999).

Under the CTA, intrusive policing and surveillance became a daily part of the lives of these communities. This included maintaining names of offenders in permanent records and placing groups of these

communities into 'reformatory' settlements to restrict their nomadic movements and keep a constant vigil on individuals (Singha 2014). Singha (2014) argues that it was far easier for the imperial policing structures to prosecute an individual for being part of an ill-defined criminal collective than to establish criminality for a specific offence.

Five years after India's independence, the CTA was repealed and thereafter these communities were referred to as De-notified tribes (DNT). However, the legacy of the CTA has continued into contemporary policing structures including that of the present forest bureaucracy (Bokil et al 2021). Across India, policing bodies including Forest Departments continue to maintain surveillance systems designed under the CTA and have adopted legal provisions to create new categories such as 'habitual offenders' (HO's). This new ill-defined administrative category of HO's has replaced the hereditary criminal of the past and now enables vast discretionary powers to policing bodies. A deeply entrenched caste system, extremely low representation of bahujans within policing bodies and the legacy of the CTA continues to direct limited policing resources to be selectively used against the same communities that were targeted in colonial times (Bokil et al 2021).

In India, policing agencies for centuries have kept physical records of all cases and of habitual offenders (HO's). These records are now being rapidly digitised through a centralised system of digital records called the Crime and Criminal Tracking Network and Systems (CCTNS) (National Crime Records Bureau Ministry of Home Affairs 2019). The CCTNS allows policing agencies to seamlessly access every police record in history with details of offenders, the crime committed, facial photographs and judicial decisions associated with them (Bokil et al 2021). The capabilities of the CCTNS extends far beyond digitisation of police records and now allows for the geo-tagging of offences (Mishra 2012). Using 'smart' and 'objective' algorithms, the CCTNS predicts criminal hotspots that aid predictive policing by Indian security agencies (Jassal 2020). However, the databases that are being digitized are fed by a century old caste-based system of preventive surveillance and predictive policing based on lists of habitual offenders (Bokil et al 2021). It is argued that the CCTNS adds a modernized technological veneer to a policing model which is driven by caste bias and produces criminalities across jurisdictions with seamless digital transmission (Singh and Gulzar 2019, Bokil et al 2021). More recently, several state governments and security agencies have initiated the collection of biometric details of HO's and their family members to establish a 'deterrent effect' (Bokil et al 2021). The CCTNS, parallel regimes of surveillance such as CCTV cameras and social

security mechanisms such as Aadhar[1] are rapidly rendering certain populations, particularly from Bahujan communities, hyper visible and vulnerable to persecution.

In the following sections of this chapter, I will start with demonstrating how the forests and villages adjoining CTR are casteist and communal spaces. Following which, I will demonstrate the role CSTs play in enabling discrimination against Bahujan communities around the Corbett Tiger Reserve. I will show how surveillance done in the CTR using CSTs is seen as biased, driven by caste, and underpinned by a social sorting agenda.

5.3: The Forests of Corbett as Casteist and Communal spaces: Segregation and ghettoization based on Caste and Religion

"We don't take tourists birdwatching through that part of the village, it is very dirty, and they are not co-operative people" said Belwal ji, an upper caste local resident and tour operator from the village of Chukar Malla that is located on the boundary of the Corbett Tiger Reserve (CTR). He was referring to lower caste households that lined the boundary between the village and the CTR. Decades of ethnographic research (Srinivas 1959, Ahmad 2008, Singh, and Khan 2003) has demonstrated how spatial organization of residential spaces in rural India is not only based on caste but also reflects the caste hierarchy of the varna system. During my fieldwork in the villages around the CTR it became increasingly clear that households and even entire villages were segregated and ghettoized based on caste and communal lines. Caste based segregation within villages also determined how adjoining forest spaces were used and who used them. For instance, villages that were dominated by lower caste households were more forest dependent than others and lower caste communities within mixed caste villages used forest spaces more than residents of other castes (see figure 8). The subtle casteism in Belwal ji's assertion was not an aberration in the socio-political space around the CTR. On multiple occasions during fieldwork, I encountered caste-based and communal undertones in the language of a range of actors.

[1] *Aadhar* is a 12-digit random number issued by the Unique Identification Authority of India (UIDAI). Biometric details such as Iris scans and fingerprints are taken to generate the number. The number serves as a social security mechanism by giving proof of identity. It is a single source offline/online identity verification for all Indian residents.

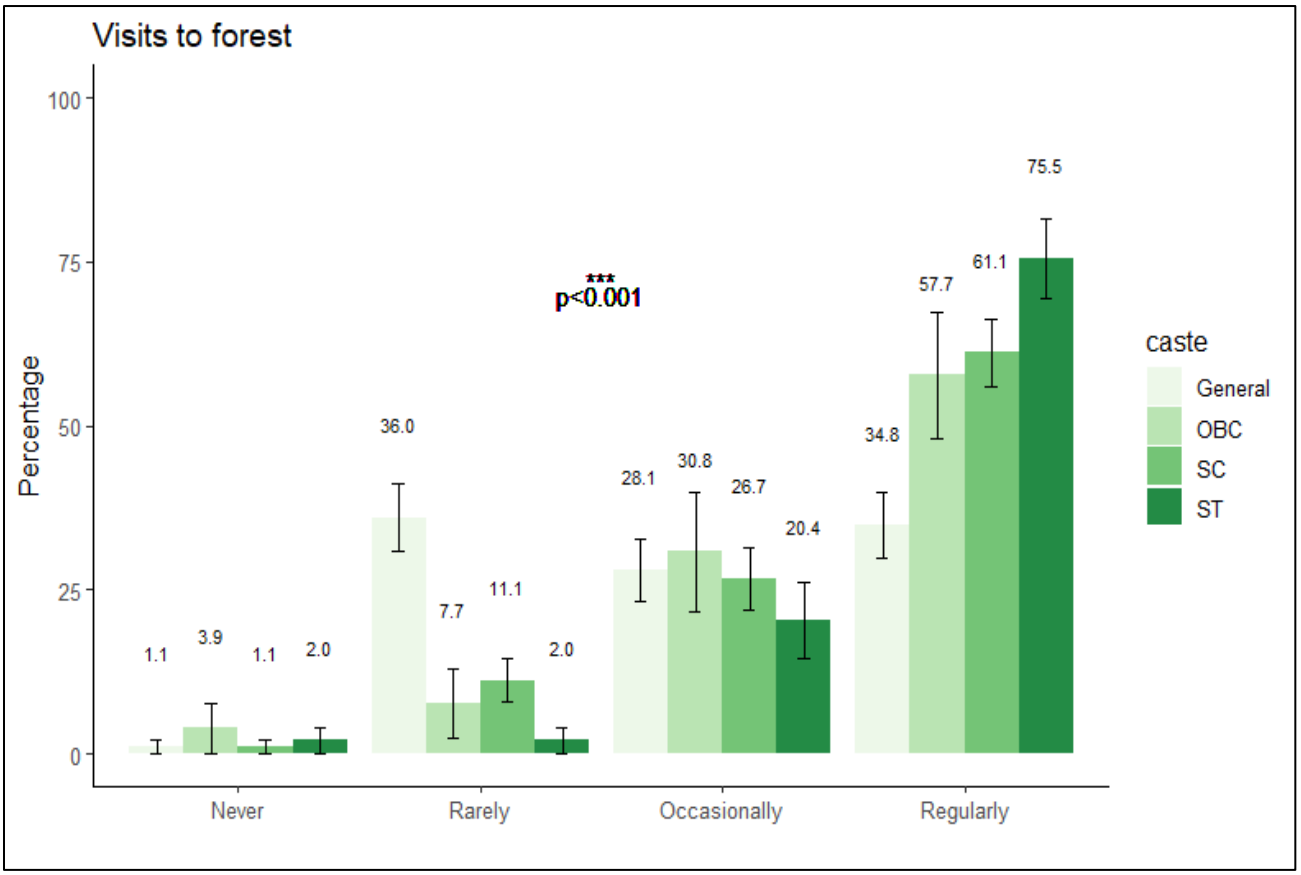

Figure 10: Caste wise representation of how often local-residents visit the forest of CTR for daily livelihood or other needs.

Note: *** p<0.001 (n =117, **Chi-squared test** showing statistically significant caste

General: Forward Castes, OBC: Other backward castes, SC: Scheduled Castes, ST: Scheduled Tribes

As I have described in chapter 4, the caste composition of the villages around CTR varies according to the administrative status of the village. Forest villages wherein land rights have not been settled are resided by Bahujan communities while revenue villages have a mixed caste composition, although dominated by upper caste communities. Such social compositions invariably determined the ways in which forest spaces were used (see figure 8) and how caste relations manifested themselves in the forest. I have described how caste relations dictated contestations over forest spaces between women forest produce collectors in further detail in chapter 6. The interviews I conducted with members from the Buxa tribal community revealed that caste hierarchy determined which part of the forest they could use and what times of the day they could use them. There is considerable social stigma amongst upper caste pahadi's against buxas that are categorized as scheduled tribes (STs) in Uttarakhand. My interviews revealed that members of the Buxa community are considered 'unclean' and 'disorganized' by upper caste communities. The majority of the Buxa population that lives on the boundaries of the CTR is ghettoized in the village of Ranwalga, where they face everyday discrimination and exploitation by land owning upper castes.

"These people (Buxas) live in filth, are drug and alcohol addicts and engage in all kinds of small-time crime."

(Local resident, Interview no. 59)

"These people will never develop, even after the advent of so many resorts around this village, these people choose to do small time menial and lazy work."

(Local resident, Interview no. 61)

One morning in the month of November, while doing participant observations with some women forest produce collectors from the village of Ranwalga, I witnessed a major argument between women and two men from the Buxa community. The men were on their way to the nearby forest stream and were carrying a small locally crafted fishing net. *"Yeh dekho Taskar" - Look at these smugglers*, said Parvati ji to me pointing towards their fishing nets. When I asked why she was referring to them as smugglers she replied, *"What else should I call these dirty men who come to fish and pollute this stream from where we drink water"*. The older women in the group then aggressively asked them to leave the area using the choicest of casteist expletives. In response, the men made their way out of the forest without confronting the women while showing signs of being afraid.

That evening I went on to conduct interviews with a few members of the Buxa community to understand what had transpired in the forest. It was revealed that small scale local fishing is very central to Buxa tradition especially during social functions such as marriages or the birth of a new-born. The river stream

near the village of Ranwalga flows through the buffer area of the National Park and is used by residents of the village as a source of water that is brought into the village through a pipeline. It is also used by the Buxa community for occasional fishing and for potable water. Buxas are treated as 'impure' by upper castes, and their traditional fishing practice that involves diving into the water and catching fish with their hands is considered 'polluting' the water source by some residents of the village. Access to forest resources of the CTR, like this forest stream near the village of Ranwalga was acting as tool to reproduce practices of discrimination and untouchability. Such practices of eco-casteism prevails in many parts of India against Bahujan communities where access to natural resources is clearly defined through caste hierarchy and regulated by casteist social constructs of 'purity' and 'pollution'.

"Most other residents of this village treat us as if we live under their boots, they don't even sit around us and make excuses when paying wages for our labour."

(Local resident (Buxa) Interview no. 65)

"Catching fish from the river is very important in our culture, the Forest Department restricts us from fishing citing laws, but the village members restrict us from fishing because they think we are dirty, and we will pollute their water."

(Local resident (Buxa), Interview no. 68)

Caste hierarchy and inequalities are also reproduced in villages and the forests of CTR by mechanisms of surveillance practiced by the CTR administration in collaboration with the state police. A village level crime dossier is maintained to keep a track of communities and individuals living around and using forest spaces. These registers are maintained at the office of the range forest officer and at every gram panchayat or village council. A gram prahiri (village watcher/sentinel), who is most often an upper caste man is appointed by the police to keep an eye on 'troublemakers' and potential poachers. As forest villages do not have gram panchayats, a gram prahiri from a nearby revenue village is given responsibilities to monitor those villages. A gram prahiri's responsibilities are to constantly monitor the movement of wandering pastoral people, ascertain the presence of outsiders, migrant workers and keeping an inventory of their temporary settlements. The gram prahiri is also responsible to document natural deaths of wildlife, particularly of elephants and tigers in the vicinity of the villages, and names of residents who display basics of wildlife movement detection and who have potentially spoken about hunting. The Gram prahiri also identifies and recruit's informers within villages who could potentially aid with wildlife crime investigations. All this information is maintained in a dossier which is then regularly exchanged with local police to facilitate updates on their list of HO's.

Mr. Sati was a gram prahiri I had the opportunity to interview multiple times and accompany on his 'prahiri' duties. Mr Sati's information gathering would start by asking upper caste residents about any suspicious activity in the village. *"Have you seen any big bearded one's around these days"* asks Mr. Sati to a group of gathered male residents. He was pejoratively referring to men from the van gujjar community who are pastoral in nature and keep setting up temporary settlements. The gathered group laughs and discusses how having van gujjars in the forests adjoining their village is always risky. The van gujjars identify as Muslim by religion and contemporary socio-political discourse in India has seen an increase in Muslims being imagined as a threat and persecuted in response. On one visit to the forest adjoining the village of Shyami, Mr. Sati gathered a group of young men and marched to a temporary van gujjar settlement set up in the forest. The young men and Mr. Sati ask a barrage of questions with hostility to an old van gujjar patriarch. *"Don't even think of doing any 'galat kaam' (illegal things) in this forest and stay away from where our daughters and mothers collect forest produce"* said Mr. Sati. Such assertions of upper caste and majoritarian power over forest resources often intersect with gendered narratives. Here Hindu upper caste men were asserting authority over forest resources while at the same time promoting a commonly used Islamophobic narrative which construes Muslims as a security threat to Hindu women (Anand 2011).

Mr Sati made monthly visits to the zonal police station and reported activities by van gujjars, members of the buxa community and individuals from forest villages who were seen in forest spaces. These reports were taken into cognizance by police constables and reported to the station house officer. An interview I conducted with one such officer revealed that gram prahiris and surveillance done by the Forest Department contributed to police records of habitual offenders (HOs). Gram prahiris who are upper caste men from revenue villages contribute to surveillance by social sorting by reporting perceived suspicious activities of communities belonging to disadvantaged groups, making them hyper visible and vulnerable to persecution by both the state and upper caste dominant groups.

"Gram prahiris and the Forest Department are important sources of information for us to keep a record of suspicious people and troublemakers in areas where we don't go on patrols."

(Police official, Interview no. 222)

"A gram prahiri we recruited gave us important information on a group of men from the Rai Sikh community, they are suspicious people, and we keep a record of them in our HO register."

(Police official Interview no. 223)

5.2. Spectacles of Fear and the Drone Security Force in the Corbett Tiger Reserve

Caste-class structures and ongoing socio-political tensions in society shape the ways in which CST's are deployed in the CTR. This is demonstrated by how the drone security force functions in their day-to-day activities. I conducted many hours of participant observations and interviews with the drone team of the CTR to understand how drone surveillance was practiced in the forests of the CTR. The drone team of the CTR was set up in the year 2017 as the Uttarakhand Forest Drone Force popularly known as the 'warriors of the forests'. The military language used in the name was also reflected in the labour that was used to operate the drone. A five-member team with previous experience of working in the Indian paramilitary forces was specially trained to operate the drones around the forests of the CTR. These men were all from upper caste groups and hailing from different parts of Uttarakhand and the neighbouring state of Uttar Pradesh. I had the opportunity to travel with the team on multiple occasions and observe the ways in which they conduct their drone sorties. In the section below I narrate some of these observations through my ethnographic analysis.

5.2.1. Drone surveillance in a Revenue Village

Suyal Ji was the chief drone operator of the drone security force conducting regular surveillance in the forests and adjoining villages of the CTR. Suyal ji and his colleagues would start each drone patrol dressed in military fatigues and driving a covered vehicle that resembles something covert security agencies would use. Suyal ji and his colleagues were responsible to meet weekly surveillance targets in selected areas in a randomized pattern. *"We have to be unpredictable and make surprise drone sorties"* says Suyal ji explaining to me that the element of surprise is necessary when it comes to detecting illegalities or wildlife crime. My observation and interviews revealed that drones in the Corbett tiger reserve were used completely for surveillance of people and very rarely for wildlife management purposes. However, this surveillance changes in intensity according to the type of space and population being surveilled. Although the team is provided an official document with randomly generated points to be monitored, it has considerable agency to act according to its own judgement and experience.

"We are given a sheet with GPS co-ordinates and points to monitor, but we hardly follow it, those sheets are only for official purposes to show a record of all the monitoring"

(Drone operator, Interview no. 230)

"What is the point of such a sheet, our basic mandate is to deter people from entering the forests, we know exactly where to fly the drone to meet that objective"

(Drone operator, Interview no. 229)

Before each drone patrol, Suyal ji would make a few phone calls to the 'gram pradhans' (village headman) of pre-determined villages and ask for permission and advice to make a drone sortie around the village. For instance, on one morning I received a call from Suyal ji informing me of a planned drone sortie in the village of Ranwalga. *"We have to inform the gram pradhan before we fly the drone around, lest someone has an objection"* said Suyal ji. After arriving at the village, the drone team parked the vehicle on a road adjoining the village, visited the residence of the gram Pradhan, had a cup of tea, and discussed ongoing issues and developments related to the village and the forest. *"Doing this is important, we have to be seen with an influential man from a village, it sends the right message"* whispered Suyal ji to me in between conversations with the gram Pradhan. The gram Pradhan would then inform the drone team about movement of elephants and other wildlife in the surrounding area and of newly arrived migrant labour or what he considers suspicious activity in the village.

The drone team is then led by the gram pradhan and a few other residents to the boundary of village where the team prepares the drone for the flight. In flight, the drone is flown in a straight line on the boundary of the forest and the village for a few minutes. As the flight is in process, large groups of residents gather and break into an applause as the drone is lowered on the landing pad. The gram Pradhan then authoritatively informed the gathered residents about the drone, its functions and why the Forest Department was using drones to monitor the village boundaries. *"Now listen here everyone, Suyal ji and his team are monitoring the village boundary to keep an eye on this part of the forest, please tell your friends and family to not enter the forests on the days Suyal ji and his team are flying the drone in our village"* instructs the gram Pradhan to the gathered crowd. Some residents then took selfies and photographs with the drone while some demand it to be flown again. As the drone team prepared to wrap up and leave, one local resident informed the drone team about newly arrived migrant labour. *"Three days ago, Nepali labourers have arrived for some resort construction work, they can eat anything, so you should monitor them"* he said, as others laughed and nodded in agreement. Conversations I had with residents later revealed that labourers who had arrived were from the state of Assam and the 'Nepali' and 'eat anything' reference was made in a pejorative way for the food habits of migrant labourers from the north-eastern region of India. Agreeing to the demands of the gathered crowd, the drone team made another flight, this time over the temporary houses of the migrant labour. *"Bagh dadh mach jaayegi"- "They will run helter skelter"* said the gram Pradhan joking with some gathered residents. As predicted, there was a flurry of activity as some people hurriedly ran for cover into their homes while some

huddled together in fear. My interviews in the village of Ranwalga also revealed that the drone team also flew drones over Buxa houses and on the stretch of rivers the Buxas used for fishing and collecting water. This was a typical example of how the drone security force conducted its routine surveillance in a revenue village like Ranwalga. Although the level of involvement of the village head and other residents varied with each drone patrol, they were always informed in advance. Furthermore, powerful caste and class groups influenced the process of surveillance and on who it was subjected, socially sorting certain bodies over others.

5.2.2. Drone surveillance in non-revenue villages

"It is not necessary to call anyone or ask them beforehand before we fly our drone, they are squatters on forest land"

(Drone operator, Interview no. 230)

The process of drone surveillance in forest villages and settlements where land rights were contested was significantly different from how it was conducted in revenue villages around the CTR. As mentioned before, forest villages are primarily comprised of lower caste and bahujan populations and contestations with the Forest Department over resources and forest spaces is more intense compared to revenue villages. Like in the revenue village of Ranwalga I also made observations of the drone team while they conducted drone patrols in the villages of Horloki and Guldar Ban. In stark difference from the village of Ranwalga, the drone security force would not call any village representative or inform anyone before arriving at the scene to conduct their drone patrol. The drone vehicle would be driven straight to the village and parked along the central area in full public view. The team would then wait for a large crowd to gather before the drone is taken out and flown.

The body language of the team is also significantly different compared to when they were flying the drone in the revenue village of Ranwalga. In forest villages, the drone team were more authoritative and aggressive in the ways they communicated with the gathered crowd. Furthermore, the drone would be flown from within the village and then directed towards the forest as opposed to on village-forest boundaries as in the case of revenue villages. Perhaps the most significantly different aspect of drone sorties over forest villages was what was communicated to the gathered crowd. *"We have to create an atmosphere of 'Khauf'- terror and fear*" said Suyal ji while directing his colleagues to fly the drone low before heading towards the forest boundary. As a crowd gathered, Suyal ji commandingly informed them, *"This is a drone camera, we are watching you and the forest from the air"*. Other drone operators would also get into conversations with groups and individuals and misinform them about the capabilities of the drone. They

would be told about night flying capabilities of the drone and it having facial recognition abilities that are linked to people's *Aadhar* cards. On one instance in the village of Horloki, a young man contested such assertions only to be insulted by the team using casteist expletives, *"Bada pandit ban raha hai- Acting like a pandit (brahmin) are you? Our team from Dehradun will come and catch you if you dare enter the forest"* retorted one of the drone operators.

Figure 11: An illustrative representation of the modus operandi of the drone security force in the CTR

The ways in which caste structures shaped drone surveillance in the CTR was demonstrated in the strongest ways in the temporary settlement of Guldar Ban. As mentioned in chapter 4, Guldar Ban is considered as an encroachment on forest land by the CTR administration and is inhabited only by lower caste and Dalit communities. While doing participant observations with the drone team in Guldar Ban, I noticed that the team would collude with the forest guard responsible for the area and fly the drone over areas directed by the guard. For instance, on one occasion I observed the forest guard asking the drone team to fly at a lower altitude above some houses and attempting to count the number of firewood stacks stored outside each house. *"The people from this village are notorious, the other day some women formed a group and attacked one of my subordinates because he stopped them from bringing large clumps of firewood, I'll show them now"* said the guard while counting firewood clumps and taking notes on a small diary. Later in the week, I interviewed residents of Guldar Ban to get a perspective on their experiences of such drone surveillance. *"The guard that monitors the forests alongside our village acts more like a 'zamindar[1]' than a guard"* said Chandra Arya a local activist from the village. My interviews revealed that constant tussles with the forest guard and residents particularly women of Guldar Ban were a common occurrence and the CTR administration often retaliated and created obstacles in the day to day functioning of the village. *"Corbett administration call our village an 'atikarman'- encroachment, and the forest guards and its officers enjoy showing us down because we are all dalits,"* said Chandra Arya. According to many residents of Guldar Ban, interventions by forest authorities are often determined by their inherent caste bias. Chandra Arya revealed to me that the drone team would also make flights in the dry stream beds where women from the village would go to relieve themselves. According to the drone operators and forest guards, to control the rising cases of human wildlife conflicts, drones were flown over the said areas to deter residents. This however also reflected the dynamics of caste and the structures of violence associated with it, as is evident from the quotes below.

"What are they trying to monitor by flying the drone where women from our village go to relieve themselves? Can they dare to do the same in the upper caste villages?"

(Social Activist, Interviewee no. 44)

"They want to line up every morning and evening to relieve themselves so close to the forest, inviting attacks from wildlife, they should sit outside their homes instead of 'polluting' the forest area"

(Forest Guard, Interviewee no. 189)

[1] The word zamindar is a caste reference often used to depict historically oppressing landowning castes such as Brahmins and Rajputs.

The sorties over forest villages and temporary settlements around the CTR was always about a show of power, and in the words of a senior forest officer I interviewed- "a spectacle of fear" to create deterrence amongst residents. As demonstrated in the above sections through my ethnographic analysis, such spectacles of fear and display of power were unequally distributed between villages and were determined by deeply rooted caste structures.

5.3. Nationalistic Discourse, Islamophobia and Conservation Surveillance in the Corbett Tiger Reserve

As has been argued before, certain communities and ethnicities are presented as threat symbols triggering panics in society. In India, Islamophobic discourse has seen a significant rise since the year 2014 that saw the rise of the Bharatiya Janata Party (BJP), a Hindu nationalist political party. The BJP and its majoritarian Hindutva ideology narrative have regularly targeted Muslims, giving rise to mob violence, hate crimes and state persecution (Anand 2007). I have also mentioned how van gujjar communities are subjected to surveillance and hostility by police structures like gram prahiris in and around the forests of the CTR. In this section I describe how CSTs are used to further contribute to the surveillance of van gujjars and the role ongoing socio-political and nationalistic discourses play in such surveillance.

During the last few months of my fieldwork in the CTR, a significant political event by the government of India caused a wave of nationalist fervour throughout the country, including in the villages adjoining the CTR. On 5th august 2019, the government of India revoked the special status or limited autonomy granted under article 370 of the Indian constitution to the state of Jammu and Kashmir. This region has been a site of significant dispute between India, Pakistan, and China since the year 1947 (Mohan 1992). The region has also been a trigger for multiple wars between India and Pakistan and has seen an ongoing insurgency since the last three decades (Bhat 2019). The Van Gujjar community track their ancestry to this region and until recently practiced transhumance, by spending summers in the Himalayan foothills of Kashmir and Himachal Pradesh and winters in the forests of Uttarakhand.

Post abrogation of article 370, there were celebrations in the town of Ramnagar organised by a popular right-wing Hindu organisation called the Bajrang Dal. Youth activists of the organisation also planned for village level demonstrations and celebrations around the CTR. The day after the abrogation of article 370, I had an interview scheduled with Rajnish ji, a local activist who happened to have been a part of the local Bajrang Dal group in his young days. As we sat discussing the socio-politics of people-park relationships in the CTR, a small procession of Bajrang Dal youths marched by his office raising nationalistic and pro Hindu slogans. *"These people are going to cause a lot of trouble for Muslims in our area for a few days now"* said Rajnish

ji. As we discussed the issue, he seemed concerned about van gujjar populations around the CTR who already face restrictions and state action against their way of life and daily mobility. My interview with Rajnish ji also revealed that the regional police had mobilised 'gram prahiris' from every village around the CTR to track suspicious activities and be alert for a few weeks.

A Van Gujjar settlement called Kakar Khet with multiple households is located near the village of *Chukar Malla* and within the buffer area of the CTR. Van Gujjar residents I interviewed from this settlement faced many restrictions by the Forest Department when it came to grazing their cattle. The residents of this settlement also regularly lost their livestock to depredation by tigers and struggled with access to compensatory mechanism made available by the CTR administration. Three days after the abrogation of article 370, I was informed about an altercation between a Van Gujjar family and Bajrang dal activists from the village of *Chukar Malla*. The 'gram prahiri' of the village had made a complaint with the local police and with the Forest Department about some 'suspicious' activities by the Van Gujjars in the area.

A Bajrang dal member himself, the gram prahiri of *Chukar Malla* had made calls to the drone team of the CTR. Interviews I conducted with the drone team following up after this incident revealed that the gram prahiri had heard some of the Van Gujjars express concerns and dissent over the abrogation of article 370. This caused an altercation between two groups resulting in violence subjected towards the Van Gujjars. The drone team were then asked by the gram prahiri, some powerful residents and even the local police to conduct drone patrols over Kakar Khet. *"The situation is tense, and these people (van gujjars) are known to retaliate by poisoning water bodies and animal carcasses to kill tigers"* said Suyal ji the chief drone operator. In the past, Van Gujjars have been accused of poisoning livestock carcasses killed by tigers as retaliation against the Forest Department. The drone team conducted multiple drone sorties for a week in and around the Van Gujjar settlement, keeping a close eye on the adjoining forests and riverbeds. Furthermore, forest guards were directed to install camera traps around the entry and exit roads and in the forests used by these Van Gujjars. *"A fire lit in Kashmir by Modi Sarkar (government) can light a fire in our forest too if we don't watch these people"* said a forest officer responding to my question on the sudden rise in surveillance of Van Gujjars and the settlement of Kakar Khet.

"These Van Gujjars cannot be trusted, a gram prahiri heard one of them talk about how the abrogation of article 370 is very troublesome for the gujjar's relatives who graze their cattle in Kashmir. They can do anti national activities. They should be monitored by the drones"

(Forest officer, Interviewee no. 120)

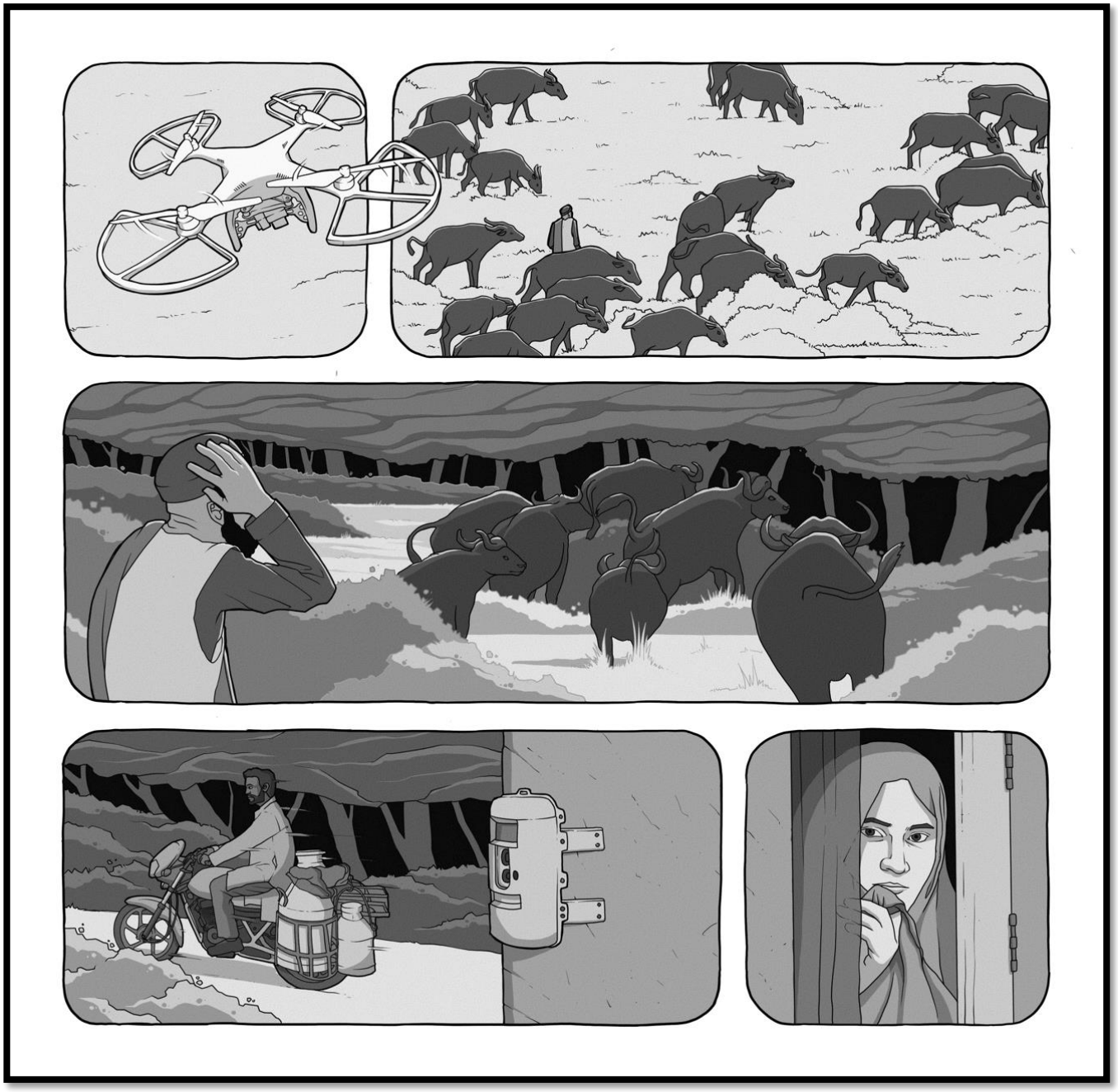

Figure 12: An illustrative representation of surveillance imposed on van-gujjars

I also interviewed Van Gujjar residents of Kakar Khet to understand their experiences of such state backed surveillance. My interviews revealed that restrictions and heightened surveillance were everyday realities particularly for Van Gujjars of this settlement. However, post the abrogation of Article 370, residents of Kakar Khet experienced an increase in such surveillance. *"The CTR administration has been wanting to evict us for years now, we are familiar with being taunted and restricted, but this is different, the atmosphere in the country is not good for us"* said Taukir Hussain who has spent over four decades practicing transhumance in the Himalayan foothills. *"We no longer have any connections to Kashmir, my ancestors did, just because we are Muslim we are being targeted*" said Taukir Hussain after being asked the reasons behind recent events of violence and disturbance in Kakar Khet. Taukir Hussain revealed to me that although the Forest Department regularly deploys cameras in the forests adjoining their settlement, this time they had placed camera traps in key entry and exit locations to the settlement. *"I have worked with the Forest Department as a daily wager, I know that the camera is to be put in the jungle, what are they trying to do by putting it near our 'dehras'[2] (households)* said Taukir. According to Taukir, this was motivated by an altercation some members of his community had with local youth groups a few days ago.

When asked why the Forest Department would collude with local groups and be involved in such politics, Taukir replied *"Who are the Forest Department? they are a large mirror that reflects these local groups and their politics, both ask us to go to Pakistan".* The go to Pakistan reference has been regularly used as an Islamophobic reference against Muslims throughout India by right wing political groups, pro-government news media and even state institutions. According to Taukir and other community members drone surveillance above their households and grazing areas was a method to instil terror. In Kakar Khet, drones were flown low and directly above grazing cattle causing the livestock to panic and run into the forests in small groups. *"This puts our livestock in danger, our livestock can become easy target for tigers"* says one resident. According to Taukir, this was done purposefully by drone operators as a tool for harassment. *"Our women are not educated or exposed to these things, some of them panic and don't come out of the houses",* says another resident. By highlighting the case of Kakar Khet and the Van Gujjars, I argue that CSTs like camera traps and drones are easily co-opted and used for objectives that contribute to the othering of already vulnerable communities. CST's when used in such contexts contribute to narratives that intensify communalism and make communities like Van Gujjars hyper visible and vulnerable to persecution by the state and its populist narratives.

[2] Dehras are temporary Van Gujjar households made out of mud and thatch and a characteristic feature of a Van Gujjar Settlement

5.4. Conservation Surveillance, Caste, and the Criminalization of a State Border

In the year 2005, two engineers and technology entrepreneurs from a metropolitan city of India visited the CTR for a leisure trip. Being technocrats with a penchant for innovation, they noticed a need for an advanced and effective wildlife crime technology in the tiger reserves of India. After months of research on technologies used by organisations such as the United States Army and the Israeli Defense Forces, the two technocrats devised e-Eye, a complex surveillance system that would provide extensive live surveillance over large swathes of a given landscape. Bolstered by awards at a Wildlife crime tech challenge that was organised by donors such as USAID, TRAFFIC and the Smithsonian foundation, the technocrats introduced the e-Eye system to India's National Tiger Conservation Authority (NTCA). In 2011, The e-Eye system was piloted in the CTR with a full deployment along its southern boundary in the year 2016. As part of my fieldwork, I interviewed the innovators behind the e-Eye and other key people associated with it at the NTCA and CTR administration to understand what factors led to its deployment on the southern boundary of the CTR. In this section, I demonstrate the role of caste structures and perceived criminalities in the deployment of a hi-tech conservation surveillance system such as the e-Eye from its conception to its deployment.

"Me and my business partner have done countless safaris in India's tiger reserves and are well aware of the poaching problem" said one of the engineers who co-founded the company that holds the patent for the e-Eye. The company has innovated a range of other digital and surveillance technologies that are presented for use in conservation such as high-end radio collars and handheld thermal imaging cameras designed to be used for animal rescues. The engineers believed strongly in technological solutions for conservation law enforcement and were committed to delivering technologies that detect and prevent wildlife crime. *"Organised criminals have decimated tiger populations in tiger reserves such as Ranthambore and pose a threat everywhere"* said the engineer responding to my question on why surveillance tech like e-Eye is important. *"In this way we can keep a track of suspected criminals before they enter the forest"* they continued. During my conversations with the engineer, I observed that the criminals or poachers were being associated with certain vulnerable communities that were generally blamed for wildlife crimes such as the *Rai Sikhs* and *Kanjars*, both of which were classified as criminal tribes during colonial rule. In the period through which e-Eye was being developed, global narratives on poaching were replete with imagery of war and on the links between wildlife crime funding terrorism. In India, such global narratives were encouraging the militarisation of conservation (Simlai 2015) particularly in high profile tiger reserves such as the CTR.

"Conservation is a war now, everywhere from Africa to India there is an organised racket that is killing our elephants and tigers, it is also linked to terrorism, technologies can play a key role in this war"

(Tech entrepreneur, Interview no. 240)

"We have been told by CTR administration that they are dealing with organised rackets of criminal tribes"

(Tech entrepreneur, Interview no. 240)

In its conception itself the e-Eye was driven by logics and narratives that criminalised certain bodies over others and reflected militaristic narratives in conservation. To explore this dimension further I conducted detailed interviews with NTCA officials, senior forest officers, operators of the e-Eye and residents on the southern boundary of the CTR that were subjected to surveillance by the e-Eye. *"The towers were put there because the boundary with the state of Uttar Pradesh (UP) was identified as the most sensitive, you know how hardy UP criminals can be"* said a senior government officer from the NTCA. During the time of my fieldwork in the CTR a total of 10 towers were functional all along the southern boundary of the CTR bordering the state of Uttar Pradesh.

In the year 2001, CTR was struck with a spate of elephant killing incidents referred to as 'Haathi kaand' (Elephant Scam). The killings were very different to what was seen or recorded before in other poaching incidents elsewhere in India. The perpetrators had used chisel like iron darts soaked with a lethal pesticide that was fired through a muzzle loader aimed at the underbelly of an elephant. The elephants were then tracked, sometimes for days in the dense undergrowth till the poison took effect and killed them. Interviews I conducted with conservation practitioners, forest officials and residents present in the CTR during the time revealed that the primary suspicion for the poaching events was on Rai Sikh 'criminals' who were supported by migrant outsiders. Investigations in the elephant killings case went on for multiple years with no arrests or prosecutions. However, these investigations resulted in many incidents of detentions for individuals that fit the profile, which was Rai Sikh men and migrant outsiders in the villages around the CTR. Furthermore, the investigations also highlighted that an operation of this magnitude would not have been possible without the complicity of the Forest Department. Despite this, the elephant killings of 2001 had further entrenched perceived criminalities associated with the Rai Sikh community and of communities from the state of UP which continues till date, and as I will demonstrate in the section below, determines the ways in which the e-Eye is used.

"Rai sikhs are expert hunters and skilled in bushcraft, it had to be them, their 'jaat' (caste) is a hunting 'jaat'."

(Conservation Practitioner, Interview no. 161)

"They caught and beat up many of our boys, some of them from our community may have been involved, but Forest Department guards and officers were also involved."

(Rai Sikh Elder, Interview no. 187)

"There are screens in the director's and deputy director's office, so I have to pay attention all the time, I will be in trouble if I miss something, and they catch it" said a forest staff deputed to watch the screens relaying the live feed from the e-Eye towers. The screen located in the IT cell of CTR headquarters is watched round the clock by staff members in shifts of 8 hours each. During this time, they are to keep watch and document any human activity inside the boundaries and on the fringes of the reserve. Such human activity ranges from monitoring residents working fields or collecting forest produce, to monitoring forest staff conducting routine patrols. The staff member is also to keep watch for signs of fire and any abnormal movement of large wildlife particularly elephants and tigers. *"The people from this area are very cunning, they need no reason to light a fire in the jungle or kill some animals"* said the staff member pointing to the screen that was relaying visuals from tower number 6. This tower was directly facing the village of Rahad, and visuals on the screen were showing colour and thermal images of people walking in a distance, and a series of houses spread out close to the forest boundary. *"Whenever intelligence comes in from the top, we make sure we are monitoring the visuals from tower number 6, Rai Sikhs are known to operate from here"* said the staff member zooming in on the people walking near the forest. *"These ones look harmless; these are our labourers, and these are just women collecting firewood, but this house here is where Gogha Rai's relatives live, his name is in the dossier."* said the staff member moving the camera around. My interviews had revealed that Gogha Rai was a Rai Sikh man who had been detained multiple times on charges of hunting wild boar and jungle fowl within the CTR and threatening forest staff with violence. His name was in the village level crime dossier that is maintained by the CTR administration and particular attention was given to the area around his family's household as it was used in the past as a base for his criminal activity.

"Gogha Rai and his family are notorious criminals, if it was up to me, I would program one tower to constantly monitor his house"

(Forest officer, Interview no. 234)

As I observed staff members on different days and varied hours of the day watching the visuals from the e-Eye towers, it became clear to me that more attention was paid to visuals being relayed out of towers

facing the villages along the UP boundary. *"Yahan ke log seedhe hai, par yahan ke log thode tede hai"- "The people here are straight, but the people here are bent the wrong way",* said a staff member pointing towards two different villages and visuals on the screen. The metaphor of 'straight and 'bent' used by the staff member implied a caste-based differentiation being made based on how easy or difficult it was to deal with them. The first visual was from the forest boundary along the village of Dhimka[3] while the second village was from the tower directly overlooking the village of Rahad.

Caste-based differentiation of this kind and the way it informed the use of the e-Eye, was best demonstrated by an observation I made of how e-Eye operators dealt with large wildlife moving around the forest boundary and entering agricultural fields. *"Look at this male elephant hiding here, looks like it will enter these fields in the village of Rahad"* said the e-Eye operator pointing to a thermal signature of the large elephant inside dense lantana vegetation on the border of a sugarcane farm adjoining the CTR boundary. I asked if he was going to send a message to a nearby forest chowkie[4] to which he responded, *"This village is in UP and that is technically not in our jurisdiction, we have told them many times not to plant sugarcane, but they continue to do so, anpadh wale kaam- and function like illiterates!"*. Due to time constraints, I could not wait and see if the elephant did enter the fields, however the incident gave me another narrative to follow while I conducted interviews in the village of Rahad.

"Animals coming out of the CTR are causing irreparable damage every year to my small yield of sugarcane" said Chouhan ji, a resident who owns a small farm plot bordering the CTR. My interviews in Rahad revealed that levels of human-wildlife conflict particularly of crop raiding were very high in the area. Crop raiding herbivores such as Sambar Deer, Wild Boar, Spotted Deer and Asiatic Elephants would raid crops at different times of the day, by crossing over from the forests of Uttarakhand into the farms of UP. Although compensation mechanisms existed for crop damage, they came with immense administrative and bureaucratic hurdles for residents and even for forest staff. This was mainly due to jurisdictional differences between the two states. However, when it came to surveillance and law enforcement, forest staff from the CTR, which is in Uttarakhand, regularly entered UP to act against offenders or restrict the movement of people entering CTR for forest produce collection. *"They have put such big and expensive cameras on the hills there, it is just the politics of showing us down, if not why are they not used to warn us when animals are entering our fields?"* said Mahtam ji pointing to the tower in the distance across the village. Mahtam ji was an elderly Rai Sikh man who had found the means to move away from the community's traditional occupation of hunting and had started farming on a small plot of land allocated through a government subsidy.

[3] Village dominated by land owning upper castes and a burgeoning ecotourism industry.
[4] A forest *chowkie* is equivalent to a ranger field station and is headed by a forest guard. They are also sometimes referred to as an anti-poaching station.

My interviews and observations revealed that the answer to Mahtam ji's question were a mix of jurisdictional and administrative hurdles driven by prejudiced and casteist undertones. For instance, a senior forest officer I interviewed had supported the applicability of the e-Eye towards mitigating human-wildlife conflict by acting as an early warning system. However, this hardly translated into action on the ground. *"How many animals can we stop from entering those farms, there are hundreds of deer at different times of the day, and the forest staff from UP never respond on time"* said one of the e-Eye operators responding to my query on the matter. "*There are only thieves and criminals in this village, farming is just an excuse"* he continued. The 'thieves' and 'criminals' metaphor was being used for the large group of Rai Sikhs resident in the village of Rahad. *"Have you heard of Rai Sikhs farming? They are supposed to make a living out of guarding farms and not by owning farms themselves,"* said the operator. The casteist nature of this narrative was very clear as the community was being associated with their caste-based occupation of being hunters and fowlers. This was a typical example showing how a potentially useful aspect of a complex surveillance system was also influenced by caste prejudices harboured by those who operated them.

"Why are the cameras facing UP only, and all along the Southern Boundary? Can't there be any intrusion from the North? It is because, all other boundaries have land owning 'pahadi' upper castes"

(Local resident, Interview no. 76)

"When we complain about animals of CTR from Uttarakhand raiding crops in Uttar Pradesh, they say that animals are neither from Uttarakhand nor are they from UP, they are neither ours nor are they yours, they are 'Rashtriya Sampatti'- national treasures".

(Local resident, Interview no. 71)

As my visits to observe the towers being operated became more frequent, I noticed that staff members watching the visuals were also occupied with other administrative duties. These ranged from arranging official papers, delivering communication within the office block, and helping other staff with IT related problems. This took their attention away, often for long durations, from the visuals on the screens. However, on certain occasions like visits by central government officers, senior members of staff or even researchers like me, e-Eye operators would demonstrate the capabilities in a more performative way than on a normal mundane day.

For example, on one afternoon in the month of March 2019, I was informed about an official visit by NTCA officers and other non-governmental observers to review the functioning of the e-Eye amongst other matters. As I had already interviewed the visiting officer in Delhi, I could manage to get permission

and access to visit the e-Eye control room while its utility was being demonstrated. As I entered the visual room, I saw neatly arranged tables and desks with e-Eye brochures, multiple staff members fully uniformed operating the screens with logbooks, walkie talkies and charts at the ready. *"Today important people from NTCA are coming, so everything is neatly arranged"* said one of the operators laughingly. *"We have to demonstrate that the system is useful and that it works to detect illegalities"* he continued. The officers from NTCA accompanied by senior forest officials from the CTR entered the control room a few hours later and started examining the visuals on screen. One of the staff operators then brought up visuals from tower number 6 and points towards some men sitting near the forest boundary. It was unclear what the men were doing, but the staff member uses a walkie talkie directs forest guards at a nearby antipoaching camp to check on them. *"There are some men sitting near the Rahad Haathi Naala, they look like Rai Sikhs, go check them out"* commanded the operator (Represented in Figure 12).

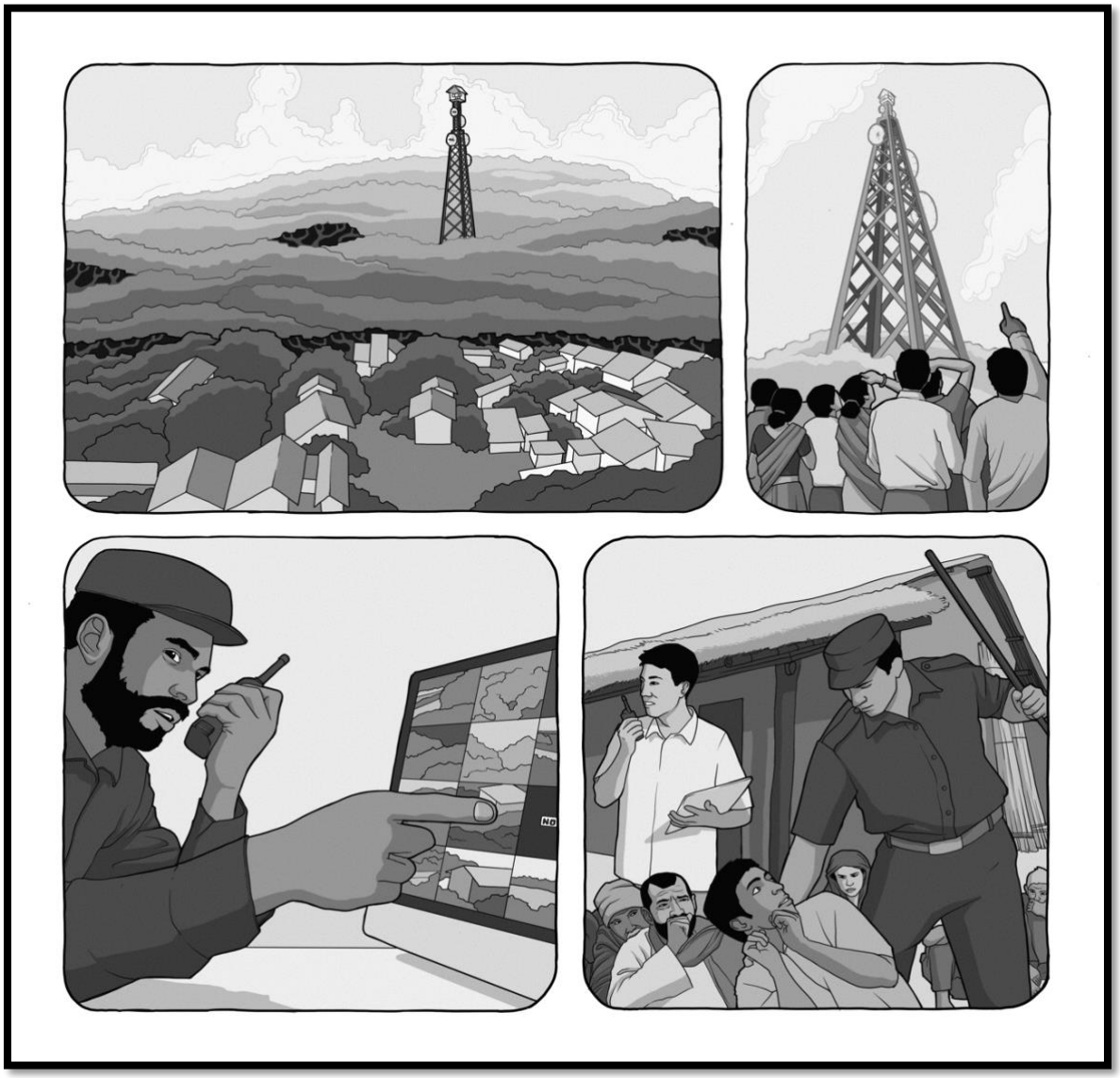

Figure 13: An illustrative representation of the e-Eye surveillance system in practice

While senior officers of the CTR administration showcased charts and logbooks to the guests, the staff member operating the screen brought their attention back to the visuals. Within a span of 10 minutes forest guards had reached the scene and appeared to be questioning and asking the men to leave. *"Sir, as you can see, this the area of all the troublemakers, gangs of Rai Sikhs are still active, and we have a fully capable system here that can provide immediate actionable intelligence to boots on the ground,"* said a senior officer. This incident appeared to be very performative as my observations with staff members operating the e-Eye were in marked contrast to what had just transpired. My interviews with NTCA officials previously, had revealed that funding for the towers had been stopped due to its high budget and lack of demonstrated cost effectiveness. The CTR administration had approached multiple funding agencies including the state government of Uttarakhand to continue the use of the e-Eye and the demonstration that had just occurred was part of this agenda. Nevertheless, it does not take away from the fact that a particular community was being subjected to surveillance by social sorting through the e-Eye system, as Rai Sikhs and the settlements they live in were being profiled.

"Corbett e-Eye is a waste of money, there are too many towers doing the work one or two can do and they are not even doing the surveillance properly".

(NTCA official, Interview no.157)

"Some of our towers had to be disabled for a few months due to a funding freeze from NTCA, the state government of Uttarakhand stepped in, but that may not continue in the long term"

(Senior Forest officer, Interview no.161)

5.5. Forest Rights, Territorialisation and Conservation Surveillance

As mentioned in previous chapters, land titles in forest villages around the CTR still belong with the Forest Department. They continue to lack basic civic provisions such as access to a motorable road, water, electricity, schools, and basic medical facilities. The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Rights) Act 2006 popularly known as the Forest Rights Act (FRA) is a landmark piece of legislation that provides the legal framework that aims to recognise pre-existing rights of forest dwelling communities through a transparent and democratic process (Aggarwal 2011). Implementation of the FRA has the potential to restore land rights of enclosed commons such as the forest villages of CTR back to communities that live in them.

The FRA can result in major redistribution of control over forest lands and resources in favour of forest dwelling marginalised communities (Sathyapalan 2010). The FRA also aims to challenge existing conservation paradigms by introducing reforms that move away from traditional fortress conservation by enabling community control over forests, wildlife, and biodiversity conservation (Mishra 2018). 15 years after the FRA was passed as a bill in the Indian Parliament and made law, its implementation record remains abysmal. Studies have shown that this is due to multiple reasons such as the ambiguous role of implementing agencies, failure of state administration to support participation in recognising forest rights, resistance by state Forest Departments and the lack of awareness amongst government agencies at the local district levels (Sahu 2020).

There have been multiple attempts to implement the FRA in the forest villages of the CTR, mainly by NGO's and social rights groups. One such group called the Van Sangharsh Morcha has been working with the residents of the village Horloki on implementing the FRA since the year 2016. This village has a caste composition of only Bahujan and Dalit communities. The geographic location of Horloki is such that it is bordered by the tourism zone of the CTR on one side and a public motorway on the other. However, there is no direct access for residents to the motorway and instead they must take a small detour past a forest checkpoint to access the main public road. Forest authorities argue that a direct path connecting Horloki to the motorway makes the village and eventually the tourism zone of CTR accessible to infiltration by unlawful elements. However, residents of Horloki argue that this was a strategy of the Forest Department to deny them access to basic civic facilities. Even though there is no direct access to the public motorway, residents of Horloki had made small paths through forest land that could only be traversed on foot or on a motorbike.

"A state highway runs close to the village, if we give them a road from that side anyone can enter without us detecting them and enter the forest from there, it is a big risk"

(Forest officer, Interview no. 217)

"They want to watch our every movement, who enters, who goes out, so that we don't get easy access to the road, to market, to the school, to the hospital. It all because we are Dalits, and they don't want us to move ahead"

(Local resident, Interview no. 43)

Activists from the Van Gram Sangharsh Morcha (VGSM) initiated the process for the implementation of FRA in Horloki by organising a '*Jan Sabha'* or public meeting in January 2017. My interviews revealed that the Forest Department initially did not give permissions for 'outsiders' which were mainly FRA activists

to enter the village. After demonstrations and agitation by the residents of Horloki, the Forest Department allowed the public meeting but deployed multiple forest guards, a range forest officer, and members of the Special Tiger Protection Force (STPF) to monitor the meeting. One of the steps for the demarcation of community forests under the FRA is a participative mapping process. This step delineates recognizable landmarks in the forest where village residents have exercised forest rights historically. My interviews revealed that the CTR administration heightened its surveillance measures around the village of Horloki in the days after the public meeting.

Firstly, trenches were dug on paths made by residents that connected the village to the public motorway. Secondly, entry of non-residents to the village from the forest checkpoint was banned and relatives and guests of residents were asked to deposit their identification documents and sign a register in the forest office. Furthermore, camera traps were deployed on these paths, within the village and across the forest patches that were to be mapped for the implementation of the FRA. However, forest officials I interviewed, maintained that increased surveillance in *Horloki* with the deployment of camera traps in the forest spaces was part of protocol and the cameras within village boundaries was just a short-term measure, as they had received credible intelligence about a security threat. A few weeks later, residents had started resisting and making alternate pathways to enter the village. However, whenever new pathways were made, the Forest Department deployed camera traps in the area to monitor the mobility of people. *"We identified some non-residents entering the village in our camera traps, we could tell by their clothes that they were not from this community"* said a forest officer responding to my question on how surveillance by camera traps was done in this context. When asked what he meant by that, he laughingly responded by saying *"VGSM is full of these Van Gujjars, they are easy to identify"*. The expression of identifying people from their clothes can be read as discriminatory and a form of racialization where a particular community is profiled by the way they dress. In the case of Horloki, CSTs like camera traps were used to restrict mobilities and derail the FRA process by creating a surveillance regime that deterred VGSM activists from marginalised backgrounds from entering the village.

"Since the Jan Shaba (public meeting), there were cameras everywhere, they wanted to watch everything we did in the village and the forest"

(Village Resident, Interview no. 43)

"Such public meetings on forest land need to be monitored, they are easy cover for poachers and troublemakers, that is why we put the cameras for a short period"

(Forest official, Interview no. 217)

5.6. Conservation Surveillance and the Production of Criminalities

As is evident from the above sections, the deployment of CSTs in the Corbett Tiger Reserve is influenced by structures of caste, communalism, perceived criminalities, and geographies associated with crime. My fieldwork also led me to conduct many hours of observation within the office spaces of the Forest Department. In this section I provide an ethnographic narrative of my observations in such spaces related to social sorting of data gathered through CST's.

Data gathered using camera traps outside the All-India Tiger Estimation Exercise[5]is stored within range offices of forest divisions. Territorial forest divisions adjoining the CTR such as the Ramnagar forest division have high densities of tigers, but do not fall under the purview of the CTR administration and hence keep their data independently. This data is stored in memory cards and USB sticks and are uploaded on office laptops and computers in an arbitrary fashion. *"We have a huge collection of camera trap photographs, so it is difficult to maintain in our computers"* said Mr. Chauhan, a mid-level forest officer assigned to the Ramnagar Forest Division bordering the CTR. According to Mr. Chauhan, only recently have staff caught up with computer operating skills and there is a huge backlog of data that needs to be uploaded in a systematic format. *"This isn't a job for one person, there is so much data and there is very little available space"* said a staff member in the office.

The Ramnagar forest division unlike the CTR lacks a dedicated IT cell, and digital resources such as extra computers and laptops for data storage are difficult to access. Due to this, data from camera traps is filtered by staff and only photographs that are deemed useful are kept and uploaded into office computers. Such photographs invariably are only of tigers, and of people deemed suspicious. *"We only keep the tiger pictures, the rest we delete unless we find smugglers"* said a staff member. Forest guards and forest watchers who operate camera traps in the divisions have complete access to memory cards of the devices and filter pictures at their own level. The photographs undergo further filtration and sorting by staff members at division offices. I had the opportunity to observe this sorting and filtration process at multiple levels- in the field with forest guards and watchers, and then with staff members at different range offices of the Ramnagar forest division and of the CTR.

[5] The All-India Tiger Estimation Exercise is conducted by the National Tiger Conservation Authority (NTCA) in four phases, with results of tiger populations throughout India being released every four years.

At a division office, a forest staff member collects memory cards from a desk drawer stored in differently labelled boxes. Dusting off the dust on the box and the card the staff member inserts one of the cards on the office computer and starts accessing the different folders sorted by date on the card. Mr. Chauhan walks in and starts supervising the staff member now going through the images, deleting images of most other species except tigers. *"Our staff in the field delete pictures of people, otherwise we will be completely overloaded"* said the staff member continuing to sort the images. *"This area has many forest produce collectors and people grazing cattle, so it is difficult to store all that information even if we want to"* asserted Mr. Chauhan paying close attention to the process.

As the staff member continued to sort photographs from another memory card, something caught Mr Chauhan's attention. It was two men on a motorbike passing by the camera. *"Rai Sikh lag rahe hai na- Looks like Rai Sikhs don't they"* said Mr Chauhan approaching the computer screen for a closer look. He then rings a bell kept on the desk meant to get the attention of officer workers stationed outside. *"Ring Ramesh and Mathur (forest guards of the area) and tell them to come in immediately*" said Mr Chauhan to the worker who hurriedly left to complete the task given to him. Mr. Chauhan looked visibly angry about the fact that these photographs were now many months old and gave a stern warning to all staff members. *"We have been notified to report any activity by people from this community, what if something goes wrong, who will be responsible"* said Mr Chauhan sternly.

My conversations with Mr Chauhan revealed that he had received a report by senior authorities in the crime and surveillance team of the CTR, and from the police about suspected activity of poaching gangs active in the area and was ordered to report any suspicious activity immediately. Taking another closer look at the image, he asserts, *"These men fit the 'profile', I must share this with the Corbett folks and local police"*. A few minutes later, the two forest guards that were summoned by Mr. Chauhan entered the office and looked closely at the image discussing the identities of the men in the image. *"Sir these are labourers who are working on a farm nearby,"* said Ramesh. *"We kept this image in case something goes wrong, but these men are still doing labour in the farm and have not done anything wrong"*, seconded Mathur.

The following discussions over their identities went on for many minutes and involved inputs from almost every staff member present in the office. *"Labourers or not, they are Rai Sikhs, and we must share this image with the CTR team and the police, so that in the future it doesn't come back to us"* declared Mr Chauhan. As mentioned before, a dossier of habitual offenders is maintained by the Forest Department and the police, information from which is being rapidly digitized and uploaded on to the CCTNS. Here was a typical example

showcasing how data derived out of a CST was giving rise to profiling and social sorting of individuals from a community, perceived to be criminal and further entrenching the legacy of the CTA.

5.7. Conclusion

As I have argued before, the public discourse of biodiversity conservation in India is essentially caste blind. Leaving aside a handful of studies, detailed analysis of caste and communal structures remain invisible even in political ecology research. Being a fundamental feature of Indian society, caste should play a more central role in critical academic inquiries within biodiversity conservation. In this chapter, I have attempted to bring caste to the forefront of my enquiry into the social implications of conservation surveillance. Surveillance through CSTs of Rai Sikhs, Van Gujjars and other Bahujan communities around the CTR reflects unequal power relations and biases stemming from deeply entrenched caste structures, which inform how CSTs are deployed and who they are used against.

Social sorting through conservation surveillance is analytically an important topic in the political ecology of conservation and particularly to the scholarship on militarisation of conservation. I argue that surveillance practices used by the CTR administration follow the colonial legacies of the British Raj. Dossiers of habitual offenders and maintenance of village level crime registers are bolstered using CSTs, forming a surveillance regime that cultivates panic and fears within marginalised communities in conservation spaces. The CCTNS, CCTV cameras, biometric surveillance through *Aadhar* are already part of a powerful surveillance assemblage in India. CSTs, as shown in my ethnographic narrative, contribute to this surveillance assemblage by making certain bodies hyper visible and vulnerable to state persecution. These surveillance regimes are fundamentally oppressive as they contribute to upholding caste purity, control, and coercion of marginalised bodies. They also contribute to anticipating, suppressing, and punishing dissent against the Indian nation state.

In this chapter I have also attempted to make a novel contribution to the understanding of social sorting through conservation surveillance, that leads to profiling and stigmatisation of marginalised and vulnerable communities within a conservation context. By giving empirical examples I have argued that caste and communal hostility features heavily in the practice of conservation surveillance which has serious negative consequences for subjects under the enhanced surveillant gaze. The use of CSTs for law enforcement in India hence needs to be understood within the wider context of caste defined social structures, so that questions may be asked about its ethical and social safeguards. It has been argued that in societies where politically and socially motivated surveillance is normalized, there is significant weakening of social

cohesion, rise in public mistrust and suspicion (Leibold 2019). Hence, the role CTS's play in such forms of surveillance can potentially be detrimental to the long-term success of conservation projects.

CHAPTER 6

The Gendered Dimensions of Conservation Surveillance

"One woman's picture of relieving herself came in that camera of theirs, instead of deleting the photo immediately, they circulated it in their phones".

(Interviewee no. 42)

6.1. Introduction

Achieving an equitable and a socially just practice of biodiversity conservation requires the inclusion of gender as a key component. Gender plays a crucial role in local livelihoods and in shaping perceptions related to biodiversity conservation *(*Leach 1994, Rocheleau et al 1996, Ogra 2012, Espinosa 2010*)*. While there has been some progress in including gendered dimensions in conservation research, many projects remain gender blind *(*Brown and Fortnam 2018, Kariuki and Birner 2016*)* and there remains a scope for improvement. It has been argued that most research in conservation tends to avoid a gender studies component unless it is highly relevant to its goals and main objectives *(*Ogra 2012*)*. Furthermore, explicitly including gendered dimensions in conservation research and practice can result in strengthened conservation outcomes *(*Lau 2020, Agarwal 2009*),* while a failure to do so may lead to undesirable outcomes such as increasing the labour burden of women and increasing their economic and social vulnerability (Arora-Jonsson 2014*)*. Speaking to this assertion, this chapter attempts to make gender a central thread in examining the impacts of conservation surveillance technologies (CSTs) in the Corbett Tiger Reserve (CTR). Specifically, this chapter explores how gendered geographies around the CTR influence the deployment of CSTs and how these technologies in turn influence such gendered geographies.

Gender is rooted in and is produced by specific spatial and temporal contexts. The practices of biodiversity conservation and of traditional surveillance include multiple power relationships that are gendered. I combine concepts from surveillance studies and feminist political ecologies with my ethnography of women firewood and grass collectors in the CTR to describe how CSTs discursively shape and exacerbate gendered structural violence. I demonstrate how the deployment of CSTs control the spatial and subjective lives of women. I also demonstrate how CSTs can become tools of gendered harassment and contribute to social control that intensifies patriarchal surveillance in the villages of the CTR.

6.2. Gender and the Environment

"The forest is where I feel free, in the forest nobody is watching us, and I can be carefree"

(Local resident woman, Interview no. 28)

Identities, perceptions, roles, and entitlements are defined by constructions of gender. In the forest, as elsewhere, men and women differentiate their relations within social and natural worlds. The production of spaces as gendered, signifies that certain roles and interactions with certain environments are not naturally ascribed but are socially constructed. Gender differentiation on the other hand uses biological and sexual differences to create hierarchies that make one sex group inferior to the other. However, gendered spaces and roles are not homogenous—and as is in the case of my study area, they are highly intersectional. Individuals negotiate gender roles and spaces in accordance to entrenched social hierarchies like caste, class, ethnicity, and age. For example, both men and women of the pastoralist marginalized *Van Gujjar* community share responsibilities when it comes to resource use from the forest. However, it is mostly women from the dominant *'pahari'* communities that use the forest for natural resource collection, while their men situate themselves in perceived masculine roles of jobs and businesses. Hence, gender roles might include not only subordination but also co-operation to make livelihoods more resilient in highly contested and politically charged environments.

It has been widely recognized that gendered perspectives are highly relevant to environmental issues. There has also been a significant rise in the literature associated with natural environments as gendered spaces. However, there is also debate within this literature on the exact nature and context of this relevance. Feminist scholars have argued that there exists an innate 'natural' connection between women and nature that gives them a unique understanding of ecosystem processes and encourages environmental conservation *(Shiva 1988, Diamond and Orenstein 1990).* Other feminist scholars have challenged this narrative, and instead argue that it is the everyday material practices such as resource collection that brings women closer to nature *(Warren 1987, Agarwal 1992).* Political ecologists on the other hand use a historical materialism lens to focus on gender as one of the strands through which access, distribution and power over natural resources is differential within societies *(Mackenzie 1995, Fortmann 1996, Rocheleau et al 1996, Gururani 2002).*

Vandana Shiva's (1988) book *Staying Alive: Women, Ecology and Development* discusses the *Chipko* (see chapter 6) movement from Uttarakhand, India. It is perhaps the most important work on the innate 'natural' or essential connections between women and nature. Shiva states that Indian women have an inherent connection to their natural environment which gives them power to resist the state and risk

their security in confronting the logging machinery. Shiva invokes ancient religious beliefs from Hindu texts to suggest that women have a more philosophical and deeper understanding of environmental processes. This work was instrumental in initiating a discussion on traditional ecological knowledge and in promoting the idea that local communities and particularly women may have a better understanding of environmental protection than policymakers, foresters, and scientists. However, Shiva's work has seen widespread criticism from other feminist scholars both within India and globally for making certain assumptions about women's experiences and ignoring fundamental issues such as the role of caste, ethnicity, and local forces of power in driving gendered subjectivities (Agarwal 1992). They argue that essentialist conceptualisations of women reinforce the flawed notion of 'feminine' natures and overlook structural differences that exist between women (Cuomo 1998).

Bina Agarwal's (1992) work on ecological feminisms from the Indian Himalayas challenges essentialist notions of gender and the environment. Agarwal argues that the motivation for women to protect the environment arises out of their material realities and needs, and not out of some inherent close connection to nature. Collection of fuelwood, fodder, and other products from the forests for daily livelihood needs are everyday responsibilities for many Indian women. She states that material practices of harvesting forest produce provide women with intimate knowledge of ecosystem processes and promotes sustainable use. This motivates them to manage and protect nature as environmental degradation can increase their economic vulnerability and intensify their labour practices (Agarwal 1997). Agarwal's work provided empirical basis to claims put forward by Shiva and others about the unique environmental knowledge systems rural women harboured. It brought in a political economy analysis into the gender and environment discourse and demonstrated that material conditions of local communities drive the production of kinds of environmental problems and knowledge systems which are gendered in nature.

Building on Shiva's (1988) and Agarwal's (1992) work, Shubra Gururani (2002) draws from poststructuralist discourses on nature *(*Haraway 1991, Latour 1993, Braun and Castree 1998*)* and argues for a need to reconceptualise nature in relation to gender. Gururani argues that forests are as much formed by local socio-politics as they are through biophysical features. Gururani through her fieldwork in the Kumaon Himalayas demonstrates how social relations constitute and transform environments through daily interactions between people and forests. She compares the forests of Kumaon with David Mosse's (1997) conceptualisation of irrigations tanks of Tamil Nadu, India. Mosse compares tanks to public institutions like village temples that are an expression of local political and social relations. Gururani demonstrates that the forests of Kumaon, although not public institutions as such, are still shared spaces and are not sources of livelihood and material realities alone. Describing them as *"forests of pleasure and pain",*

Gururani shows how forests are critical cultural spaces that shape and enable gendered subjectivities in culturally and historically specific ways. She argues that these forests are spaces wherein the identities of women are entwined with their everyday activities in the forest. For example, women in Gururani's field site used the forests not just for material needs but also as a more personal and social space where they would tell jokes, gossip, and play with each other. My participant observations with women in the forests of Corbett were very similar to Gururani's and speak to her assertion of forests as a gendered terrain of power.

Feminist political ecologists on the other hand build on ecofeminism and ecological feminisms by laying out three key strands, through which they theorise political ecologies of gender and the environment. The first theme examines how access to scientific knowledge is structured by gender (Wangari et al 1996, Diamond and Orenstein 1990), the second theme examines the differential access between men and women to claims on lands and resources (Radcliffe 1992, Gisbert et al 1994). Finally, the third theme examines social and political movements related to the environment with a focus on the differential dimensions of access and power available to women within them (Agarwal 1994, Gururani 2000, Rocheleau and Edmunds 1997). In summary, scholarship on these themes across the globe demonstrates the differential opportunities and challenges existing between men and women in relation to environmental change and development.

Much of the work within biodiversity conservation continues to take a very perfunctory view on gender-environment relationships. Many projects remain gender blind or view everyday practices of forest resource collection through a transactional or economic lens (Brown & Fortnam 2018, Kariuki & Birner 2016). For example, it is commonly assumed that women are solely driven by economic, and livelihood needs and those needs structure their relationships with the environment. Moreover, conservation projects continue to treat gender as a women-versus-men problem and do not consider the multiple lines of difference such as age, caste, and class that intersect with gender (Lau 2020). Biodiversity conservation projects cannot adequately inform gender equity in their interventions unless such intersectional issues and context specific power dynamics are considered.

Gender issues generally fall in the realm of the social sciences and humanities while biodiversity conservation studies are often conducted from a biological perspective. It has been argued that gendered dimensions find limited inclusion in conservation studies because of a lack of training and technical knowledge required to seamlessly include gender as part of conservation related projects and interventions (Mai et al. 2011, Ogra 2012a, Ogra 2012b). Hence, the inclusion of gendered dimension within

conservation studies requires at least a moderate engagement with gender relevant analytical frameworks. In the next section of this chapter, I demonstrate the gendered nature of the forests of the CTR, and their different socio-cultural framings. I reveal how the forests spaces of CTR are used by women for a wide variety of cultural and livelihood needs, following which I will demonstrate the impacts of CST's on gendered relationships with the environment.

6.3. Forests of Corbett as a Gendered Space:

"Dekho Seni chali jungle jaani ho"! (Look, the women are off to the forest) - Common parlance in the villages of the Kumaon Himalayas.

On a foggy and cold November morning, I accompanied a group of women from the village Guldar Ban into the nearby forest that falls into the buffer zone of the Corbett Tiger Reserve (CTR). I joined the group at the edge of the forest boundary and was greeted by muffled laugher and baffled remarks. *Manjudevi* (name changed) the leader of the village *mahila morcha sangh* (women's union) asked me condescendingly, *"Have you ever been to the forest before? It is not a place for young boys like you"*. Not waiting for my response, the assertive septuagenarian turned around and started leading the group into the forest. Keeping up with the group by maintaining a brisk pace, I asked a younger woman towards the tail end what *Manjudevi* meant. She replied, *"Don't mind her, she does not like men entering the forest as they do no work, and only enter the forest to drink* sharaab *(alcohol) and smoke charas (marijuana)"*. Over the entire period of my fieldwork, I conducted multiple rounds of participant observations by following women from the fringe of the CTR as they went about completing their daily chores in the forest. During such observations I had several in depth conversations with women about social aspects of their daily chores in the forest, and its relation to their everyday lives. In the following sections I argue that forests of the CTR are not just spaces of resource collection but also of cultural associations and complex social relations. For the purposes of anonymity all names, locations and personal family situations have been changed.

6.3.1. Forests of 'Haq' (Rights) and 'Dharm' (Duty): The cultural and social framing of forest spaces

In the winter months, women in the villages around the CTR spend considerable amounts of time collecting firewood, grass and other non-timber forest produce in their respective neighbouring forest spaces. Although women collect forest produce around the year, the winter months (October-March) see an increase in the time they spend inside forests. This is not only due to an increased necessity for firewood to provide heating in the house, but also because there is less work in the agricultural fields. For *'pahari'* women, going to the forest is a *'haq'* (right) and a *'dharm'* (duty). *Kamladevi*, an elderly lady I interviewed in the village of Chukar Malla has been going to the forests daily since she was a young child. Now in her eighties, she thinks of the forest and access to its resources as her 'haq' (right). She states, *"Going to the 'jangal' (forest) is our right and bringing back its resources our 'dharm' (duty)"*. She continues, *"pahari women cannot be stopped from going to the forest, it is more than just a place where we go to collect firewood, it is a place where we form lifelong relationships with each other"*. Gururani (2002) explains very lucidly what *Kamladevi* describes, albeit from a different part of the Kumaon Himalayas. She argues that forests are not only critical sources of livelihood for women and their families but are also cultural sites where quotidian social relations of gender, authority and patriarchy are formed.

"The jungle is the only place where I don't get taunted by my mother-in-law and my husband or get bothered by my children, it is a place where I can find some calm, even if it means working hard to collect firewood"

(Local resident woman, Interview no. 37)

Tsing's (1994) ethnography with the *Meratus Dayaks*[10] in the rainforests of Indonesia reveals how social relations and identities within the community are not just formed in villages but are also forged through complex associations within the forest landscape. Tsing argues that users of forest sites gain a sense of connection with other users through memories associated with interactions or events that have taken place at those sites be it in the past or the present. In the forests of CTR, I observed how women often named trees, rocks, and other natural features within forests after certain events or interactions that have taken place at those sites. For example, women from the village *Shyami* named a small river stretch they crossed daily after *'Geeta'*, who had a fall at that very spot while carrying a heavy load of firewood even after being warned not to do so by the others.

[10]A marginalized indigenous people from the Meratus mountains of South Kalimantan, Indonesia

"Geeta wants to prove she is better than us in collecting 'sukhi lakdi'(firewood), we had warned her not to carry an amount that will blind her vision, she did not listen and fell flat on her face while crossing this stretch, we now refer to this stretch as "Geeta Sot [11]"

(Local resident (Woman), Interview no. 27)

Gururani (2002) makes similar observations, where she describes how interactions and associations that happen in the forest shape social relations amongst women in the village of *Bankhali* in the Kumaon Himalayas. For example, she describes how women who complained about hard work in the forest are often mocked through songs and parodies during wedding ceremonies and other gatherings. My interviews with younger women in the villages around CTR revealed how young unmarried women are often asked about their skills, abilities, and willingness to harvest resources from the forest by mothers of their potential suitors. *Tulsi Joshi* was one such woman from the village *Chukar Malla*, she states that "*A sasu (mother-in-law) always prefers a bwari (daughter in law) who goes to the forest daily to collect wood and grass"*. When asked what she thinks of that, she replies *"Most of my friends are already married, I cannot complain about going to the forest because then I will get rejected by the boy's family". Tulsi's* family have been intending to find her an appropriate suitor for many years now and are worried about her ageing past the preferred marriage age for *pahari* girls. *Tulsi* too is worried about this situation and laments *"The older women taunt me in the forest and say that if I don't get a suitor soon, they will have to get me married to the big 'haldu' (Adina cordifolia) tree I often climb to lop leaves from".*

For *Tulsi*, and other women like her, collecting wood and grass from the forest was also a means to gain respect and conform to 'pahari' tradition and expectations. For example, *Geeta* a recently married woman I interviewed from the village Shyami reveals how her mother-in-law constantly taunted her for not bringing enough wood from the forest. *Geeta* grew up in the nearby town of Haldwani that had little or no forest nearby. She states, *"I never went to the forest in my hometown, but here I have to go every day and be productive in the forest, only then will I be accepted by the other ladies as one of their own".* My observations corroborate *Gururani's (2002)* thesis, that the forest is a vital space through which women claim respect and establish relationships with each other. The dominant discourses on gender and environment mentioned in the earlier section highlight the unequal burdens of labour and livelihood that women endure. However, they do not adequately inform the nuanced and highly socialized meanings of work, pride, tradition, and respect that are constituted through forested environments (Gururani 2002).

"I enjoy being in the forest, we often have competitions between ourselves on who will collect the most wood in a short span of time and return to the village quickest".

(Local resident woman, Interview no. 37)

[11] Small streams, dry riverbeds and shallow river crossings are referred to as 'Sot' in the pahari/kumaoni language

6.3.2. Forests and Folk Culture

"The roar of the tiger, the trumpet of an elephant and the 'Nyauli' of a seni (woman) are all melodies that reverberate through these forests"

(Local resident woman, Interview no. 59)

Following the anti-liquor movement of the late sixties and the Chipko movement in the seventies, folk culture in the form of resistance songs flourished in the hills of Uttarakhand. These songs celebrated the beauty of the Himalayas and of resistance movements against state forestry and alcoholism, while at the same time expressed deep anguish at the conditions of women and other disadvantaged people (Dogra 1989). Decades after these movements, such songs of resistance continue to be sung within the forests of Uttarakhand. Along with such songs, women in the Kumaon region also sing folk songs called *'Nyauli's'* that provide vivid descriptions of love, nature, and seasons. Women often live their everyday realities through their renditions of *'Nyaulis'*. The sorrow of a new bride, the ruthlessness of a mother-in-law, awaiting a loving partner, harshness of labour in the forest, caste discrimination and other social problems that epitomize life's hardships are brought to life through these songs.

"We sing because we feel alive in the forest, in the village we have housework and other duties, outside marriage functions singing is not encouraged within the household"

(Local Resident Woman, Interview no. 61)

"Singing in the forest brings us closer to each other, we can express and share our pain through our songs, we cannot do this in the village"

(Local resident woman, Interview no. 37)

My interviews and observations with women forest produce collectors around the CTR were enriched by daily exposure to a wide range of *Nyaulis* sung by these women while collecting forest produce. The forests of the CTR served as spaces of expression and freedom through song for these women and covered a multitude of purposes. Songs and *Nyaulis* had accounts of resistance and anger towards the Forest Department, ties of kinship and even caste solidarity.

"The lower caste women of Chukar Malla are well known for singing anti-caste songs in the forest, especially in the presence of upper caste women from the same village"

(Local social activist, Interview no. 99)

"These women taunt us regularly through their songs, the other day while on a patrol I came across these women who were initially singing a Nyauli, as soon as they saw me, they started singing a parody on us forest guards"

(Forest Guard, Interview no. 223)

The loud singing of songs was also an important counter measure to keep large wildlife like elephants and tigers away. This was evident when panic spread amongst women in the village of Shyami, following the news of an old man from a nearby village trampled to death by an elephant the previous evening. This was the same forest patch these women were planning to visit for collecting forest produce that morning. *"Let us go in the big group, and not spread out too much",* stated one lady. "*We need to sing loudly as we approach the forest, and continue doing so all day today",* added another. Sure enough, as we started our walk towards the forest a chorus of melodies reverberated through the group. In the forest, the women worked in a clustered group singing every few moments and calling out to each other loudly. Looking at a visibly disturbed researcher (me), nervously looking for signs of elephant activity in the area one woman stated, *"Don't worry, we did not hear any rumblings or trumpets, our songs must have driven the tusker away"*. I asked the woman if such events happen regularly, she stated, *"No son, elephants and tigers don't kill humans for no reason, they attack only when they get disturbed or surprised, our singing announces our presence to them and hence we don't get attacked"*. I observed this pattern during my entire fieldwork period across all village sites in the CTR. Whenever I went out with women forest produce collectors or came across them within the forest, they would either be singing loudly from time to time or would communicate with each other in the form of high-pitched loud sounds meant to keep large wildlife away

6.4. Forests as private and intimate spaces

On one afternoon, as I sat doing participant observations with a group of women from the village *Raata Ban,* I noticed a couple of younger women discreetly breaking off from the main group and entering deeper into the forest. As I looked at my interlocutor to get a sense of what was going on, she signalled me to ignore and continue to have conversations with the women present. Just at that moment *'Mayadevi',* an elderly woman present closest to me asks, *"Son do you smoke 'beedis'[6]?"* Taken aback by the suddenness and sensitive nature of that question I hastily reply *"nahi"* (of course not). The other women giggle, sneer and start making jokes in the local kumaoni dialect clearly aimed at me. At the end of the day, as we sat by the local *'chai'* shop to discuss the day, my interlocutor explained that what had occurred in the forest was

[6] A thin and mini cigarette filled with tobacco wrapped in a *Tendu* (Diospyros melanoxylon) leaf tied with a string at one end.

common. The two women had broken off from the group to smoke beedis and it had to be done discreetly for multiple reasons. Consumption of beedis[7] in forest spaces is heavily restricted and is a major social taboo (along with alcohol) for women in 'pahari' society. However, for men drinking alcohol or smoking tobacco outside formal and religious settings is considered a normal affair.

The gendered nature of alcohol and tobacco consumption coupled with associated social taboos heavily restricts women to engage in these activities anywhere in public view of their village or in their homes. The forest then becomes a space for some women to engage in these activities away from the patriarchal gaze of pahari society. However, this deeply intersects with other identity markers such as caste, class, and age. For example, there was a clear distinction between groups of women visiting the forest even when they were from the same village. Locations from where upper caste women harvested forest produce would generally be avoided by lower caste women. One reason for this was attributed to the clear distinction in where lower caste households were situated within a village. Such households were invariably ghettoized in villages that had resident multiple caste groups such as Shyami, Chukar Malla and Kakar Khet.

"Because of unchecked tourism here, our women are getting influenced by urban women who smoke openly and even drink beer, some have even started doing it secretly in the forest".

(Village Headman, Interview No. 53)

Spatial and social inequalities resulting from such residential segregation has been well documented in India *(Sidhwani 2015, Singh 2015, Pramod 2020).* While doing participant observations with a group of women one morning near the forests of Shyami, an argument broke out between two groups of women. *"You ladies collect all the grass and wood from here leaving nothing for us, go to your part of the forest"* screamed *'Seemadevi',* a middle-aged lady and part of the group I was with. A few minutes after the altercation, I asked 'Seemadevi' what that was all about. She stated, *"These women that live north of the river[8] come to our side of the forest to do illegal things like cutting 'hari lakdi (*Fresh wood). She continues, *"These women drink 'sharaab' (alcohol) and smoke 'beedis' in the forest, they are a bad influence on our girls".* Middle aged upper caste women like *Seemadevi* often associate women consuming alcohol and beedis as lower caste attributes. However, younger upper caste women sometimes transgress social boundaries in building kinship with lower caste women of similar age groups. The forest acts as space that fosters these relationships away from the casteist societal gaze of the village.

[7] Beedis that not extinguished properly and thrown in the forest are known to cause forest fires
[8] A common casteist expression in the village of Shyami, as lower caste households are all located north of the river

"Women from Sambar Ban mainly go to the forest for 'galat kaam' (wrong kind of things) rather than for firewood or grass, they are very cunning"

(Forest Guard (upper caste), Interview no. 223)

"I go the forest with my 'harijan' neighbour, she is going to teach me dance steps for an upcoming village wedding, my mother does not like it if she comes home, so she will teach me while we go to collect grass in the forest".

(Local resident woman, Interview no. 27)

Lack of privacy, prevalent social taboos and the constant patriarchal gaze of village elders prohibit romantic associations between young couples in the confines of a village. Young couples would visit parks and temple grounds in the nearby town or other public settings to spend time together. However, these locations, as *Brunson (2013)* argues, do not offer the acceptability or privacy as much as a forest does. My interviews and observations revealed that both rural women and men use forests as a space to express and practice private moments of intimacy. It is not uncommon to find tree trunks and rocks in the forest, inscribed with the names, art, and poems of love made by couples. Young couples however avoid going to forests bordering their own villages due to a fear of being 'caught' or 'seen' by someone they know. Instead, they use forest spaces bordering other villages or sometimes even enter the confines of the CTR.

"I spend time with my girlfriend in the jungles near the village of 'Tedha', too many women from our village enter the jungle here"

(Local resident man, Interview no. 9)

"Sometimes these young couples find their way into the CTR, we catch them, file a case and call their parents to discipline them"

(Range Forest Officer, Interview no. 215)

6.5. Forests as spaces of Escape and Freedom

Constrictive social norms and entrenched patriarchy in 'pahari' societies have resulted in the marginalization and deprivation of women in several respects. Rampant alcoholism resulting in domestic violence is still prevalent, and a major source of distress for women in rural Uttarakhand (Kandari and Bahuguna 2015, Pande et al 2017). A survey undertaken by the Uttarakhand State Commission for Women revealed that every 2nd woman in the state was a victim of domestic violence. These topics came up very

often during my interviews and observations with women forest produce collectors in the villages of the CTR. Prevalent alcoholism and violence associated with it was a common motivation for women to spend long hours in forest spaces.

During one of my focus group discussions with women from the village Guldar Ban, many women complained about rising alcoholism leading to domestic violence in their village. *"As soon as my husband starts drinking alcohol in the afternoon, I leave the house and head to the forest even when I don't need to"* said *Umadevi*, one of the discussants of that focus group. *Gauradevi,* the leader of the *mahila morcha sangh* of *Guldar Ban* was a well-known anti-alcoholism activist in the region. Years of domestic violence perpetrated by her husband and father-in-law made her launch a '*Sharaab Bandi*' (liquor ban) movement in the region. Now a widow with two married daughters, *Gauradevi ji* lives by herself and regularly holds protests and lobbies the local authorities to regulate alcohol in the district. *Why do you think women go to the forest?* She asks, *I reply by saying for grass and firewood*, she nods in disapproval and replies *"No son, it is because women feel free and safe in the forest"*.

"Sharaab (alcohol) is the biggest social evil of Uttarakhand, women can only be truly free once there is a complete ban on the sale of liquor".

(Local resident woman, Interview no. 37)

"Women feel free in the forest, they don't have to tolerate the prying eyes of their father in law's and suffer the taunts and violence of their husbands"

(Local resident woman, Interview no. 61)

In revenue villages such as Shyami and Chukar Malla that were dominated by the upper caste and landed groups, men often berated their wives, daughters, and mothers for visiting the forest every day. Intrigued by my interest in interviewing women who collect forest produce, some men demanded to be interviewed as well. One of my respondents condescendingly stated, *"Why are you encouraging these women by studying what they do in the forest, they just go to the forest to escape housework"*.

Employment and financial incentives brought in by the tourism related economy of the CTR has resulted in some selective and upward economic mobility. However, this has been limited to the villages dominated by upper castes and landed groups. Men from such revenue villages now have work as tourist guides, safari game drivers or as staff in hotels and lodges. Some have even started their own tourism enterprises such as homestays. These men preferred their women especially their wives and daughters to stop or reduce their visits to the forest.

"I go as a tourist safari guide to the tiger reserve every day and tell tourists about all the disturbances in the forest, it is embarrassing to sometimes come across my wife collecting forest produce with other women while I am explaining such things, the other guides make fun of me".

(Local resident man, Interview no. 51)

"We now have a gas cylinder and an electric water heater in my house because we have started a homestay, still my mother and wife go to the forest"

(Local resident man, Interview no. 58)

Upper caste women from revenue villages often complained during my interviews of how men in their families were increasingly restricting their visits to the forests. However, tourism related benefits were also reaching women and changing the micro level nature society dynamics between women and forests in the CTR. For example- women are increasingly finding jobs in hotels and lodges and a new recruitment drive for safari guides included women for the first time in the history of the CTR (Pandya forthcoming). How these developments change women's relationships with forest spaces remains to be investigated

In the above sections of this chapter, I have tried to demonstrate how deeply intertwined and gendered nature-society relationships are in the forests of the Corbett Tiger Reserve. I have also argued that gendered practices of forest produce collection are not just about material or livelihood needs but also about culturally specific practices that shape identities and social relations both in villages and in forests. Speaking to the work of Gururani (2002) and Nightingale (2006), my research reveals that women in the villages around the CTR go to the forests every day for multiple reasons that range from material needs, cultural associations, a space for privacy or as an escape from patriarchal violence. All these practices intersect with multiple identity markers such as age, class, and caste. It is hence imperative for conservation as a discipline to account for these locally specific meanings through gender relevant analytical frameworks. In the next section of this chapter, I will demonstrate how the use of CST's in gendered spaces such as the forests of CTR, impact women's interactions with forest spaces and the myriad of social relations discussed in this section.

6.6. The Disciplinary and Regulatory Gaze of Conservation Surveillance

As argued in the above section, the female body is an object of the panoptic gaze in a different way than the male body. Women are constantly placed as objects of a gaze, and this also applies to them being viewed through conservation surveillance technologies. My observations and interviews with women

forest produce collectors in the villages of the CTR revealed how CSTs were resulting in disciplinary and regulatory control over the bodies of women. The behaviour of women, their work pattern and the daily conduct changed considerably in the presence of CSTs. Through my ethnographic accounts in the following paragraphs, I reveal the extent to which CSTs control, regulate and discipline the bodies of women through the relentless application of biopower.

On a December morning, as I approached the house of one of my respondents to conduct a scheduled interview, I was stopped by another woman who declared, "*We don't have time for you today, there will be cameras in the forest from tomorrow", we need to go and collect enough firewood today".* Local newspapers and WhatsApp forwards carried multiple stories that declared the commencement of the All-India Tiger Monitoring Exercise in the state of Uttarakhand. While I was aware of such an exercise, I did not expect the very evident sense of urgency and panic within groups of women in the villages of the CTR. "*We cannot talk to you today, but you can come with us to the forest if you wish"* said Manjudevi, who had warmed up to me since my first interaction with her.

As I followed this group of women from the village of Guldar Ban to the nearby forests, we were stopped near the local forest chowkie[8] by a forest guard. *"You cannot enter this part of the forest today, we are fixing poles for the cameras"*, he stated. A cacophony of objections echoed through the group with Manjudevi loudly asserting *"Why didn't you inform us before, from tomorrow you will have cameras inside the forest and then you will tell us not to walk in front of them".* The forest guard, adamant in his decision, summoned his sub-ordinate forest watchers[2] who were residents of the same village as the women to take stock of the situation and calm things down. Being familiar with me (having been interviewed by me before), he walked up to me and said "*Wildlife Wale (researchers) from Dehradun have gone to inspect this forest, I will be in trouble if I let these women go.* I ask the forest guard, why the women are told to avoid walking in front of the cameras in the forest. *"Sir, this part of the forest has a lot of tiger and elephant activity, besides these people are squatters on forest land, we give them enough leeway anyway, their photographs in camera traps puts us in trouble"* he replies. My follow up interviews with the forest guard and associated officials revealed that camera trap images from this part of the forest go through intense scrutiny as compared to other ranges or areas of the CTR. The reason for this is the complex history of conflict between the village of Guldar Ban and the Corbett administration as mentioned in Chapter 4.

[8] A forest *chowkie* is equivalent to a ranger field station and is headed by a forest guard. They are also sometimes referred to as an anti-poaching station.

My interviews with multiple women over the course of my fieldwork revealed how camera traps were altering behaviour, impeding social and cultural practice, and controlling their movement patterns within the forest. For instance, women often narrated how they felt being watched while collecting forest produce. Deployment of camera traps in the forests of the CTR happens without any knowledge or consent of women forest produce collectors who use forest spaces every day. The ways in which residents and communities from the Kumaon Himalayas understand forest spaces has been well documented in previous research (Agrawal 2001, Guha 1989). Forest authorities including researchers often ignore such complex histories while deploying CSTs or in implementing other conservation interventions.

"It is not necessary to inform villagers about the camera traps, forest land is not a public space" (Senior Forest official, Interview no.262)

"Yes, it can be argued that women can be wary of these cameras, but they must understand it is a protected area, we are not liable to take any sort of permission from them" (Senior Forest Official, Interview no.172)

Apart from creating fear of an unknown device in the forest, the cameras also contribute to regulating the bodies and behaviour of women. My interviews reveal how women discipline and regulate themselves while collecting forest produce in an area that is being monitored by camera traps. *"I am only picking up firewood, I still feel like I am doing something wrong or stealing something" says Lata, a woman from the village of Guldar Ban.* Women I interviewed and observed in the forest collected less firewood, clumps of grass and totally avoided other non-timber forest produce like herbs and honey when cameras were placed in the forest. Furthermore, new technologies such as drones and the E-Eye system were intensifying the ways in which control and discipline over the bodies of women were being established. This holds particularly true for women from marginalised groups such as the Van Gujjar and Buxa tribal communities. Van Gujjar women cut grass and lop leaves in areas that are designated to them by the forest authorities. Women from these communities often told me how they entirely stopped cutting grass or collecting forest produce whenever they knew that cameras had been deployed.

On one of my participant observation days with the drone team of the CTR, I observed how during a flying sortie near the village of Chital Khet, the drone was intentionally lowered above women returning from the forest with clumps of firewood and grass on their heads. This triggered panic and resulted in women dropping their collected produce and running to take cover. The drone operators have a laugh about what just transpired, then one of them turned to me and said, *"this is what happens, the women panic and drop the extra wood they are bringing from the forest"*. I asked the operator if he knew how much the women are

supposed to bring and how they could tell if they were exceeding that limit, he replied *"The problem is that there is no limit, these women sell more than they actually consume, they don't need that much wood anyway"*.

In the days that followed, I got the opportunity to do a focus group discussion with some of the women who I had seen panic and run after seeing the drone. *"I do not know why I dropped my head load of wood when I saw the drone, it just triggered some panic and fear in me"* said Babli a woman from the group. The discussion revealed that the ambivalent legal nature of what is permitted and not permitted in the forest, and contestations over resource collection zones (buffer area) and inviolate zones (core areas) determined how women reacted to such surveillance. The discussions also revealed that much of the fear and panic among women stemmed from fear of a loud flying object and its associations with traditional policing and the military.

"These people from the department fly a small helicopter over the forest sometimes, I get scared of the buzzing noise and the sound it makes" (Local resident woman, Interview no. 17)

"They show drones in the tv that military uses with guns and bombs, and now there are military people patrolling the boundaries of Corbett too, anything is possible" (Local resident woman, Interview no. 43)

6.6.1. Restricting talk and other clandestine acts

Lack of information on why the cameras are deployed or what they do, gives rise to fear and confusion among women. On many occasions I noticed women abruptly stopping conversations amongst themselves as they walked past cameras or entered an area that was being monitored by them. Discussing household problems or village gossip was avoided completely in a forest with camera traps. As mentioned before, forest spaces are used by women for a myriad of social associations including discussing personal and household talk. The presence of camera traps in the forest triggers a very evident shift in the way women behave and conduct themselves in the forest. Women would consciously reduce chatter amongst themselves while collecting forest produce if they were aware of the presence of CSTs in the area. Particular attention would be paid to not discuss private matters and take each other's names while collecting forest produce. CSTs like camera traps also changed the way forest spaces were used for other perceived clandestine activities such as smoking or consuming alcohol. As explained in section 2.4 the forest acts as a space for women to practice certain activities that are considered taboo by the restrictive and patriarchal nature of pahari society. In the paragraph below, I give an example of how camera traps have the potential to result in social distress amongst certain groups.

"We don't know who is watching us from these cameras, is it clicking our photo? Or recording a video, can it hear us?"

(Local resident woman, Interview no. 27)

Woman 1: "The other day he hit me"!

Woman 2: Quiet - there is a camera attached near the tree"

(Conversation between two women, Participant Observation, 3rd February 2019)

Figure 14: An illustrative representation of the above quote. Women suspicious of camera traps in the forest

On one morning in the month of March, I received a phone call from *Annu* (my interlocutor). She wanted me to urgently travel to the village of *Tedha* as a small group of women were trying to reach out to me following a camera trap related incident in the forest. This came as a surprise to me, as this village was not part of my selected field sites and I had not conducted any interviews there. I immediately made arrangements with Annu to travel towards *Tedha.* As we neared the village, we were received by a group of women on the road significantly before the village. I realised that within this group there were a couple of women who were participants of a focus group discussion I conducted in a different village a few days ago. As soon as we got off the vehicle, the women surrounded my interlocutor Annu and started voicing their urgent concerns in the local Kumaoni dialect. One of the older ladies who was familiar with me because of the focus group I conducted, approached me, and said *"Son, my daughter is married into this village, please help us, she has been recorded!".* Unsure about what had happened, I asked Annu the details. It was revealed to me that the incident had occurred that morning, two women had broken off from the main group to smoke 'beedis' and were inadvertently captured by a well camouflaged camera trap. I have discussed in Section 2.4, how pahari society attributes a large amount of social taboo and shame to women engaging in smoking or consuming alcohol. Such activities are also largely attributed to lower caste groups by forest authorities and by upper caste groups. However, in this case the women involved came from an upper caste background, causing a great deal of panic and concern among them. "*Meri Beti ne naak kaat di*[9] *(My daughter has brought a great deal of shame to us), if the family she is married into finds out they will oust her,"* said the panic-stricken mother.

Realising the sensitive nature of the situation I accompanied *Annu* with two of the older women (including the mother) to the nearest forest chowkie. The women wanted me to be present as they spoke to the local forest guard and did not understand how the cameras worked. As the forest guard was informed about the situation by the women and by *Annu,* I observed caste dynamics being played out in front of me. The women asked to speak to the forest guard away from the gaze and hearing distance of two forest watchers who were of lower caste backgrounds. After a long conversation, it was revealed to the women by the forest guard that the particular camera trap was dysfunctional and out of batteries and was only kept attached for its deterrence value. *"Do not worry, safeguarding the dignity of our daughters is also my duty"* said the forest guard, reassuring the women. The forest guard then spoke to me at length about the camera and asked me to assure the women that nothing would have been photographed or recorded. I took the opportunity to ask him why the forest watchers were kept away from this conversation. *"Isn't it important to inform them as well",* I asked. *"No! they will spread a rumour in the village",* he replied firmly. Later, my

[9] Common proverb to signify a great deal of shame brought by someone, mostly associated with women

interlocutor *Annu* also revealed to me that a few hundred rupees were paid as a gesture of goodwill to the forest guard by the women.

This episode highlights two important issues. First, CSTs like camera traps can have meaningful consequences in social contexts that are already marked by discriminatory sexist relations. Secondly, the impacts of these consequences are unevenly distributed, in a manner determined in this case by caste. The women affected could use their upper caste privilege to negotiate with the upper caste forest guard and keep the incident a secret. Would things be different if the camera was functional, and the women affected were from marginalised backgrounds? I have explored such differential impacts of surveillance in Chapter 5.

6.6.2. Clothing, Voyeurism and Harassment

As discussed in Chapter 2, feminist scholars have argued that the practice of surveillance contributes to furthering the imbalance in gender relations rather than challenging it (Koskela 2012). In this section I will demonstrate how CSTs privilege certain bodies over others, based on their gender. I will also show how CSTs can enable voyeuristic practices and give rise to instances of sexual harassment causing social shame and giving rise to conflicts that can put conservation projects at risk.

"Men don't care about the camera traps, while women need to be more careful, they need to watch what they are saying, what they are doing and even what they are wearing"

(Local resident woman, Interview no 37)

"We cannot stay in the forest for long hours when they install the cameras, don't we women need to relieve ourselves? With these cameras around where will we go?"

(Local resident woman, Interview no. 27)

In my interviews, women often discussed how they tie their 'Kurtis'[10] or 'Sarees'[11] above their knees to facilitate ease of movement while collecting forest produce. The presence of cameras makes them conscious from doing this, which in turn increases the time taken for them to collect firewood and grass. *"We cannot walk in front of the cameras or sit in the area with our Kurtis above our knees, we are afraid that we might get photographed or recorded in a wrong way"* says *Lata* a woman from the village of *Kakar Khet*. Although the forest serves as a space for a myriad of social associations between women it is also a space where hard labourious

[10] A long-sleeved collarless tunic worn by women throughout South and Southeast Asia.
[11] Traditional Garment wrapped around the waist with one end draped over the shoulder partially exposing the midriff

work is done. According to *Lata*, the rate of collection of firewood and cutting grass is significantly reduced when worn *Kurtis* or *Sarees* are not folded up. *"Whenever these cameras are deployed, it increases our work time in the forest by many hours, we cannot be free while collecting firewood"* states *Lata*. Women also spend long hours in the forest many kilometres away from the nearest toilet or from their homes. During this time, they also use forest spaces to relieve themselves whenever the need arises. The presence of camera traps then dissuades women to use forest spaces as such and, as I show from the vignette below, can lead to instances of voyeurism and sexual harassment.

The people from the village of Guldar Ban have been in a long-standing conflict with the CTR administration over land, and their rights to harvest forest produce. Classified by the administration as an encroachment on forest land, the village and its residents are seen as squatters on government land (for details see chapter 4). The use of CSTs by the CTR administration manifests itself in the most intensive ways in and around this village. During one of my interviews with a local social activist from the region, it was revealed to me that a case of sexual harassment related to camera traps in the forest had occurred near Guldar Ban in the year 2017.

Forest streams coming out of the CTR drain through the village in the form of 'nullahs'[12] These dry waterbeds are used by wildlife to move between the forests of the CTR and the Ramnagar forest division. A project to map and monitor wildlife corridors around the CTR was launched the previous year by a well-known conservation NGO. Camera traps were deployed in these *nullahs* to monitor the movement of wildlife and determine preferred routes taken by elephants and tigers. Research done under the project revealed that elephants and other wildlife largely use these *'nullahs'* as paths to cross over to the Ramnagar forest division. What the project did not consider was that these '*nullahs'* were also used by residents of Guldar Ban as a space for open defecation.

"They did not hold any meeting or ask any of us before putting those cameras, we only got to know when my brother noticed a flash one evening as he sat down to do his business"

(Local resident man, Interview no 56)

"At first, when we found out about the cameras, we started going into the forest instead of the nullahs, but after a young woman was mauled by a leopard, we started using the nullahs again"

(Local resident woman, Interview no 57)

[12] A seasonal waterbed or ravine.

After the project completion, forest authorities continued the use of camera traps in the same locations albeit more discreetly. Forest guards would often deploy camera traps in the *nullahs* to monitor movement of tigers crossing over to the other side and to deter village residents to use the nullahs. *"The people of Guldar Ban are cunningly clever; they smuggle wood and herbs from the forest through these nullahs"* says a forest guard who's chowkie is located right opposite the village and at the edge of the forest. My interviews with forest guards and senior officials of the CTR revealed that surveillance was more intensive in an around Guldar Ban as opposed to other regions bordering the park.

"We maintain an active informant network and monitor the area with cameras and drones, it is important to project some strength in that area due to the sensitive situation of the land"

(Senior Forest Official, Interview no.172)

In the year 2017, camera traps were discreetly deployed by the local forest staff in one of these '*nullahs',* and a semi-naked woman relieving herself was captured by one of the camera traps. My interviews with residents and activists revealed that this woman was also severely autistic and could not communicate what she had seen or experienced. To make matters worse, her photographs were circulated over WhatsApp as a joke by young men who had recently joined the Forest Department as daily wage forest watchers from a neighbouring village. Generally, only forest guards have access to memory cards of camera traps that are deployed for routine monitoring and surveillance. In this case, the forest watchers obtained the images from the forest guard and 'leaked' the image in local digital chat groups through which it got circulated further.

An activist from the social and political action group called the *'Samajvadi Lok Manch'* (SLM) from the nearby town of Ramnagar was notified about this from a what's app chat group wherein the photograph was circulated. In the following weeks, workers affiliated to the SLM arrived at Guldar Ban to uncover details, organise the residents and take direct action in the form of 'gherao'[13] the forest chowkie and initiate a 'chakka jaam'[14]. However, the family of the woman who was photographed were reluctant to come forward and file an official complaint. The SLM workers even failed to mobilise the rest of the village after conducting a public meeting about this. *"The girl is mentally challenged, and the family is afraid there will be further shaming of their daughter"* said Gopal an active member of the SLM. When I asked why the other village members were reluctant to protest and mobilise, Gopal lamented, "*The village headman and others are reluctant*

[13] A protest tactic used often by trade union activists, students and political workers which involves the encirclement/picketing of a government building until their demands are met

[14] A protest tactic often used by labour unions, students, civil rights activists which involves physically blocking major roads and highways to all forms of vehicular traffic

because some of the village men and boys are also involved with the sharing of the images". The involvement of some residents of their own village in circulating the photograph had dissuaded the residents to organise and agitate against this. However, in the wake of this event residents of Guldar Ban were perceived to have become more 'aggressive' and 'hostile' towards camera traps. The event was also read by residents of Guldar Ban as a case of caste oppression by upper caste forest authorities and residents of a nearby village.

Figure 15: An illustrative example of the incident of sexual harassment through the circulation of a camera trap image in the village of Guldar Ban

"They are a very hostile people, we have lost many camera traps in an around Guldar Ban, they either set fire to it or just smash it to pieces"

(Conservation NGO member, Interview no. 140)

"This would not have happened, if the woman photographed was not of Guldar Ban or was not a 'dalit'

(Local resident (Guldar Ban), Interview no.63)

"Sadly, our own people are involved, it is such a matter of shame that we do this to each other, that is why we don't move ahead socially and economically, our own people pull us down"

(Local resident (Guldar Ban), Interview no.40)

6.7. Privileging certain bodies over others

As discussed in Section 6.2., the forests of the CTR are a heavily gendered space with women using forest spaces disproportionately more than men. However, men do use forest spaces occasionally, for collecting forest produce in the absence of a female presence in the house, for recreation and on rare occasions for illegal hunting. Although most of my participant observations inside forest spaces were with women, I did get to accompany some men from different villages, castes, and ethnically different backgrounds inside forests on multiple occasions. On one such observation day, I followed a group of upper caste young men from the village Shyami for a 'picnic' and a swim in a pool located in the nearby forests of the Pawalgarh conservation reserve. The young men nonchalantly smoked *beedis* and marijuana as they walked in the forest, engaged in fishing in the river, consumed alcohol, and cooked a meal inside the forest.

On the way to the spot, the men came across multiple camera trap stations. None of them gave any attention to the cameras and casually walked past them, dressed in just towels and their boxers. Intrigued, I asked what they thought about being photographed like this. *Jeetu* a young man said, *"Why should we be afraid of the cameras, we are not doing anything illegal, I am not completely naked either*!" At this, *Panku* another young man in a show of power and to make a point decides to relieve himself (urinates) right in front of a camera trap station amidst cheer and laughter by the others. Troubled by the fact that this might lead to government action against him, I asked what will happen if the authorities see the image. *"They will never see the image, and even if they do there is nothing illegal about this"* replied *Panku*. During conversations with other village members at a later stage, it was revealed to me that *Panku* often helped forest authorities deploy these camera traps and hence could take a certain degree of advantage of such a situation. In this case, young men like *jeetu* and *panku* were not too bothered or affected by the presence of camera traps in the forest, not least because of their caste and class privilege. Furthermore, this particular forest space was less intensely monitored and securitised as compared to the core or buffer areas of the CTR.

"Men don't care about the cameras, while women need to be more careful, they need to watch what they are saying, what they are doing and even what they are wearing"

(Local resident woman, Interview no. 61)

What I intend to highlight through this example is the stark difference in how men and women perceive the gaze of the camera trap and how some technologies privilege[15] certain bodies over others. *Panku* could use the privilege of his male body to relieve himself in front of the camera without concern of the consequences, while a woman doing the same in 'pahari' society may result in social shame and mental trauma for them. However, this too depends on intersectional markers of caste and class as I demonstrate in the paragraph below.

As mentioned before, forest produce collection is central to the identity of Pahari women. Singing Nyaulis while collecting forest produce is as much cultural as it is a counter measure to keep away large wildlife. *"Seni jungle mein gaaye gi hi"* (Women will always sing in the forest) exclaims Roopadevi, *"It is part of our identity, cameras will not stop us from singing"* she continues. Roopadevi, a woman I interviewed multiple times is an upper caste woman from the village of Dhimka. When I asked if cameras were inhibiting women from singing Nyaulis or their loud communication in the forest, Roopadevi laughed. *"I stand in front of the cameras and abuse the Forest Department and make faces at it, a camera cannot stop us from doing anything, it is just an object like this water bucket (points to a bucket nearby) for us"*. Roopadevi is the wife of a very active and popular local political activist. Her sons are employed in the tourism industry and her family owns adequate farmland nearby. She also plays a key role of a *sacheev* or secretary in village council or *Gram Sabha*. Groups of women from Dhimka preferred going to the forest with Roopadevi due to her image of being a confident and boisterous leader. *"Forest Guards fear Roopadevi ji, they can't say anything to her, so we accompany her often says a fellow resident from the same village*. The power associated with the social positioning of Roopadevi, not only privileged her but also other women who accompany her in the forest. This was in stark contrast to the experiences of lower caste women who faced harassment and restrictions for their use of forest resources.

Monahan (2009) discusses how some technologies are simply not designed with a full range of bodies in mind. In the case of Corbett Tiger Reserve, camera traps do indeed privilege certain bodies that are usually male, young and from upper caste and class backgrounds over others. Moreover, they also privilege certain women over other women depending on intersectional markers of caste and class.

[15] This may not be an inherent feature of the tech itself, rather it is about how it is used and perceived by people subjected to it.

6.8. Deteriorating Cultural Practices and Risk of Animal Attack

As I walked with a group of women from the forest village of *Sambar Ban* on their way to the nearby forests, some broke into a melodious chorus singing a *Nyauli*. *"Hush Hush, Camera lag Gaye hai"* (the cameras have been put) interrupted *Reshma*, *"Let us reduce our volume in the forest",* she continued. As the women started cutting grass and gathering firewood, I asked *Reshma* what she thinks will happen if they continue to sing in the forest. *"The forest authorities are always watching us because this area is often frequented by tourists, and they don't like us talking loudly or singing in the forest"* she replied. *Reshma* belonged to a village adjoining one of the tourism zones of the CTR. Women from this village were often told by forest authorities not to walk on the roads where the safari vehicles operated. The reason for this was to enhance the experience of tourists who come to see large wildlife and experience the wilderness devoid of human presence. This separation of humans from nature and the idea of nature being wild and pristine has been strongly contested in literature and is still central to many conservation conflicts around the world. The songs sung by women forest produce collectors and their high-pitched communication between them was seen as a 'disturbance' in the forest, especially in an area frequented by tourists in safari vehicles.

"Tourists don't like to see groups of women with headloads of firewood and grass coming out of the bush when they have been sold a complete natural experience"

(Senior Forest Official, Interview no. 262)

"My clients were excited about alarm calls reverberating through the forest, they were sure that a predator was around, suddenly we started hearing songs from the forest, it was a group of women collecting forest produce, it ruined their experience"

(Safari Vehicle Operator, Interview no. 8)

After multiple complaints and arguments over coming across women forest produce collectors on safari routes, the Corbett administration started exercising additional restrictions on women. Women were told to stay away from the safari routes and not be 'visible' and to remain quite in the forest as it disturbs both wildlife and the experience of tourists. "*They tell us to remain quite in the jungle, and now they have strategically put cameras in the forest to monitor that"* says *Umadevi* from the village of *Sambar Ban*. I asked *Umadevi*, if she was certain that the cameras were recording videos and audio or just clicking photographs, she replied, *"I cannot be certain about that, but the local forest guards and watchers told us, that senior officials in Dehradun and Ramnagar can see and hear everything we do in the forest through the cameras".* The use of CSTs to establish fear and control through a false narrative had become increasingly common in the modus operandi of local forest authorities, as explained in more detail in chapter 5.

Restrictions on loud communication between women in the forest were also giving rise to increasing anxiety amongst these women. As argued in section 2.3, loud singing of songs by women is also an important counter measure to keep large wildlife like elephants and tigers away. During my interviews, multiple groups of women expressed concerns over an increasing risk of attack by large wildlife. My interviews reveal that the indiscriminate use of CSTs like camera traps without consultations and consent can have implications on the safety of women forest produce collectors. For example, Mayadevi a woman from the village Sambar Ban reveals how loud communication between women in the forest serves to warn wildlife of their arrival. *"There is a 'baaghin' (tigress) with cubs in this part of our forest, if we don't sing or talk loudly there is a chance of her being surprised and attack us as any protective animal would do"* she states.

Furthermore, the deployment of CSTs often results in women relocating to other unfamiliar forested areas to collect forest produce. *"Since they put cameras in the area, we normally go to collect grass, we are forced to go deeper into the forest where the vegetation is too dense, this increases risk of us running into elephants",* says Meera from the forest village of Raata Ban. Multiple interviews that I conducted with women forest produce collectors suggested that their loud communication and songs, spoke to the animals and announced their arrival in the forest, decreasing risk of them being attacked by wildlife.

"If we don't talk or sing loudly, how will the elephants know that we are here"

(Local resident woman, Interview no. 37)

"Attacks by tigers and leopards are on the rise, the other day a woman was very grievously injured by a leopard, we need to be more careful in the forest"

(Local resident woman, Interview no. 48)

6.9. Social Control, Moral Policing and Sousveillance

As mentioned before, communities in the villages around CTR are closely knit, despite omnipresent caste structures. Most men in the revenue villages like Shyami and Chukar Malla are employed by the burgeoning tourism economy associated with the CTR. Most upper caste households also generate a livelihood from small farm holdings although human wildlife conflict is fast changing this. Financial conditions in these villages have let most households invest in cooking gas and heaters for warming water, two major reasons for women to collect firewood from the forest. Earnings from tourism have also led some households to reduce the number of livestock and hence lower the need for fodder grass, that women collect from the

forest. Despite this, woman from these villages continue to visit the forest to collect firewood and grass for reasons discussed in the earlier sections of this chapter.

Men in these villages often complain about their women unnecessarily entering forests. "There is still a pile of firewood kept in the porch of our house" but my wife still wants to go to the forest says Nandan Sati. My interviews with men from these villages revealed there was considerable disapproval of women going to forests on a regular basis. Such disapproval came from husbands, father in laws and even sons of women. Although some amount of this disapproval came from the fact that it was getting increasingly dangerous to enter forests due to risk of animal attack, a majority these men were more concerned about women 'wasting time' and 'enjoying themselves' in the forest. *"They leave the kids unattended for hours together and go to the forest, they need to spend more time home"* says Raju Belwal from the village Chukar Malla. The presence of camera traps in the forests bordering these villages is often welcomed by men who disapprove of women spending long hours in the forest. *"We are very happy when the Forest Department installs cameras in this part of the forest, our women come back early or don't go at all"* says Raju Belwal as men around him nod in agreement. My interviews also revealed that men from these villages, who aid the Forest Department during the All-India Tiger Monitoring period, often dictate where cameras should be deployed. This is invariably driven by the objective of controlling the time spent by women in the forest, or for stopping them entering the forest.

While interviewing the local forest guard responsible for the forests around Shyami, it was revealed to me that some elderly men had requested camera traps to be put in an area frequently visited by young couples from the village as a tool of deterrence. Although the camera traps on this occasion did not capture images of any young couples, such an image was reported from another village and was reported to the local police by forest officials.

"One of our camera traps captured an image of a couple doing 'matargasti' (romance) in the forest, we immediately reported it to the police"

(Range Forest Officer, Interview no. 253)

My interviews with a local police constable suggest that the police often benefit from CSTs, and in recent times have even requested the Forest Department to deploy them on forest land as they are increasingly being used by young couples seeking privacy. The use of surveillance technologies by policing agencies in India for moral policing is not new, in fact police in the neighbouring state of Uttar Pradesh have used Drones to monitor what they deem as 'anti-social' behaviour, which invariably is moral policing of young couples. The co-opting of CSTs by policing bodies on forest land hence should not come as much of a

surprise. This suggests that CST's have the potential to extend the patriarchal gaze of 'pahari' society and become a mechanism of moral policing in the forests of the CTR.

CST's become tools of social control through which patriarchy and gendered structural violence is reinforced. However, they can also be tools through which women resist or use them for what's been referred to as reverse surveillance or sousveillance. As has been mentioned before, Uttarakhand has an acute problem of alcoholism and domestic violence. My interviews in the village of Chuka Malla, revealed that some women have been known to escape domestic violence being subjected on them by leading their husbands in front of camera traps deployed nearby. "*Seema sat in front of a camera trap installed on the road in front of her house all night so that she can photograph her husband assaulting her"* says Ramadevi the leader of a local women's union. *"She was so frustrated, that she was ready to risk her life from being attacked by a wild animal than being assaulted by her husband"* she continues. Although such instances of using CSTs as tools of reverse surveillance are overshadowed by them being used to propagate gendered structural violence, they are still significant and an important area for further research.

6.10. Conclusion

In this Chapter, I have attempted to demonstrate the gendered impacts of CSTs. I have argued that CSTs invade the social, cultural, and political spaces of women, influencing their actions and impeding their autonomy. Conservation interventions in India often ignore the complex and gendered nature of forest spaces. Even when such interventions do consider gendered dimensions, they largely focus only on material aspects of subsistence and livelihoods. By combining concepts from surveillance studies and feminist political ecologies, I have demonstrated the implicit gendered structural violence that is propagated using CSTs.

I have attempted to establish how nuanced socio-cultural values associated with work, pride and tradition are constituted through the gendered forest spaces of the CTR forests. These spaces are used by women to claim and establish relationships within themselves, and become sites where daily relations of gender, authority and patriarchy are formed and challenged. My research also revealed the importance of songs sung in the forest by women forest produce collectors, not only as a valued tradition but also as an important method of keeping away large wildlife. The forests of CTR also act as private spaces where certain acts are performed, that are otherwise considered taboo by the patriarchal and casteist gaze of the society. Finally, forest spaces also act as spaces of escape, freedom, and liberation for women. It is hence imperative for conservation to account for these locally specific meanings through gender relevant analytical frameworks.

Surveillance of women is a long-standing practice in Indian societies and elsewhere. The emphasis placed on the bodies of women in patriarchal societies results in paradoxical dichotomies. Surveillance technologies capture these dichotomies perfectly, as women are expected to conform to tradition by regulating or hiding their bodies, while at the same time their bodies are constantly on display. Padte (2014) poignantly argues that male dominated spaces result in the bodies of the other being the focus of surveillance, wherein the aim is to control the other (often women) so that they adhere to the norm. The gendering of surveillance is hence critical, as the depth and range of impacts of surveillance on women and other non-conforming bodies needs to be brought to the fore. Although the emergence of feminist surveillance studies as a sub disciple aims to do just this, most empirical work within the discipline has focussed on urban geographies, in spaces such as factories, shopping malls, city streets and digital environments like social media. My research extends the body of work within feminist surveillance studies to forest environments by examining the impacts of CSTs on gendered power structures in the forests of the CTR.

I have demonstrated that the use of CSTs in forest spaces has a disproportionate impact on women, the severity of which are based on intersectional markers of caste and class. CSTs alter the behaviour of women forest produce collectors, wherein they discipline and regulate their practices of forest produce collection even when those practices are legally permitted. Furthermore, CSTs control the bodies of women by restricting private talk and other activities that are deemed as social taboos for women. As demonstrated from my empirical data, perhaps the most significant impact of CSTs is their potential of voyeuristic harassment. When CSTs play an active role in such harassment, they further contribute to the sexualization of women and to the masculinization of space. Finally, CSTs extend the patriarchal gaze of society to forest spaces where they are co-opted for purposes beyond conservation that reinforce patriarchal norms and propagate gendered structural violence. Koskela (2000) argues that surveillance can be a way of reproducing and reinforcing male power. My analysis shows that CSTs are opening new possibilities of control, harassment, and stalking, while at the same time they can be tools of reverse surveillance wherein they are used by women to challenge male power. Using the analytical frameworks of feminist surveillance studies and feminist political ecologies, my detailed ethnography makes novel contributions by detailing the gendered dimensions of conservation surveillance. In the next and final empirical chapter of this thesis, I turn to the phenomenon of workplace surveillance by examining a Ranger based law enforcement monitoring tool called MSTrIPES, and its impacts on conservation labour in the CTR.

CHAPTER 7

Watching the Watchers: Workplace Surveillance and Conservation Labour

"This device with the software is like a leash on us, we don't feel free, it has been forced on us. I feel like a robot, one day here, one day there, completing targets".

(Forest Guard, Interview no. 129)

7.1. Introduction

Increasingly critical scholars have started examining conservation as a 'mode of production' and the creation of value from conservation commodities (Brockington & Schofield 2010). This analysis of conservation production is linked to a range of processes and actors that work towards the conversion of nature into commodities for sale in the capitalist market (Neimark et al 2020, Büscher & Fletcher 2015). An emergent new line of inquiry proposes conservation labour geographies as a critical analysis of labour processes in the green economy (Thankholi 2021). However, issues related to labour processes in conservation have largely been ignored as nature conservation has often been projected as the antithesis to extractive forms of industry (Sodikoff 2009). Consequently, there remains a lack of literature that critically analyses the production of conservation labour, the value it creates and the broader implications of conservation interventions such as the use of CSTs on labour regimes. This labour refers to workers who participate in the production of conservation spaces and its commodities such as rangers, safari guides, maintenance, and hospitality staff. Biodiversity conservation is frequently posited as a solution to global environmental degradation leading to more land being set aside as conservation spaces. Furthermore, threats such as organized poaching and wildlife crime are resulting in conservation practice to be more militarized in response (Massé 2018, Duffy et al 2019). Such developments make it imperative for researchers to examine, and critically analyze labour processes within conservation.

The militarization of conservation has led to an increased dependence on surveillance technologies aimed to monitor law enforcement effectiveness and performance of conservation staff (Massé 2018, 2020). Frontline forest staff or forest workers are regarded as the backbone of conservation enforcement and management strategies in India. A range of digital applications called Ranger based law enforcement monitoring (LEM) tools have been designed to aid frontline forest staff in their daily duties of patrolling

and anti-poaching efforts (Cronin et al 2021, Critchlow et al 2017, Marvin et al 2016, Stokes 2010). In India, an application called M-STrIPES (Management System for Tigers- Intensive Protection and Ecological Status) has been used since 2010. The objective of the system is to increase the effectiveness of patrolling by frontline forest staff and strengthen surveillance by spatial analysis of ecological and anthropogenic information collected during patrolling. It is claimed that the use of MSTrIPES has resulted in a significant check in illegal activities inside the tiger reserves of India. However, the application has significant social implications for forest guards and forest watchers who are using it daily, as part of their duty. In this chapter, I turn the lens on how workplace surveillance affects the watchers of the forest themselves by examining the impacts of MSTrIPES on the labour processes of frontline forest staff. I argue that an increasing shift towards the use of ranger-based LEM tools in conservation and forest management activities is leading to increased vulnerability of frontline forest staff, mainly daily wage forest labourers. I also argue that these digital technologies are changing the nature of forest labour itself, by causing increased automation and giving rise to a surveillance system that establishes discipline and control in the workplace. Finally, I argue that technologies designed and built with inadequate research and consultations that do not factor in the social and ecological processes of a specific site lead to adverse effects on conservation practice.

7.1.1. Conservation as Productive Labour

Before looking at the above-mentioned arguments in detail, it is important to provide a background of forest labour practices in India and the frontline forest staff in the CTR. Through my research on the implications of surveillance technologies on conservation labour practices I also aim to fill in an important gap in the literature on 'conservation labour', and by making visible a largely ignored group that surveillance studies or labour studies as a field has failed to explicitly engage with. The fact that working classes sell physical effort in the service of conservation biologists, government departments and tourists in India's National Parks has not been critically analysed. Furthermore, conservation narratives have largely obfuscated labour and working-class realities by limiting the engagement to local community participation in conservation, traditional ecological knowledge, displacement, and resettlement and of dispossession.

The role of manual labour in conservation is a central theme in Sodikoff's (2012) book *Forest and Labour in Madagascar*. For Sodikoff, labour is a conceptual lens through which she examines the effects of hierarchy, compensation discrepancies, resistance, and compliance on the creation of value and capital. She reveals the daily tasks through which subaltern forest labour produce certain types of knowledge that contribute to the creation of this value. Sodikoff argues that this labour has been rendered invisible in conservation narratives and further work and analysis of conservation as productive labour will highlight

the tensions internal to the labour structure of neoliberal conservation. The devaluation of labour here not only refers to inadequate wages relative to the challenging circumstances of their work but also to the historical redeployment of moral hierarchies that separate 'unskilled' manual labour from 'skilled' intellectual labour. Sodikoff's work is instructive to my arguments in this chapter, which starts from a similar theme of a historically exploitative use of local labour as the backbone of forest work today. I make additions to the arguments made by Sodikoff by revealing the impacts of conservation surveillance technologies on local labour.

Colonial governments across the world have relied on the coercive use of manual labour for forestry (Sodikoff 2012, Rangarajan 1996). In India, the imperial Forest Department recruited traditional forest dwellers as local labour in the form of guards, watchers, and planters, settling them in forest villages as tenants at will. Labourers were required by British foresters for planting tree species used for timber, managing, and clearing fire lines, protecting crops from wild animals, as mahouts for work elephants and for assisting during game hunts by officers (Rangarajan 1996, Mandala 2015). This provision of labour served as a bargaining card for many forest dwelling communities as they increasingly grew dependent on forest labour for their daily subsistence following the curtailment of their traditional forest rights (Rangarajan 1996). Local forest labourers in most instances came from forest dwellers and marginalized groups such as the scheduled tribes of India or from communities belonging to the scheduled castes (Rangarajan 1996, Müster 2014, 2016). Post-independence, and with a change in the forest policies of India, forest labour practices changed from producing a landscape of timber production to now a conservation landscape for tourist consumption (Münster and Münster 2012).

Münster (2014, 2016) in her ethnography of human-elephant relations from Kerala, India reveals how traditional forest dwellers continue working at the lowest level of the Forest Department's hierarchy and remain alienated from decision-making processes in wildlife management. She argues that the power over decision-making processes in wildlife management resides firmly in the hands of forest officials, conservation scientists and experts, while the environmental knowledge they rely on to make those decisions, is produced by the labour of traditional forest dwellers. Like Sodikoff's arguments, Münster too discusses this institutional devaluation of the forest worker that shapes their subjective experiences and renders invisible their labour in representations of biodiversity conservation.

7.1.2. Conservation Labour in the Corbett Tiger Reserve

The Corbett Tiger Reserve has three groups of actors that fit into the frontline forest staff category, namely- forest guards, forest watchers and the special tiger protection force (STPF). Although they all fall

in the frontline staff category, the nature of work and working conditions of these three groups are significantly different from each other. In this chapter, I will only refer to the impacts of conservation surveillance on forest guards and forest watchers as the STPF are not monitored through any kind of surveillance technology.

The first and the most visible group in conservation narratives are the Forest Guards. In the year 1878, the imperial forest service of British India brought in legislation called the Indian Forest Law that defined several legal categories of forests[1]. The two most important categories were the 'Reserved Forests' that would be managed by the imperial Forest Department for timber production and silviculture, while 'Protected Forests' were to be set aside from general use and had a temporary designation until they could be assessed and planned (Sivaramakrishnan 1999). This resulted in designing fire control measures, controlling grazing, and denying the access of local communities to these forests (ibid).

The 1878 law rapidly gave rise to conflict between the indigenous forest management institutions of local villagers and of the colonial forestry practices for timber management. To quell dissent and regulate the access of local villagers to forests, the British introduced 'Forest Guards' in line with the police constables of the Indian Imperial Police (Sinclair 2008). Today, the forest guard is the lowest level functionary in the hierarchy[2] of the Indian forest services. They are the primary representatives of the Forest Department in rural society that police access to forest resources and enforce, interpret, and explain forest policies to local communities (Vasan 2002). Introduced as a policing force that would restrict access of local communities to forest resources, the main duties of forest guards today are to continually monitor their 'beat'[3] by conducting regular foot patrolling. With the powers bestowed upon them by the state to fine illegal forest use and make arrests, and by being *'sarkari karmacharees'* (government employees) it places forest guards in a position of power over local villagers who are forest dependent.

"We are 'sarkari karmacharees' (government employees), we have the power to stop them, and they are right to be fearful of us."

(Forest guard, Interview no. 232)

[1] See Chapter 4 for details

[2] State level hierarchy of the Indian forest services from the lowest to the highest are- forest guard, forestor, range forest officer, divisional forest officer, conservator of forests, chief conservator of forests and principal chief conservator of forests

[3] A beat is the smallest administrative unit in the Forest Department's land management system. Forest guards are also known as beat officers. Forest land at the state level is divided into circles, each circle has some divisions, each division has multiple forest ranges and each range has multiple beats.

"We are the 'darogas' (inspectors) of the forest just like the police 'darogas."

(Forest guard, Interview no. 210)

The second group of frontline forest staff in the CTR consists of 'forest watchers' or 'daily wage forest labourers'. This group of labour forms the vanguard or backbone of all conservation management and enforcement measures across India's protected areas, yet like they remain largely invisible in conservation scholarship. As mentioned in Chapter 4, the formation of the state of Uttarakhand in 2002 led to significant demographic changes affecting the availability of forest labour. Today, most forest labour called '*daily walleh'*- or daily wage forest watchers in the Corbett tiger reserve are landless peasants from the lower castes.

Forest watchers in the CTR form the mainstay of its entire frontline staff in terms of manpower. Forest guards take charge of *'beats'* and *forest chowkie* and are supported by 2-4 daily wage forest watchers. The duties of forest watchers are numerous and varied, a watcher operates key entry and exit points in the park, cooks food for forest guards, fetches water, cleans utensils and washes clothes. At the same time watchers are the vanguard in fighting fire, coppicing, and clearing weeds, patrolling the forest, policing fringe areas, and monitoring the movement of key wildlife. Forest Watchers are recruited through informal bureaucratic mechanisms and through the personal contacts of forest guards and range forest officers. Occasionally there are intakes or *'bhartis'* for forest watchers; these are announced in local newspapers and through forest guards who rely on word of mouth within villages. Such '*bhartis'* allow for the employment of forest workers with a monthly salary calculated through set daily wages, and the arrangement involves the possibility of the job becoming permanent by promoting forest watchers to forest guards after serving for a minimum set of years.

"I joined in as a watcher in 2001, that was the first big 'bharti' of watchers in CTR. Before that it was all very informal, even today it is informal but before it was even more so."

(Forest Watcher, Interview no. 250)

Alternatively, some forest watchers are employed in a more temporary capacity, for a few weeks or months brought to fill in the shoes of forest guards on leave, as an additional force for fighting fire in the dry season or for road construction and repair work. These appointments happen entirely through the personal contacts of forest guards and through their relations with local villagers. Forest watchers being the primary assistants to forest guards help with patrolling and using the MSTrIPES device.

"Forest guards regularly come to the villages every month looking for men to do labour work in the forest, they prefer young men who can do arduous work."

(Forest Watcher, Interview no. 24)

7.2. The Precarity of Conservation Labour in CTR: Uneven Vulnerabilities and Uncertainties

"We read in the newspapers that Corbett is the best park of India with most tigers in the world. It is the best park because we have given our blood and sweat for it but look at our condition; the dog from the canine squad has a better life than us."

(Forest watcher, Interview no. 128)

To better understand the impacts of workplace surveillance through CSTs on forest labour, it is important to first highlight the prevailing structural inequalities that exist within the forest labour processes of the CTR. When I began my fieldwork investigating the implications of conservation surveillance technologies in CTR, I did not intend to study the impacts of CSTs on forest labourers as a group, although they were central to my research gaze- as actors that deploy these technologies to watch and conduct surveillance on forest dwelling communities. In time, I discovered that forest guards and forest watchers themselves have multiple identities and positionalities as they interact very closely with local communities. In the case of forest watchers these identities are often fluid, as in most cases watchers come from within these communities and share the challenges associated with living next to a tiger reserve and the historical contestation of space over access to natural resources. Although there are some studies on the challenges associated with doing conservation labour, studies on the welfare and the comparative struggles of different groups within this labour force are largely absent in scholarly work (Etemesi et al 2018, Singh et al 2020). In this section I will attempt to make visible some of these issues from CTR before discussing the implications of surveillance on this group of conservation actors.

A survey conducted by the World Wide Fund for Nature (WWF) and the Ranger Federation of Asia (WWF and RFA ranger perceptions: Asia 2016) revealed that 'rangers' in Asia were working in dangerous conditions with low pay, poor facilities and were having to spend long durations away from their families. The survey collectively refers to all frontline staff as "rangers" that include forest guards, foresters, wildlife wardens, scouts, and watchers. However, in India these roles significantly differ from each other and have very different power relations between them, shaped by a rigid hierarchy as will be made clearer further in this section. The difference in this hierarchy-driven structure of power also influences how surveillance is experienced within these groups. In the section below, I attempt to describe some of the precarious realities of conservation labour- particularly of forest guards and forest watchers from CTR. For the purposes of anonymity all names, locations and personal family situations have been changed.

7.2.1. Forest Guards

As mentioned before, forest guards in India are salaried government employees with better social security measures such as insurance and a pension compared to forest watchers who, due to being daily wage labourers, are paid only a minimum wage and are deprived of government social security schemes available only to full time employees. Nonetheless the job of a forest guard is unique compared to other government employees of the same levels in other departments like the Indian police services or the Indian armed forces.

"The biggest challenge for all frontline forest staff is our 24 hours duty. No other public department have this kind of working hours, the police and even the army have shifts. We have no shifts! Our work never gets over!"

(Forest Guard, Interview no. 223)

Forest guards in India are expected to work for 24 hours a day and for 365 days a year, although they are given leave in times of family emergencies and important festivals, it is not easily sanctioned by their superior authorities. However, there are varying degrees of unevenness in the privileges enjoyed or deprived by forest guards in CTR. Since political ecology underpins the inquiry of this thesis, it is important to reveal these discrepancies to better understand how certain kinds of social and political power shape certain vulnerabilities of forest guards.

I regularly met with one such forest guard who has spent close to 25 years in the service and has had a range of 'beats' under his supervision in both the buffer and core areas of CTR. Triloknath Tiwari popularly known as 'Panditji'- owing to him being from the Brahmin caste and more importantly a sub-caste that are traditionally known to conduct Hindu rituals in the mountains, was well respected amongst his immediate superiors and shared a good rapport with guides and drivers working as service providers for tourists. Panditji would often be found away from his *'chowkie'* in the town of Ramnagar where lies the headquarters of the CTR administration including the office of the field director. He would often proudly talk about how senior authorities always took his counsel in matters of managing the buffer areas better and on matters related to transfers and postings of other forest guards. When asked who looks after the *chowkie* in his absence, he would retort, *"my labour (forest watchers) is always there"*. Safari drivers who would often visit the field director's office for matters related to permits would teasingly pass remarks on Panditji's 'connections' in the office and state that *'He always gets things done for himself when it comes to leave from duty'*. Over the months, I often found Panditji away during the main Hindu festivities and on one

instance for the marriage of his niece. When he got back, I asked how he managed to get frequent leaves like this and how he managed to complete his patrolling targets, he would say,

"I handpick my labour, they always obey and do everything correctly even when I am not there, plus I have served enough and given my blood and sweat to CTR, I also regularly do rituals and pujas in the homes of the officers, the least they can do is give me this leeway."

(Forest Guard, Interview no. 221).

Panditji clearly enjoyed a certain amount of goodwill amongst his superior authorities owing to his long years of service and not least because of his caste privilege that placed him in a position of power within the social structure of the forest administration. What is also interesting to note here is that Panditji would always refer to his watchers as 'mera' (my) labour, this reference is also confirmatory of how arduous labour of forest watchers is viewed through the gaze of caste (most forest watchers belong to lower castes) by forest guards.

In contrast to Panditji, another forest guard that I met regularly came from a religious minority group. Much younger in age and experience to Panditji, this forest guard had completed his graduate studies and was well versed with conservation terminologies and issues. This forest guard would be difficult to meet as his chowkie was in the interiors of the CTR, and the only way to set up a meeting would be when he visited a nearby village or the town of Ramnagar for administrative work or his personal chores. For him, the challenges associated of being a forest guard in CTR are very different than Panditji's. For instance, his interactions with his superiors in matters of leave and duties are not as positive. He laments-

"Some of these old forest guards get what they want from the 'adhikaaris' (officers), be it a favorable chowkie nearer to Ramnagar or a holiday during a number of festivals, they only need to inform their rangers a few days in advance, while in my case I have to notify them months in advance to go home for Eid (an important festival for Muslims) and even then they take a long time to actually sanction it."

When asked the reason for this disparity he stated- *"You are aware enough to understand what the possible reasons could be, the watchers that are assigned to me do not take me very seriously and are always ready with excuses, these same watchers were with another guard a few months ago and were very respectful of him and did whatever he wanted".* What was being implied was that his subordinates were not respectful enough of him due to his minority background. This is another issue that is very poorly documented when it comes to the study of frontline forest staff and conservation labour. Scholars have discussed that the social processes in a workplace are not independent of dominant socio-political narratives in society (Wald 2009, Johnson & Roberto 2018, Fiske

& Lee 2008). As mentioned in chapter 5, growing prejudice and mistrust of minorities in India not only affected control and surveillance of certain forest dwelling communities but as shown here, also have implications for forest staff.

Access to leaves and respite from duty are rare privileges that only some forest guards like Panditji have. Being employees of the government of India, suspensions from duty and a termination of job happens in extremely rare circumstances (Shobhavedi & Rathod 2014). Instead, public policy scholars studying Indian bureaucracies have noted that frequent transfer of officers are more common and serve several purposes that could range from being a routine process to prevent corruption or serve as a punishment for being either too loyal or disloyal to local political and social connections (Kaufman 1960, Banik 2001, Iyer & Mani 2008). Forest officers in the Indian forest service were the topic of Fleischman's (2016) study in which he discusses the role of transfers as a form of bureaucratic control that serve political ends. In the case of forest guards in India, suspension and termination of duties are rare occurrences; instead, they are subjected to 'punishment' postings that could mean being assigned chowkis far away from the nearest village or town in core areas with very limited connectivity.

"You have to be in the good books of the 'adhikaaris' (officers) to get postings in the fringe areas, when someone is put in the core it means they are not patrolling properly."

(Forest Guard, Interview no. 140)

"These adhikaaris (officers) often burden us with other work that are more personal to them rather than work related to the park, if we refuse, we are out of favor."

(Forest Guard, Interview no. 223)

7.2.2. Forest Watchers

In contrast to forest guards, transfers of forest watchers in CTR were heavily dependent on the whims of their senior authorities and influenced by forest guards. Similar to the findings of Runacres (2021) who studied forest workers in the Panna tiger reserve, forest watchers in CTR too viewed transfers as arbitrary, exploitative and cruel.

"I was transferred 5 times from one chowkie to another because I refused to wash clothes of an influential forest guard every day."

(Forest Watcher, Interview no. 201)

"The day we start asking questions about unnecessary work, they give us the 'dhamki' (threat) of transfers."

(Forest Watcher, Interview no. 202)

However, my interviews and participant observations of forest watchers in CTR revealed that transfers or holidays, although important, were not the primary matters of concern for them. Daily wage forest watchers in CTR are paid INR 6345, which is $85 dollars per month for their labour that comprises of mentally and physically strenuous work. These wages are paid for a duty that entails working hours much longer than described as lawful according to India's Factories Act of 1948 which states that-

"No employee is supposed to work for more than 48 hours in a week and 9 hours in a day. Any employee who works for more than this period is eligible for overtime remuneration prescribed as twice the amount of ordinary wages."

(Factories Act 1948).

Moreover, the wages paid are lower than lawful minimum wages for the state of Uttarakhand that sets wages to INR 8773 for the category of unskilled manual labour under which forest watchers fall. For the forest watchers of CTR, the debilitating low wages coupled with not receiving them for months is the most important cause of concern and is looked at as a violation of their basic human rights.

Balwant Kumar was a watcher I came to know closely during my fieldwork. He was a watcher with experience, after two decades of providing labour for the CTR administration in different roles, he was a veteran when it came to almost all forms of forest labour work- from assisting researchers with camera trapping to using his extensive network and relations with local communities to maintain an intelligence network of repeat offenders of forest laws. When I met him for the first time and asked him about the nature of his work, he described it as *'Shramik mazdoori'*- a common term associated with arduous daily wage labour. During one of our many conversations regarding the challenges of doing forest *'Shramik mazdoori'* in CTR, he expressively stated-

"We are paid extremely low wages of INR 6345 per month, and we never get it on time. We have no social security and some of us have not been made permanent even after 20 years of service. I am expected to do arduous labour for 24 hours a day which not only includes patrolling in the forest but also doing chores like cooking food for forest guards, closing and opening gates at key checkpoints and making sure the chowkis are running smoothly".

For 20 years Balwant Kumar had worked as a daily wage watcher in the CTR, he had narrowly survived a tiger attack and escaped with minor injuries and had faced social ostracization in his village for assisting forest guards in identifying and arresting a fellow villager for a poaching offence. When asked about why he continued this work despite long experiences of challenging circumstances and continued job dissatisfaction, Balwant states:

"I joined with the hope of becoming permanent, but it never happened and now it is impossible to find employment in Uttarakhand. Getting employment in the cities far away from home has its own set of challenges, over here I have my home to go back to, clean air to breathe and clean water to drink. It has become a 'mazboori' (compulsion, necessity) to work as a daily wage watcher, I am hardly educated to do anything else".

Aged 45, Balwant Kumar's family comprised of his wife, 3 children and an ailing father. His mother was killed by a tiger while collecting firewood for the family not far from Balwant's current chowkie. Supporting a family with school going children and a father requiring medical care was always on Balwant's mind and he often worried about paying the school fees of his children or paying off a loan taken from a village elder during his duties including while being on patrol. In my many discussions with Balwant, he often referred to being discriminated against by his superiors based on his caste.

"Most of us watchers are 'harijans'[4], and our condition does not improve because we are from 'choti jaati' (lower castes). The forest guard I am under is 15 years younger to me and yet disrespects me every day by making me wash his clothes because I come from the 'Dhobi' caste.

Balwant's situation was in stark contrast to the upper caste forest guard- 'Panditji', who felt valued and respected by his senior authorities. Balwant on the other hand experienced a state of perpetual devaluation for his long years of service as a watcher. Forest watchers in contrast to forest guards have no job security or access to social security schemes like insurance. Their services can be terminated without warning and in an arbitrary fashion. Protests, resistance, and affirmation of rights by forest watchers can be met with termination of their jobs, and in an increasingly precarious economic environment finding new employment can be extremely challenging. Forest watchers are also treated as disposable labour by senior authorities as there is no shortage of available labour due to high rates of unemployment within villages around the CTR.

[4] Term associated with members of the lowest caste outside the four-fold varna system of Hinduism coined by Mohandas Karamchand Gandhi. It is regarded as a sanitized version of the word 'dalit' and often regarded as patronizing.

"There is a lot of competition for daily wage work, we can get 'mazdoors' (labour) easily from the villages, there is a lot of 'berozgaari' (unemployment)"

(Senior Forest Official, Interview no. 172).

"They say we are just mere 'mazdoors' (labourers). What is our 'aukaad' (social standing)?"

(Forest Watcher, Interview no. 128)

My findings on the working conditions of forest watchers in CTR echo the findings of Runacres (2021) from the Panna Tiger Reserve in Central India. Runacres found that forest workers in Panna also viewed their working conditions through the lens of *mazdoori* (daily wage labour) and *mazboori* (necessity). I extend this narrative by arguing that workplace struggles of forest watchers are also viewed through the lens of social hierarchy and caste. Most of the forest watchers I interviewed come from the lower working classes or the 'labour class' as referred to by members of the upper castes/class within the Forest Department.

"These are 'labour class' people they don't have any discipline and lack interest in protecting the forest"

(Senior Forest Official, Interview no. 262)

In Chapter 5, I have explained how caste determines in what way surveillance is experienced by different groups of people living around the CTR. Allocation of labour based on caste is one of the fundamental tenets of the prevalent caste system in India, which is also reflected in who practices daily wage forest labour in CTR. Through my work I have attempted to initiate research on caste and forest labour in India, but the topic needs careful attention and further work that is outside the purview of this thesis. In the above section I have attempted to provide a background of the social and political processes that govern the workplace experiences of forest labour. In the following sections I will build on this to show how workplace surveillance is experienced by different groups of forest labour in the CTR. I will also argue that surveillance and control exacerbate the vulnerabilities of forest labour, contributes to deskilling, devaluation and intensification of the precarious nature of their labour.

7.3. Ranger Based Law Enforcement Monitoring: MIST, SMART and MSTrIPES

Law enforcement is considered as an essential component for the successful management of protected areas and has been widely studied in a broad range of contexts (Leader-Williams & Milner-Gulland 1993, Bruner et al. 2001, Dobson & Lynes 2008). It is argued that effective law enforcement requires the

information on where and by whom illegal activities are undertaken and the ability to act on this knowledge with limited financial and human resources (Stokes 2010). Achieving this in protected areas requires site-based applications that can capture data and convert it into useful and timely information for protected area managers (ibid). Furthermore, it has been argued that effective enforcement in protected areas also requires a system that can be used to evaluate the progress and performance of the law enforcers, by upholding transparency and accountability (Critchlow et al 2017, Gill et al 2015). Achieving this requires the use of appropriate indicators, standardized protocols of data collection, analysis, reporting and dissemination of this information in a simplified and visually appealing ways (Dinerstein 2019, Watson et al 2014).

The collection of data on illegal activities, ecological and anthropogenic parameters by rangers or frontline forest staff while conducting routine surveillance patrols is referred to as Ranger-based law enforcement monitoring (LEM). It is argued that if patrols are conducted regularly and achieve adequate spatial coverage over large areas, they have the potential to inform important management decisions for protected area managers (Cronin et al 2021). Moreover, collection of data by rangers is argued to have additional benefits such as being financially cheaper as it relies on an existing labour force that are familiar with and better equipped to navigate challenging terrain (Critchlow 2017). In the past, the collection of data by rangers would rely greatly on paper-based systems, data entry into spreadsheets and simple data storage. This process was regarded as unsystematic and not very useful to scientific analysis. To make this process more scientific, conservation scientists came up with tools that would collate data remotely and rely on complex technology and computational algorithms to inform law enforcement and protected area planning. However, even with the introduction of digital tools it has been recognized that ranger-based LEM may have considerable biases, as patrols in protected areas are not systematic and are typically deployed in areas where illegal activities are high (Stokes 2010).

7.3.1. Management Information System (MIST)

In the last two decades several tools for ranger-based LEM have been introduced in protected areas around the world. In 2002, a tool called Management Information SysTem (MIST) was developed and implemented across the protected areas of Uganda. Developed in collaboration between the Uganda Wildlife Authority and the GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit) MIST was designed to specifically meet the law enforcement needs of protected area managers by providing a digital system to manage, analyze and evaluate data collected by frontline forest staff (Schmitt & Sallee 2002). Between 2008-2010, MIST was rolled out in multiple protected areas across Asia that were identified as important tiger conservation landscapes. In most of these sites, MIST was implemented through partnerships between government agencies and international/local non-governmental organisations (NGO's) like the Wildlife

Conservation Society (WCS) and World Wide Fund for Nature (WWF). However, MIST was never formally used in India, due to lack of transparency between government authorities and NGOs, and a unique bureaucratic rigidity that is argued to be endemic to India.

"A divisional forest officer has a hundred other administrative duties, half his day is spent in signing files and orders, he does not have the time to go over collected data, let alone analyze and draw inferences, when MIST was introduced, all this was alien to the officers within the Forest Department."

(Conservation Scientist, Interview no. 268)

7.3.2. Spatial Monitoring and Reporting Tool- SMART

Following MIST, a new LEM tool called the Spatial Monitoring and Reporting Tool- SMART was introduced in protected areas around the world. Over the years, SMART has evolved into a management platform that comprises of a desktop and online software, mobile data collection software as well as connectivity over cloud and Internet of Things (IoT). The SMART tool is designed to help protected area managers and rangers monitor their patrols by simplified visualizations and analysis resulting in efficient allocation of resources and better planning. The data collected using the SMART tool is fed into a central database and is made available to protected area managers and rangers around the world. SMART also makes it possible to evaluate ranger performance, and multiple protected areas around the world have now introduced incentives for good performance through non-cash reward systems. Currently the SMART tool is used at more than 750 protected areas in more than 60 countries. It has also been made into a national tool for protected area management in 14 countries, making it a global leader in ranger LEM tools. However, recent scholarship has called into question the effectiveness of SMART, arguing that there is inconsistent evidence to suggest that SMART patrols deter illegal activities and increase the efficiency of management activities in protected areas (Dancer 2019).

SMART was unofficially introduced to Indian government officials at an international conference in 2010, where it was rejected on account of a claim that a similar and better system was already in place. My interviews with conservation scientists and a SMART tool implementing officer revealed that this was not accurate, and the rejection of the tool was attributed to a general aversion of Indian authorities towards 'foreign' tools. Moreover, Indian authorities wanted complete control over data generated by the SMART tool and were averse to the idea of it being on a central server, available to protected area managers and rangers around the world. Following this discussion, the National Tiger Conservation Authority (NTCA) of India, directed researchers at the Wildlife Institute of India (WII), which is the Indian government's premier wildlife research institute, to come up with an India-specific tool that later came to be called as MSTrIPES.

"The way Indian authorities wanted to implement SMART was against the ethos of its objective. The data must be open source. Indian authorities were averse to this, and we had no further discussion with them."

(SMART tool implementing officer, Interview no. 261)

"When the international committee was saying that SMART is the benchmark and must be implemented globally, India said we already have our own tool. In this case, they didn't have anything. After they said that they have it, they went back to the drawing room and built MSTrIPES."

(Conservation Scientist, Interview no. 268)

7.3.3. MSTrIPES

Monitoring System for Tigers- Intensive Protection and Ecological Status (MSTrIPES) was developed and launched by India's National Tiger Conservation Authority (NTCA) and the Wildlife Institute of India (WII) in collaboration with the Zoological Society of London (ZSL) in 2010. MSTrIPES was based on SMART in design and its objectives, but with the addition of multiple ecological parameters and functions, such as the ability to incorporate data from ranger-based patrols, camera trap data, intelligence data, ecological survey data etc. Although MSTrIPES was launched in 2010, it was not implemented across India's tiger reserves until recently. This was due to lack of training amongst their staff, delay in procurement of android smartphone devices that could run the MSTrIPES application, and a general apathy by protected area managers towards yet another perceived administrative hurdle.

"The problem is that the park managers are not taking enough interest, for them it is an added administrative hurdle, instead of becoming a proper management tool that feeds into park management plans and research, it is becoming a tool for them to monitor their guards and watchers".

(Conservation Scientist, Interview no. 268)

Following large-scale training conducted by the WII and regional NGO's such as the Wildlife Conservation Trust (WCT), MSTrIPES was implemented in some important tiger reserves as a tool to make the process of tiger surveys easier. Population monitoring of tigers and prey species in India's tiger reserves is considered as a herculean task that requires immense resources in terms of finances, logistics and labour as surveys would be done by research personnel and citizen volunteers. Before the

implementation of MSTrIPES, forest staff would record observations in the field on pre- formulated paper data sheets that would often get misplaced or be difficult to decipher. The implementation of MSTrIPES was seen as an opportunity to replace the paper data sheets with a digitized data collection application that would be used every day by an existing labour force in the form of forest staff. Data collected by MSTrIPES could then be uploaded on a central server in real time after completion of each patrol or in case of limited internet connectivity, can be saved on the device and uploaded from a forest office.

In 2018, the NTCA announced that MSTrIPES would be used for Phase 1 of the All-India Tiger Estimation exercise to improve the accuracy and reliability of data being collected. However, it is argued that India's tiger estimation exercise suffers from more foundational sampling problems that cannot be resolved through the introduction of new data collection tools such as MSTrIPES (Gopalswamy et al 2015). Furthermore, MSTrIPES was envisioned by scientists and the NTCA as the solution to ensure patrolling by forest staff in a standardized manner as data collected before could not be analyzed due to flawed sampling and spatial biases.

"Forest guards and watchers are going on patrols on their beats every day. Imagine the kind of data they can get if they are provided with an easy-to-use tool where they have to press buttons to feed in data"

(Conservation Researcher, Interview no. 191)

It was also seen as a solution to ensure patrolling by 'lazy' forest guards (Limbu & Kale 2014) who would often skip patrolling duties and send in temporary staff or watchers instead. Moreover, the digital nature of MSTrIPES ensured forest staff were not faking data related to the presence of tigers, as the tool asks for a photograph before recording any evidence of tiger (or any other wildlife or illegal activity) presence. Faking or exaggerating the evidence of tiger presence in India's tiger reserves has a long history, arising out of systemic pressure to report higher tiger numbers that serve political interests (Darimont et al 2018, Gopalswamy el al 2019).

"Many forest guards across our tiger reserves don't go on their patrols regularly, this is a major problem in the lesser-known tiger reserves where no one is checking. With MSTrIPES the respective field directors will be able to check if patrolling is happening regularly"

(Senior Government Official, Interview no. 201)

For researchers in government institutions and conservation NGOs here was a large labour force in the form of frontline forest staff that had the potential to collect large amounts of data as part of their everyday

duty. However, this labour force kept control of the labour process by following traditional methods of monitoring and data collection. The introduction of the MSTrIPES application can then be seen as a form of workplace surveillance that takes away control of the labour process from forest staff by the introduction of a digital application.

7.3.4. The Use of MSTrIPES in the Corbett Tiger Reserve

MSTrIPES was introduced in the Corbett Tiger Reserve in 2018 before the commencement of the All-India Tiger Monitoring Exercise. Experts from the Wildlife Institute of India and trainers held multiple workshops with forest officials and guards on the correct use of the application. My research and interviews with forest staff in Corbett commenced after the tiger estimation exercise was over and it had been almost a year since MSTrIPES was in operation in the CTR. My interviews with senior forest officials in the CTR suggest that the use of MSTrIPES was perceived as a tool to make sure frontline forest staff were doing their patrolling duties regularly. There was little interest in the analysis, patterns and trends of data that was being produced by the application.

"I just need the distance walked every month, covering different areas of the park, sent to me once a month, I am not bothered about other things!"

(Forest Official, Interview no. 253)

"We have some lazy staff; we need to keep a 'nazar' (an eye) on them to make sure they are going on their patrols. This application ensures that they go, and the process of taking a photograph before every patrol makes sure they do not cheat the system".

(Forest Official, Interview no. 254)

Protected area managers across India's protected areas and in the CTR have historically found it difficult to keep a control over the process of patrolling as administrative duties hinder their involvement in the field. A tool was now available to protected area managers in the form of MSTrIPES, with which the duties of subordinate forest staff and particularly frontline forest staff could be monitored.

"Also in the Indian context, let's be clear, we unfortunately live in a very hierarchical structure, the reason these photos and all these checks and balances have been introduced is because they were asking the forest watchers to go around with the mobile device and the forest guard would never go."

(Senior Conservation Practitioner, Interview no. 269).

Figure 16: Handheld android smartphone with MSTrIPES application open

The MSTrIPES process requires a forest guard to switch the device on before starting every patrol and fill in details such as date, time of patrol, type of patrol, number of patrolling members, respective designations of each patrolling member followed by clicking a picture of the entire patrolling team. Before the application starts recording the patrol route, forest guards must select either the online function which tracks patrols using the Google satellite view and uploads the information directly to the central server, or the offline function that records the patrol on the phone's memory which then needs to be uploaded manually on a computer in the respective forest office. While on patrol, if forest guards or watchers come across any direct or indirect evidence of animal presence, they are required to feed in details such as the type of sign encountered, the species and then take a photograph. Similarly, when forest guards and watchers come across any kind of human activity on patrol, they are required to feed in detail such as type of human activity found and what action has been taken to report it.

Figure 17: Diagram showing images of the first few steps of the MSTrIPES mobile application process

Forest Guards in every forest chowkie and anti-poaching camp are required to complete a set number of kilometers patrolled on their beat. They are also required to spread their patrolling routes to achieve maximum spatial coverage in their respective beats. At the end of each month, a range forest officer examines the data from the mobile application before forwarding it to the IT cell. Staff at the IT cell compute the data and make a report for each forest guard and their respective beats. Particular attention is given to see if the patrols have happened regularly and have completed their respective targets of 10 kms on each patrol. This information is relayed to range forest officers who would use the information to discipline non-performing frontline forest staff or offer appreciation and awards in the case of good performance.

"We give certificates of appreciation to some guards who are achieving their targets, disciplinary actions are taken against those who are not"

(Forest Official, Interview no. 253)

My observation of the MSTrIPES process in the CTR suggests that the application, although designed for a range of things from LEM to measuring ecological parameters, was serving as a tool of control and

surveillance by forest officials towards sub-ordinate staff. This mechanism of control through direction, evaluation and discipline resonates with the description provided by Edward's *Contested Terrain* (1979) who argues that employers obtained desired behaviour from their labour by using such control mechanisms. This control and surveillance itself is hierarchical and gets exacerbated by existing social inequalities and interactions within the forest staff. In the following sections, using empirical material from my research I will argue how the use of MSTrIPES in the CTR contributes to deskilling of conservation labour, causes their institutional devaluation, and increases risk of animal attack, making the act of labour itself precarious. I will also argue how surveillance and control is consented and resisted through quotidian encounters and relations between forest officials and subordinate forest workers.

7.4. Losing Control of my Labour: MSTrIPES and Labour Process in the CTR

Prior to the introduction of remote cameras for the population monitoring of tigers and the introduction of Ranger based LEM tools like MSTrIPES, the work routine of forest guards and watchers was considerably different to what it is now. Duties of forest staff would begin each morning with foot patrolling of their respective beats. Forest guards along with forest watchers had control over the spatial coverage of their patrols. They would choose what route they wanted to take for the patrol and which area of their assigned beat would be covered. Selection of a route or patrolling area by forest staff depended on the purpose of the patrol. For instance, a patrol to monitor wildlife, would likely be very different from that meant to check for timber smuggling or other possible illegalities.

Forest guards and watchers across India's tiger reserves were tasked to track tigers and maintain 'casts' of tiger tracks or pugmarks made from gypsum plaster. The process would start each morning by looking for pugmark impressions of tigers along patrol routes and then using a glass sheet supported by wooden frames, an outline trace of the pugmark would be made. For the annual national estimation of tiger populations, field teams led by thousands of frontline forest staff would conduct a 'pugmark census'. An Indian Forest officer called SR Choudhury pioneered this method in 1966. A pugmark census would entail a simultaneous search for tiger tracks over a 2-week period, obtaining plastered casts and traces of the left hind pugmark of a tiger (Choudhury 1970). These casts would then be compared to identify individual tigers through perceived differences in shape and size and an estimate of tiger numbers would be obtained (Choudhury 1972). In 2003, a landmark paper challenged the scientific rigor of the pugmark method and exposed some gaping loopholes in its assumptions (Karanth 2003). Soon after, the pugmark method was replaced by a combination of advanced ecological methods such as sign surveys and camera trap-based capture-recapture surveys. The practice of tracking, tracing, and making casts had given rise to an entire

generation of forest guards and watchers who were accomplished trackers with immense knowledge abou tiger movement and behavioural patterns. However, over time, the practice of tiger tracking, making plaster casts, and traces rapidly reduced across India's tiger reserves and has nearly disappeared today.

Figure 18: A forest guard traces a tiger pugmark before making a cast

"Before MSTrIPES, we counted tigers by pugmarks, first make sketch of the pugmark by keeping a tracing glass over it and then make a cast of it using a plaster. Now this does not happen, many have forgotten how to do it correctly. Before, the old watchers and guards could recognize the tiger by the pugmarks or tell many things about it. Now there are cameras, drones and mobiles and this knowledge has disappeared."

(Forest Guard, Interview no. 128)

7.4.1. Deskilling and Control

Mahendranath Rawat or Rawatji had recently retired as a forester after serving in CTR for over 30 years. Even after retirement Rawatji continues to work in the range office in the capacity of temporary staff on daily wages. Being one of the most experienced forest guards of Corbett, his in-depth knowledge is respected by his seniors, his subordinates and even members of the local community. He fondly remembers the times when he would get called to provide training to young forest guards and watchers on how to correctly make pugmark casts and traces. He proudly states- "*I could identify all the tigers in my beat by just looking at their pugmarks, I could tell their sex, age, their size, if they had just eaten and their speed of movement by one look at the pugmarks, even the senior officers would come to learn from me".*

As part of my fieldwork, I had the good fortune of going on a patrol with Rawatji and his sub-ordinates. Moments into the walk, Rawatji stops and notices a set of tiger pugmarks; he turns and questions the forest guard accompanying us- "*Kya lagta hai narr ya mada"*? (*What do you think? Male or female?)* The young forest guard, who had recently joined the service, in a moment of panic, stutters and says *"Tiger hai sir" ("It's a tiger").* Rawatiji breaks into a fit of laughter, turns to me and says *"Yeh haal hai, ("This is the condition"), all these young boys know is to push buttons on those phones, tiger, elephant, leopard".* He then turns to the young forest guard and says, *"This is a young female, probably 3 years old, walking at a normal pace".* The young forest guard is visibly embarrassed but keenly starts observing the set of pugmarks. Rawatji laments to me, *"This is not their fault, they are trained to become robots now, if they were still casting and tracing pugmarks, they would pick up these skills on their own, but now all that matters is that phone, the points they mark on it and how much distance they cover".* It is not that Rawatji does not recognize the importance of new technologies and methods. He understands that counting tigers through pugmarks can be erroneous and that MSTrIPES is a more systematic way of collecting information, but he worries that an over emphasis on new technologies is causing the deskilling of forest staff and specialist knowledge is being lost in the process. He states, *"These things can be good, but at the same time I feel we should not forget our old skills, in the rush for technologies, we are losing our 'hunar' (special skillset)."*

Figure 19: Illustrative representation of an interaction between two forest staff depicting the loss of traditional knowledge with the rise of mobile applications like MSTrIPES.

Rawatji concerns on deskilling are echoed albeit more insistently by Naveen Arya or Naveenji, another forest guard I interviewed multiple times. Naveenji, unlike Rawatji is a *'dalit'* and had served as a daily wage watcher for 18 years before becoming 'permanent'- a forest guard. For Naveenji, his 18 years as a watcher were nothing short of traumatic due to the constant caste discrimination, he faced from his senior forest guards and superiors. He asserts*, "I could read the jungle signs and sounds better than anyone, even Jim Corbett would be impressed if he was still alive, yet they always undermined my knowledge*". Naveenji's experience of being devalued by his superiors led him to lobby hard for becoming 'permanent'. However, even after becoming a permanent government employee, his caste is used against him regularly. He gives a very interesting perspective by stating *"When I was a watcher, I thought they did not take me seriously because I was a daily wager, but now I am a guard, the other guards and the ranger (range forest officer) still devalue my knowledge of the forest".* He continues, *"Why do you think they insist we use these phones; they just want to keep a control on our knowledge, the less*

we know the better it is for them". Naveenji believes that there is a severe trust deficit between senior forest officials, guards, and the watchers. He states,

"I was a watcher for a long period, I empathize with other watchers, I try to teach them how to read the pugmarks, how to look for signs of dead animals by observing vultures or how to look for sickly behaviour in elephants". "But they (senior management) don't want me to do that, they insist that I only use the phone and teach them the same". "This is because they are scared, they think the watchers will use the knowledge to collude with poachers or use their skills to locate dead tigers and elephants, which then creates a difficult situation for senior officials as media pressure increases". "They are controlling us by making us push buttons all day and making us follow certain tracks and routes".

7.4.2. Chimerical Control and Biopower

Many forest watchers I interviewed over the period of my fieldwork also echo Naveenji's apprehensions of being monitored through the application. As described in the earlier sections of this chapter, forest watchers in CTR work in precarious conditions facing institutional devaluation, are paid less than minimum wages and have zero job security. Increasing disagreements and conflicts between higher authorities of the CTR and frontline forest staff coupled with poor working conditions of forest watchers led to the creation of a regional forest workers union called the *Van Shramik Sangh* (VSS). Formed in 2017, the VSS was envisaged as a platform to consolidate a highly disorganized and informal working force of daily wage forest watchers. Currently, the VSS is meant to hold protests and strikes demanding an increase in wages, the promotion of some watchers to permanent staff and the introduction of institutional welfare schemes that protected watchers from being arbitrarily transferred or terminated.

"Our Sangh (VSS) is meant to represent our views and hold the higher forest authorities accountable for our poor working conditions"

(Forest Watcher, Interview no. 203)

"There are labour unions in all work spheres of CTR, the safari drivers have their union, the safari guides have their union, and there is even a union of hoteliers! Even forest guards have their own union, why shouldn't we have our union"

(Forest Watcher, Interview no. 172)

The responsibility of completing patrols and a certain set distance lies with the forest guard, however in their absence the responsibility to complete patrols shifts to watchers. Furthermore, when MSTrIPES targets are not achieved, forest guards are rarely penalized. At most, forest guards may be asked to shift

chowkis within the CTR or be transferred to another forest division. However, forest watchers may get their daily wages deducted or worse, may get terminated from service. For many forest watchers, the introduction of MSTrIPES is a tool of surveillance designed to counter rising dissent amongst the watchers.

"This is a strategy- a strategy to keep an eye on us, there has been a rise in labour unions these days, this way they can keep us in check and use disciplinary power on us. If any of us attend strikes or talk too much about wages, they check our patrol logs and threaten to fire us or transfer us to remote chowkis."

(Forest Watcher, Interview no. 190)

While interviewing one of the forest watchers during fieldwork, a unique opportunity of doing a focus group discussion with forest watchers presented itself when a small meeting of *VSS* was announced. The meeting was to take place by a *'dhaba'* (tea point) outside the administrative borders of the CTR. I arrived on the day of the meeting expecting a large gathering of unionized workers with flaring passions and anger. Instead, I found a gathering of just six disappointed young forest watchers. When I asked if there were more watchers coming, one of them who was also the one who called the meeting indignantly said *"Sir, Yahan bolna hi gunah hai…speaking out is a crime here, something must have scared the others"*. Before, he could explain further his phone rang and he got engaged in a furious conversation over the person on the other end, without saying anything to the others he started his motorbike and rode away. The other forest watchers then explained to me that some forest guards had got a hint of this meeting and had reported it to higher authorities. *"Sabh Dar Gaye hai…*everybody is scared and hence nobody has arrived" one of them said. As I continued the conversation, the remaining forest watchers described to me how senior forest officials deploy oppressive tactics to disrupt large gatherings of daily wage watchers. *"Yahan daman ki neeti chalti hai…. exploitation is the only policy that works here"* they say. Forest Guards often pay close attention to conversations between watchers assigned to them and report any systematized notion of dissent to their range forest officers. Individual forest watchers who are showing signs of leadership are identified and irregularities are found in their work routine, for which recorded data from MSTrIPES is used as a reference. If the software does not show irregularities, they are often manufactured by asking forest guards to report irregularity on duty.

"First they threaten individual forest watchers from time to time to not take part in demonstrations by either transferring them to a remote area or by arbitrarily terminating their service without pay. Then by introducing this mobile software they are keeping a track on us, so if there is any anomaly, they will get a chance to say we are not doing our duty."

(Forest Watcher, Interview no. 230)

"The officers identify the most outspoken of us and then decide, he is being quite the leader, get rid of him first"

(Forest Watcher, Interview no. 251)

"We work on unpaid daily wages for months and for 24 hours, now they need an app to monitor that work too."

(Forest Watcher, Interview no. 191)

A few days later, I was informed that the forest watcher who had arranged the meeting had his daily wage cut for a week, because of not completing his patrolling target and for not reporting illegal grazing in the absence of his forest guard. The records of which were dug from the MSTrIPES database and were many months old. It may thus be argued that the use of MSTrIPES in the CTR not only results in a form of Tayloristic control of frontline forest staff, but also resonates with Sewell's description of control in a "chimerical" fashion (Sewell 1998) as mentioned in chapter 2. The two forms of control together exercise 'biopower' (Foucault 1977) over forest staff by shaping their subjectivities and rendering the workers docile and compliant.

7.4.3. Deskilling of local liaison work and building healthy relationships

Forest guards and watchers need a considerable level of discretion in how they plan out their duties based on the necessities and exigencies of the field. An implicit role of forest staff while doing their duty is to go over and interact with local people in villages that fall within, or border, their 'beats'. On other occasions forest guards could also help a fellow colleague with patrolling their beat in an informal arrangement or when they are understaffed.

"I heavily depend on the goodwill of the villagers here, when there is a fire, they are the ones who come to help, and this goodwill is possible because of my daily interaction with them"

(Forest Guard, Interview no 223)

"We can sometimes be severely understaffed when watchers are not available, on such occasions we have to go to help a fellow forest guard especially when doing a long-distance patrol"

(Forest Guard, Interview no 140).

This flexibility and discretion, where they are not meant to meet some quantifiable target (such as kilometers walked, or spatial coverage achieved) allows many guards and watchers to specialize in different aspects of their jobs. Some who spend more time observing wildlife become extremely knowledgeable of the biodiversity and ecology of their forests, others would become adept at forging strong interpersonal bonds with local villagers to garner support in times of crisis, still others could specialize in intelligence gathering and anti-smuggling activity. This part of the daily routine of frontline forest staff is often not acknowledged enough in popular conservation discourse and ignored in the conceptual framework of Ranger led LEM tools such as MSTrIPES.

"Poaching happens when outsiders come into these areas, it is important for me to go to the villages, sit at local tea stalls and gather information, morning evening if we keep using this mobile, how will we get this information"

(Forest Guard, Interview no 231)

Furthermore, the merits of these specialized aspects of a forest guard or watchers' job are not explored enough in conservation. For forest guards and watchers, having control over the labour process of their work is an essential component for job satisfaction. The importance of job satisfaction leading to ranger motivation has been documented extensively in conservation literature (Spira et al 2019, Moreto et al 2016, Ogunjimi et al 2008). However, these studies do not explicitly acknowledge the role-played by a ranger's control over the labour process or the significance of their tacit knowledge in driving job satisfaction or motivation to do work.

"In the past, a forest guard or a watcher used to be much more responsible. They felt a sense of responsibility of doing things on their own. It motivated them! Today, they feel compelled to fulfil a formality of finishing the set number of distances and records. Things have become very robotic; it does not feel human anymore".

(Forest Guard, Interview no 242)

"Earlier, we would walk many more kilometers and cover a larger area as we were not bound to complete a set 10kms. Also, for example we have come towards an area deemed sensitive, like a 'nullah' or a deep gorge, earlier if we are close, we would go and check it out, now if we have completed the already set 10 kms we don't feel like doing it nor are we bound to do it"

(Forest Guard, Interview no 129)

7.4.4. Upskilling

Concerns over deskilling are however not reflected in some of the younger[5] generation of forest guards, many of whom unlike the older generation of forest guards have attained a college education. For instance, Sanjay- a young forest guard I interviewed feels empowered when he is using the MSTrIPES application, uploading data from it on the computer in his range office and when deploying camera traps. *"These old forest guards are all incompetent in using technology, many of them have not even completed school",* he states. Sanjay, unlike many other forest guards comes from a place of economic privilege. He is the youngest amongst his five brothers and his family are agriculturists owning sizeable pieces of land. Two of his brothers have found 'office jobs' in the city of Delhi and the other two serve as non-commissioned officers in the Indian Army. Sanjay's motivation of becoming a forest guard was his fascination with being associated with Corbett as a child. Originally wanting to become a tourist safari guide, pressure from his family to find a government job led him to become a forest guard. Sanjay's fascination with the CTR started during his school days where he saw the booming tourism industry transform the economic landscape of his hometown, Ramnagar, which borders the CTR.

Sanjay's keen interest in gadgets, technologies and computers explains his strong inclination towards using MSTrIPES. He states, *"I have been fascinated with mobiles since I was a little boy, in today's time everything can be done through mobiles, pizza delivery, amazon shopping even banking, so why should we not use it for our patrolling".* In sharp contrast to Rawatji, Sanjay considers the use of MSTrIPES as 'upskilling' rather than 'deskilling'. He does not consider the use of MSTrIPES as a way of control; in fact, he actively consents to have his work monitored by the application. He asserts, *"The old forest guards and watchers don't want to use the tool only because they are 'lazy', using the tool is making me more techno savvy and giving me computer skills, I feel good that I am the only guard in my range who can use the computer properly, all other guards ask me to upload the MSTrIPES data for them".*

It is important to note here that Sanjay not only actively consents to have his work monitored by the application but also considers it as a rewarding process in the end. From what I describe, it may appear that what was deskilling to Rawatji and Naveenji is upskilling for Sanjay. This is contrary to traditional Marxist views such as Braverman's thesis of despotic labour control, and resonates more with Burawoy's arguments, that recognize the agency of the worker in the process of labour control. However, this agency

[5] The last few years has seen an increased recruitment of forest guards between the ages of 20-24 throughout India's tiger reserves. However, in CTR a majority of forest guards are over 40 years old.

in the context of the CTR is limited to young and upwardly mobile workers, while those who are older and less well placed continue to view it as a form of control (see figure 19). Nevertheless, through my observations of the forest labour process in the CTR I question the classic Foucauldian assumption that forms of control invariably result in the worker being compliant and docile. In the following section I will demonstrate empirically how forest workers in CTR not only consent to being monitored, but also actively resist the process of control and participate in reverse surveillance.

"Old forest guards are worried that now because of the application their movement is being tracked and their performance is being monitored", "I have taken the award of best performing guard of the month twice in a row now, it is only because I complete all my patrolling targets"

(Forest Guard, Interview no.140)

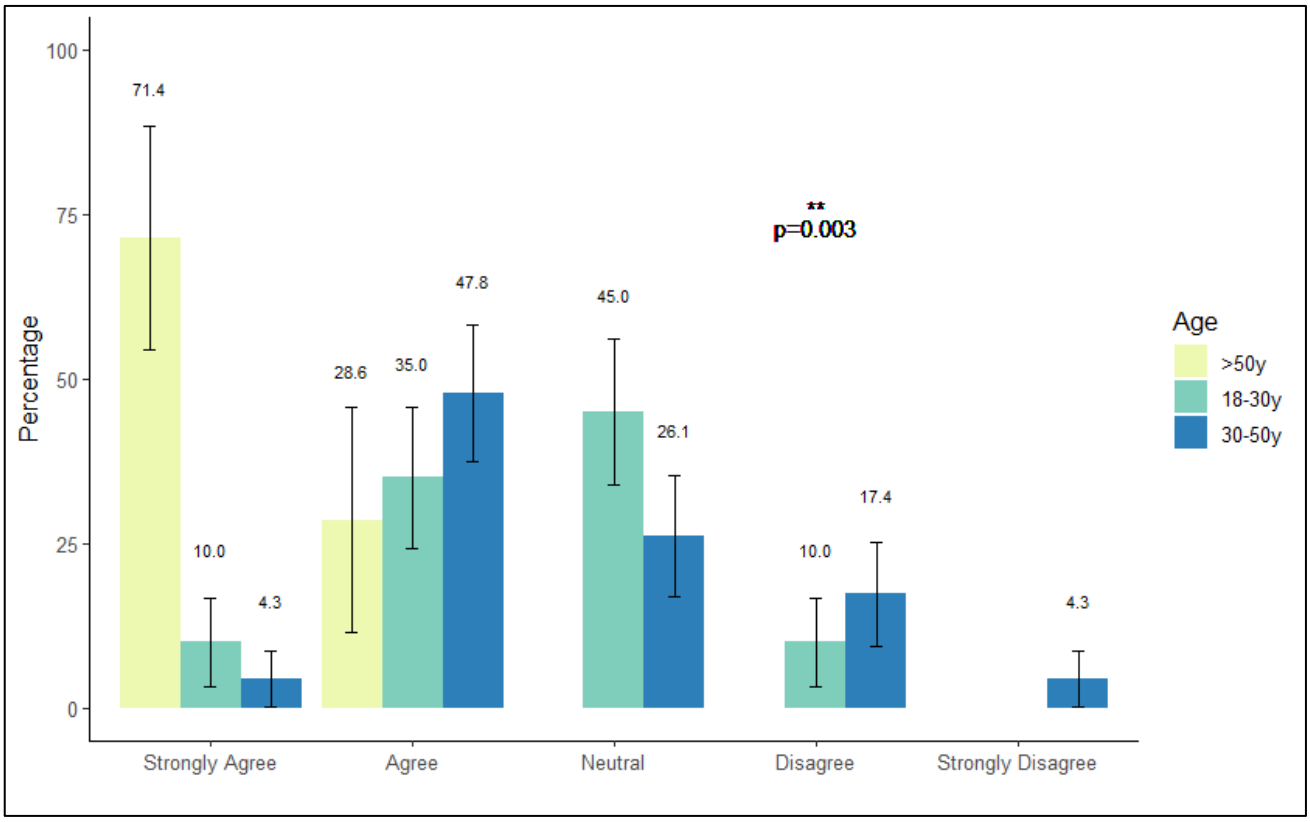

Figure 20: Age wise representation of forest staff responding to the question "Is MSTrIPES a tool for surveillance"

*Note ** p= 0.003. (n = 85,* ***Chi Squared test*** *showing statistically significant age difference).*

7.4.5. Empowerment, Resistance and Sousveillance

I have described earlier in this section how the use of MSTrIPES is resulting in the degradation of labour, causing deskilling, some amount of upskilling, and creating a labour force that is largely compliant.

However, the use of MSTrIPES has also resulted in empowerment within this labour force that uses the tool to resist, control and challenge abusive exercise of power by their superiors. For instance, some forest guards even while regarding MSTrIPES as a tool of control also recognize its empowering capacity. Shankar was one such forest guard I interviewed multiple times. Shankar had finished 12 years of service in the CTR and is popularly known to other staff as '*Transfer Shankar'*. When I asked him the story behind this unusual tag, he replied that he holds the record for being transferred the most number of times from one *chowkie* to another in all of CTR. Shankar had a reputation for rebellious behaviour and is somewhat seen as a 'celebrity' amongst other forest guards.

"He is the Salman Khan[6] of forest guards, nothing will happen to him even if he insults the range forest officer."

(Forest Guard, Interview no. 255)

"They are constantly trying to implicate him because he does not entertain requests by our range forest officer."

(Forest Watcher, Interview no. 256)

Shankar like others recognizes the downsides of MSTrIPES when it comes to dictating where and how he patrols; he is also concerned with changing labour practices of frontline forest staff. However, he also considers the tool as empowering. He states, *"Yes, it is true our essential skillsets are deteriorating by the day because of MSTrIPES, but this application is also recording exactly what we are doing and that is very useful in one way".* He explains that keeping records of each guard's exact patrolling routes and tracks was very disorganized and it was easier for senior authorities to accuse guards of being 'lazy' and not patrolling their respective beats. He continues explaining by providing an example,

"I have a habit of taking photographs of all my observations in the MSTrIPES application as I know that they would capitalize on any irregularity on my part to transfer me again". "One day a 'sagwan' (teak) tree in my beat was cut down and the range forest officer accused me of not patrolling". "It so happened that I had taken a picture of me and my watchers alongside a tiger pugmark right at the spot where this tree was cut, I showed this record to the senior authorities and complained against the ranger of making an uninformed accusation against me".

By recording and uploading everything on his patrol and providing full documentary evidence, Shankar is engaging in reverse surveillance or sousveillance in his workplace and is resisting being a mere victim of

[6] Salman Khan is a popular Bollywood celebrity known for his aura of rash and impulsive behaviour.

panoptic surveillance through the MSTrIPES application. For Shankar, MSTrIPES is empowering as it gives him the platform to counter exploitative behaviour by his senior authorities. Furthermore, sousveillance practiced using MSTrIPES is also empowering some forest watchers. For instance, forest guards are known to ask forest watchers to go patrolling in their absence, and earlier have cut their daily wages arbitrarily on account of a perceived lack of patrolling. However, patrolling tracks, routes and distances are now recorded in the application and uploaded onto the central databases in each forest range office and can be used as proof of patrolling.

"Earlier they used to cut our daily wages by claiming we are not patrolling, but now they cannot do it so easily as the mobile does not lie."

(Forest Watcher, Interview no. 256)

"Earlier we did not know exactly the number of kilometers we have walked, now we know exactly how much we have walked, for the low wages we are paid why should we walk more, when we are required to walk only 10!"

(Forest Watcher, Interview no. 258)

The best example of sousveillance in practice was narrated to me by Suraj, an ex-forest watcher. Suraj was one of the few watchers who was educated beyond high school and knew his way around a smartphone. His job was terminated immediately after he brought to light the continual absence of his forest guard on patrols. Suraj regularly took photographs that showed the forest guard present only at the start of each patrol. Taking 'selfie' photographs that showed the absence of the forest guard at frequent intervals over many patrols, Suraj complained to the respective range forest officer asking him to check the database. When I asked him what happened next, he replied, *"They terminated me from service for being a troublemaker, but I am told by other watchers that the guard does not take watchers lightly anymore"*. Seeing my shocked reaction he continued, *"Sir, this is a normal thing for us dalits, the forest guard was of the same caste as the officer, this had to happen.*

Studies have shown how workers used digital platforms to engage in sousveillance by recording and uploading everything that happened in their workplaces, to make their managers accountable in case of employer action against them (Pitts 2021). In the context of forest labour in the CTR, it may still be a stretch to argue that sousveillance has the power to restore workers control over the labour process. As seen in the case of *Suraj*, it was class and caste relations that determined the outcome of his sousveillance. As mentioned before, Zureik (2002) argues that the deployment of surveillance technologies in the workplace has different outcomes driven by power relations. Following Suraj's example, this holds true for sousveillance too. Furthermore, forest workers, especially daily wage forest watchers like *Suraj* do not

usually have access to central servers and datasets saved in forest range offices alienating them from taking action even further.

7.5. MSTrIPES induced risk to life and enhanced labour precarity

According to a report by the International Ranger Federation, India has the highest fatalities of ranger deaths in the world (The Thin Green Line Foundation 2017). Between 2012-2017, India accounted for 31% of the world's ranger deaths (Bindra 2018). Although many of such fatalities were due to increasing encounters with organized gangs of illegal miners and timber smugglers, a large majority of these deaths occurred due to attacks by large wildlife like elephants, tigers, and rhinos or due to motor vehicle accidents while on duty (Figure 18). However, such deaths receive little attention in reports (Bindra 2018) in comparison to homicide related casualties. Frontline forest staff already work in precarious conditions and patrol forest areas with high densities of such species. Increasing populations of large wildlife and intensive patrolling of forest staff has increased chances of encounters that are often fatal. In this section, I describe how the use of MSTrIPES in the CTR increases risk of animal attack and makes forest labour even more precarious.

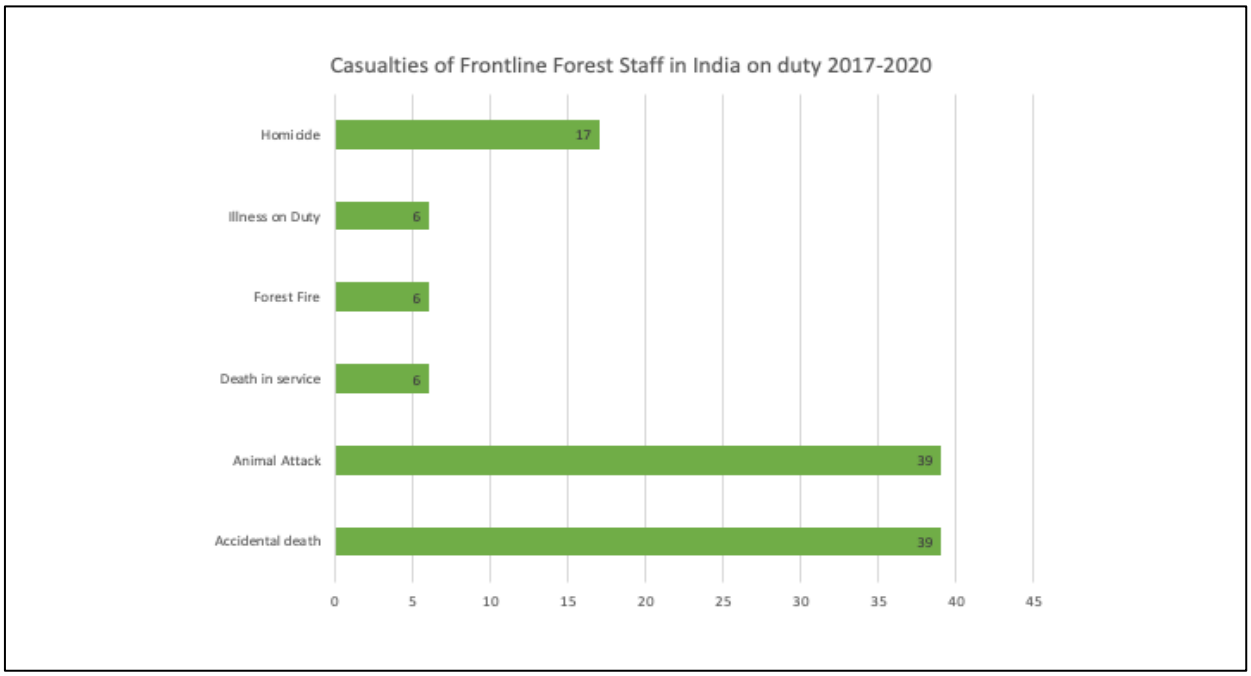

Figure 21: Cause of casualties of frontline forest staff in India from 2017-2020
Courtesy: International Ranger Foundation

During the period of my fieldwork in the CTR, three forest watchers were killed by tigers and two others injured while on their patrolling duties. An increase in attacks by elephants and tigers on forest staff was a regular topic of concern even in the upper echelons of the forest bureaucracy. *"Tiger attacks have increased in the last few years; we have lost some good men"* said a senior forest officer responsible for law enforcement strategies in the CTR. *"It is like a battlefield out there, if not by a poachers bullet it'll be from an elephant or tiger attack"* he continued. The analogy of battlefields and expendable 'men' feeds into the militarization of conservation discourse which critics have described as counterproductive for conservation goals and for frontline forest labour (Duffy et al 2019, Massé 2020, Marijnen et al 2021). My interviews revealed that Senior Forest officials, researchers and conservation practitioners connected the rising attacks on forest labour, to increased densities of tigers and elephants within the CTR, lack of awareness while patrolling and insufficient training.

"Our staff is new and young and don't know the forest well, they lack awareness, training and do not know how to behave in the forest, that is why they get attacked"

(Forest Official, Interview no. 253)

"Tiger densities have particularly increased in the CTR, encounters with tigresses rearing cubs or a male on a kill are very frequent, in such circumstances aggression is a natural response"

(Conservation Researcher, Interview no. 191).

However, in this narrative of increased population densities and lack of training, an important reason for the cause of attacks as perceived by frontline forest staff was being missed out. My participant observation and interviews with frontline forest staff revealed another narrative around the rising fatalities of forest labour by wild animal attacks.

Bishan Ram had served in the CTR for 15 years as a daily wage forest watcher waiting for many years to become permanent and be promoted to a forest guard. After a long wait, he was to be made permanent in October 2019. While on patrol duty on a morning of August 2019, Bishan Ram was attacked and killed by a tiger. The tiger had crept up behind Bishan Ram as he was sat beside a fresh tiger pugmark, entering data on the MSTrIPES application. Bishan Ram's death was not the first where a forest watcher was attacked while using the MSTrIPES application. Just a month before in a separate attack, another forest watcher was attacked and killed by a tiger in a similar situation while he was left a few hundred meters behind his colleagues, as he waited updating data on the application. My interviews with frontline forest staff revealed that dangerous encounters were becoming more common while using the MSTrIPES application, increasingly putting them in precarious situations. *"Sometimes the application hangs and is*

unresponsive, and we get distracted waiting for it, while there could be a tiger or an elephant in the dense vegetation" says Sukhi, a forest watcher. Some application developers and conservation researchers consider this as just an initial teething problem of the application which can be corrected. However, most frontline forest staff I interviewed, disagree, and point towards a deeper structural issue of using the MSTrIPES. Before the application was introduced, forest staff walked without looking at the screen of a mobile device frequently, which made them more aware of the space around them. *"We are constantly looking at the screen to make sure it is calculating distance and to keep any eye on how much we have walked"* says Ram Singh, a forest guard. My interviews revealed that the amount of time forest staff must spend looking at the screens of their mobile was distracting them from being self-aware of their surroundings. In forests such as the CTR, with dense vegetation causing low visibility, this can prove to be immensely dangerous when forest staff must manage being self-aware of their surroundings (represented in Figure 21).

"This automation of our work causes us to become increasingly dependent on the mobile distracting us from our surroundings, there could be a tiger or an elephant sitting on the next turn, and we wouldn't notice".

(Forest Guard, Interview no. 223)

"The process of entering data takes too long, the other day I had to enter all this data while a tigress kept growling from the bush".

(Forest Watcher, Interview no. 191)

"A hundred other things are on our minds while walking in the forest, do I have enough money to send my children to school? When will I get my next wage? On top of this I am distracted by the mobile device making me vulnerable to an attack!"

(Forest Watcher, Interview no. 251)

My interviews with forest staff also revealed that although the application did distract them from being more aware in the forest, there were other reasons that worked in tandem to increase risk of animal attacks. *"A few years ago, we would walk past an elephant standing a few meters away from us, now an elephant charges at us even when we are a hundred meters away from it"* says Gopal a forest guard. Forest staff associate this change in behaviour due to an increase in tourism and unruly safari drivers who take their vehicles close to the animals. *"We have noticed a change in the body language of elephants, they are stressed around vehicles, but CTR administration prioritizes money over our lives"* Gopal continues. Rising densities of tigers and elephants, an increase in aggression, and the automation of the labour process causing distraction of forest staff was being attributed to the rise in animal attacks. Within the literature on workplace surveillance and on digital

technologies, the aspect of increased risk of life for workers because of the introduction of a technology has not been documented. As ranger-based LEM tools are increasingly being expanded to protected areas across the world, further research on this issue from different contexts will make important contributions to both surveillance studies and to conservation policy.

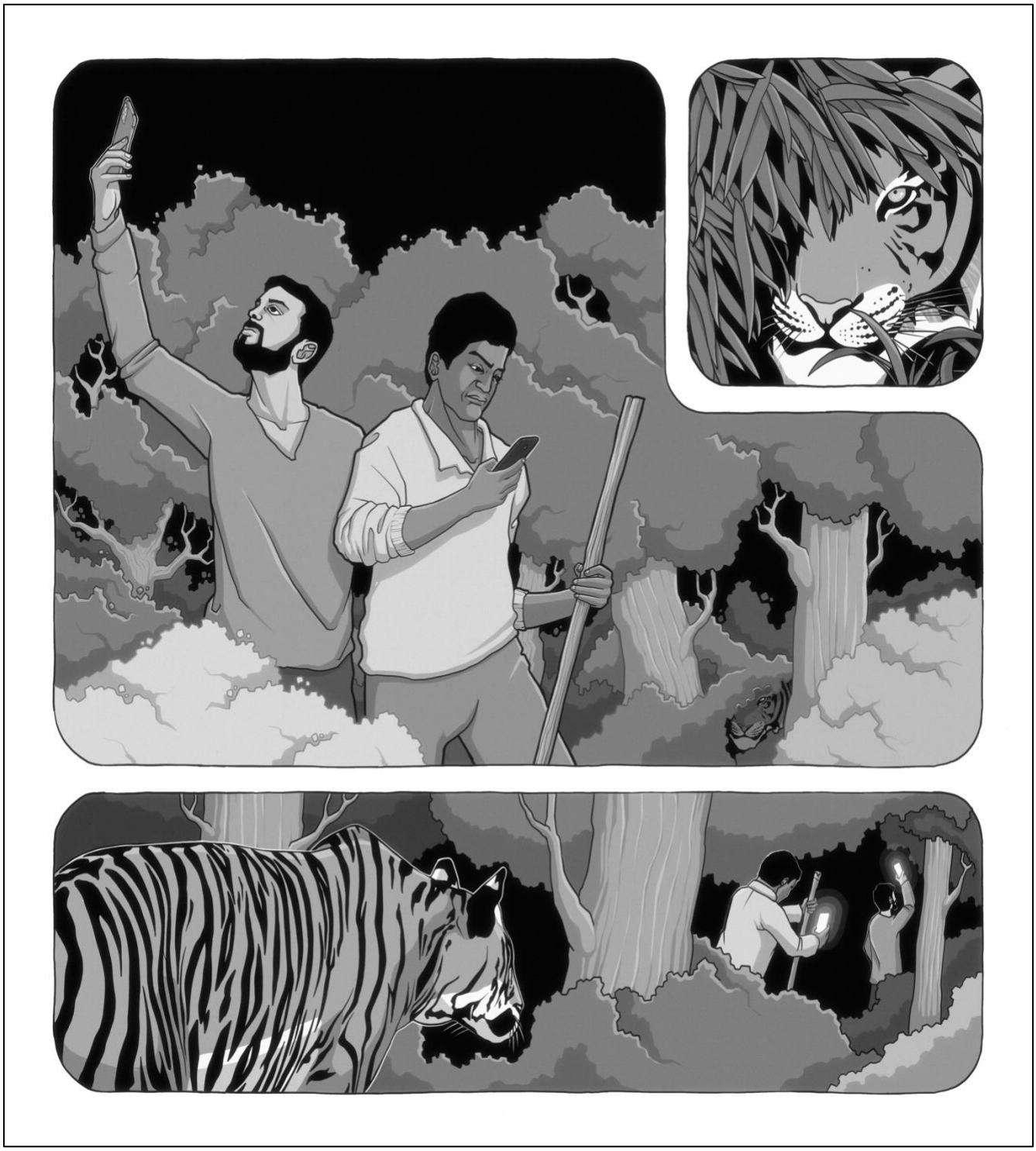

Figure 22: Illustrative representation of forest staff being stalked by a tiger while distracted on a mobile screen

7.6. Conclusion

The 'boots on the ground' approach is the primary form of field-based monitoring by rangers around the world (Cronin et al 2021). These patrols are argued to be the primary deterrents against illegal activities (Critchlow et al 2017). Ranger based LEM tools such as MSTrIPES have been designed to improve patrolling effectiveness, gather important ecological data, and increase the efficiency of the labour force (Cronin et al 2021). However, my findings reveal that MSTrIPES has significant social impacts on forest staff and is used as a tool of surveillance, rather than for achieving conservation targets. In this chapter I started by revealing the precarities of forest labour work and its uneven nature. I have argued that frontline forest staff are not homogenous units but have differential power dynamics between them, based on the intersectional markers of caste and class. I have also demonstrated the precarity of doing forest labour in the CTR and the structural issues associated with the welfare of its staff.

With the larger structural issues as context, my findings reveal that the use of MSTrIPES exacerbates the precarious nature of forest work. I demonstrate how control was being established over the labour process of forest staff by prioritizing digital methods of recording information, discouraging the accumulation of tacit knowledge that was gathered through many years of experience. Automation of forest work with MSTrIPES was causing deskilling of forest staff, particularly of daily wage forest labour, a majority of who belong to lower castes. Forest watchers also perceived this deskilling as a method of epistemological knowledge capture by upper caste senior officers. Such capture of knowledge systems by upper caste groups is well documented in sociologies of caste in India (Gopal Guru 2013). Apart from deskilling of tacit knowledge, the use of MSTrIPES was also causing deskilling of local liaison work that is essential for maintaining an information network and building healthy relationships with local communities.

Bureaucratic methods of control have always been used by employers quell labour unrest (Kochan 2004). The advent of digital technologies and their use in workplaces are rapidly transforming the ways in which such control is further intensified. My research reveals how data produced through MSTrIPES was being used to deter and discipline forest labour who participated in unionization initiatives. Such use of surveillance tactics to discourage worker unions are being increasingly reported throughout the world (Palmer 2020). My findings can provide new directions for further research within the discipline of labour studies, especially related to the work done by rangers in protected areas around the world, which is increasingly receiving more academic interest (Joanny 2020).

Although MSTrIPES is largely regarded as a tool of surveillance by frontline forest staff, there is also evidence for it contributing to upskilling for some staff. I have demonstrated that younger, upper caste and upwardly mobile workers considered the use of MSTrIPES beneficial for their personal growth and actively consented to being monitored. This challenges the dominant discourse on workplace surveillance that largely focuses on despotic forms of control and ignores the agency of the worker in the process. Furthermore, I have also demonstrated that not only do workers consent to being monitored through MSTrIPES, but they also use the technology to conduct reverse surveillance to counter exploitative behaviour by their superiors. Some emerging studies have now established how digital technologies are used for counter mapping by communities, to challenge knowledge produced by governments (Paneque-Gálvez et al 2017, Millner 2020). This could be a key entry point and yet another opportunity for further research on rangers and the impacts of other law enforcement monitoring tools in different contexts.

Finally, I demonstrate that the use of MSTrIPES was making forest labour more vulnerable to attack by tigers and elephants. There is no research or literature on workplace surveillance that directly connects increased risk of life due to the use of digital technologies. This is perhaps due to what is associated to be a workplace, in most cases these are factories or call canters. Furthermore, automation and digital tools are regarded to make environments safer to achieve increased worker efficiency. However, the workplace I have examined is a dangerous environment, and hence my findings of an increased risk to life due to the use of a digital tool are novel. The increased risk to life from animal attacks however are not just because of the use of MSTrIPES but also due to increased population densities and perceived aggressive behaviour of wild animals by frontline forest staff.

Through an ethnography of forest workers and their labour process I have attempted to reveal that disempowerment and empowerment, deskilling and upskilling, control and autonomy may coexist, depending on the context of the technology, its method of deployment, underlying intersectional social structures and the authority structure of the Forest Department. CSTs like ranger-based LEM tools and their impacts on labour processes cannot be severed from the larger questions of the political economy. Researchers who develop tools like MSTrIPES do not always engage with such questions and tend to perceive technology users as a single homogenous group. In this chapter, I have demonstrated that frontline forest staff in the CTR are a heterogenous group and are subjects of surveillance themselves, inducing exploitative labour practices in a precarious workplace.

CHAPTER 8

Concluding Arguments

8.1. Introduction

Conservation surveillance technologies (CSTs) are rapidly changing the practice of conservation in a range of ways that are of importance to critical research. The growing trend in the development of technological solutions, particularly aimed for the purpose of law enforcement and surveillance in conservation needs to be critically analysed, as these can have long term impacts on conservation goals. I examined the impacts of CSTs such as camera traps, drones, thermal cameras, and a ranger-based law enforcement monitoring tool called MSTrIPES on the social and political structures within my study landscape of the Corbett Tiger Reserve (CTR). My research revealed that CSTs used in the CTR have significant social and political implications on caste, gender, and labour processes in the landscape.

Using a case study approach situated in the social and political history of the CTR, I described and analysed how CSTs are used as part of law enforcement, policing, and management of the reserve. I have attempted to also reveal how these practices of everyday conservation work effortlessly shifted from achieving conservation objectives, to targeting specific communities, moral policing and stifling dissent against the state or government structures. My analysis of these surveillance processes makes new and original empirical contributions to enrich emerging discussions on the use of digital technologies in conservation spaces (Arts et al 2015, Adams 2017, Sarkar & Chapman 2021) and its role in the militarisation of conservation (Lunstrum 2014, Duffy et al 2019). My research also contributes to the theoretical debates and literature within surveillance studies, particularly to the topics of social sorting, gendered dimensions of surveillance and workplace surveillance. Research on these topics has been limited to technologies used in urban settings, warfare, and workplaces such as factories and call centres. My examination of CSTs extends the scope of this literature to rural and conservation spaces.

In this concluding chapter, I summarise my main research findings and discuss their implications in the context of contemporary socio-politics of conservation. I also reflect on the developments of these technologies in context of the rise of the Indian surveillance state. I also provide potential recommendations for a more participative and ethical use of these technologies and suggest research possibilities for the future.

8.2. Key research findings

The arguments of this thesis engage with topics from within surveillance studies, gender studies, labour studies and the political ecologies of conservation, to provide an intersectional analysis in three empirical chapters. These chapters explore the impacts of CSTs on structures of caste, gender, and labour in the CTR landscape. Previous work that draws attention to the social impacts of digital technologies in conservation spaces has largely been conceptual and exploratory. Although this literature identifies some key areas of concern in the use of digital technologies for conservation, it does not engage with topics already well established in surveillance studies, and that could arise out of the use of these technologies. Furthermore, questions and politics of caste, gender and labour are largely absent within conservation discourses in India. In a novel turn, I demonstrate how conservation interventions such as the use of CSTs seamlessly cross boundaries from being tools of conservation monitoring to becoming tools of state repression. These tools are then co-opted by policing institutions and powerful caste/class groups, that reinforce discriminatory caste and patriarchal structures mirroring populist, majoritarian and contemporary socio-political narratives in India.

In chapter 5, I drew attention to the often ignored but omnipresent caste and communal structures present in a conservation landscape. I contest the notion that these structures are 'invisible' or 'hidden' as is frequently observed in popular conservation discourse. I have argued that the caste blindness that exists in the conservation discourse of India, can be regarded as a form of Eco-casteism, as questions of caste and Bahujan narratives on environmental conservation complicates the dominant upper caste narratives on the environment. Speaking to this, I have attempted to make caste and communal structures central, while examining the impacts of CSTs. I argue that CSTs are reinforcing caste and communal prejudices that mirror contemporary socio-politics in India and the rise of surveillance practices targeted towards communities. Targeted surveillance of certain communities in India has been in practice for centuries. I have demonstrated in chapter 4 and in chapter 5 that colonial policing agencies kept records of individuals from communities that were deemed prone to criminal behaviour. Some of these communities were classified as 'Criminal Tribes' under the Criminal Tribes Act 1871. The surveillance of these communities takes many forms in modern India, involving detention centres, creation of ghettoized camps and by recording biometric information (Prabhakar 2020). I also demonstrated the role played by 'Gram Prahiris' or village informers in extending the surveillant gaze of the state to keep a track of certain communities such as the Van Gujjars or Rai Sikhs.

In Chapter 5, I reveal how CSTs are used by the state for the surveillance of these communities. For instance, I have shown how drones and camera traps were used for the surveillance of the pastoral and

Muslim van Gujjar community echoing the larger communal and nationalistic narratives in India at the time. Furthermore, there were clear distinctions in the way drones were used in villages dominated by powerful caste groups as opposed to forest villages dominated by lower caste groups. I have also shown how CSTs are co-opted by powerful caste and class groups, directing the surveillance capabilities of CSTs to further marginalise certain communities. Habitual offender registers maintained by the state police, Gram Prahiris, and the law enforcement mechanisms of the Forest Department give rise to multiple surveillance regimes in and around the CTR. My research demonstrates that these surveillance regimes are further intensified using CSTs. Dalits, Muslims and Adivasis were being socially sorted in and around the CTR using CSTs making them hyper visible and vulnerable to persecution.

In Chapter 6, I drew attention to the gendered dimensions of conservation surveillance. Although there has been a rise in an engagement with gender studies within conservation research, these have been limited to material understandings of livelihood and subsistence. Conservation spaces are rarely looked at as socio-cultural spaces where a range of practices associated with labour, pride and tradition are constituted. As scholars like Gururani (2006) from the forests of the Kumaon Hills, and I from the CTR have demonstrated, these are also spaces of expression, love, sorrow, and liberation. However, conservation interventions often focus on targeting the material aspects of why women use forest spaces in India and ignore the potential gendered implications of these interventions. For instance, many conservation organisations in India provide solar cookers and water heaters to reduce dependence on firewood (Dewoolkar 2020). Invariably in the long term, such interventions are difficult to sustain, due to a limited 'material' understanding of use in forest spaces. Although the focus of this thesis and chapter 6 is on the impacts of CSTs, it also makes an important contribution on understanding the gendered nature of forest spaces in protected areas.

After establishing the forests of CTR as complex gendered spaces, I turned my attention to the impacts of CSTs on gendered practices in these spaces. As has been argued by feminist scholars, the bodies of women have been objects of patriarchal gaze even before the rise of surveillance technologies. The digital age has further intensified the scrutiny to which women are subjected to surveillance by a range of actors. Following on from such developments in surveillance practices, it is unsurprising that CSTs can also become tools of gendered surveillance. I have demonstrated how the disciplinary and regulatory gaze of CSTs establishes control over the bodies of women resulting in docile behaviour. This docility manifests itself in the form of reduced collection of forest resources, restricts private talk amongst women and discourages cultural practices such as singing traditional songs inside forests. Although, CSTs may not be deployed ostensibly for this purpose, they result in control over the bodies of women which are driven by

intersectional markers of caste and class. However, the use of CSTs is encouraged by men who are unhappy about women spending too much time in forests, making them tools of social control that extend the patriarchal gaze of the village into the forest. Furthermore, I have given evidence of how CSTs can become tools for voyeurism and result in sexual harassment driven by caste politics. My findings reveal that CSTs can become tools of social control that exacerbate prevalent patriarchal structures in rural India. They infringe upon the only space that exist in a rural landscape away from the patriarchal gaze of the village. My research makes a novel contribution to gendering surveillance studies by examining the impacts of CSTs on women forest produce collectors of the CTR. Gender disaggregated research and practice makes invisible the structural violence that emerges from patriarchal systems. By highlighting some of these structures and its associated phenomena, my findings stress on the gendered nature of the practice of surveillance, and the need to gender conservation interventions.

In Chapter 7, I turn the lens of surveillance from the 'watched' to the 'watchers'. I examine the process of workplace surveillance subjected towards conservation labour using a ranger-based law enforcement monitoring tool. My arguments in the chapter, make an important contribution to the emerging literature on conservation labour geographies. Conservation spaces are produced through often exploitative yet symbiotic labour geographies (Thakholi 2021). However, critical research on conservation labour processes is largely missing in literature and in policy. The overly generalized conservation discourse around law enforcement rangers, working under challenging circumstances in protected areas, obfuscates hierarchy and power relations that exist within them. By focussing on the lowest rung of the Forest Department hierarchy- the frontline forest staff comprising of forest guards and daily wage forest watchers, I have attempted to unpack differential power relations, and the larger political economy of conservation frontline labour in the CTR. The chapter starts with making visible, challenges associated with daily wage forest labour, and the exploitative structures in which such labour functions. Staying true to the intersectionality thread in examining power structures throughout the three chapters of this thesis, I have attempted to demonstrate how intersectional markers of caste, class and age affect labour practices of frontline forest staff.

Most work done on surveillance in workplaces have concentrated on a factory floor like setting in spaces such as call centres, garment factories and schools. My research presents a new space to analyse workplace surveillance practices, in the form of the forest floor, where frontline forest staff patrol to enforce conservation laws as part of their duties. I demonstrate how the agency of frontline forest staff has been replaced in the labour process, by a digital tool called MSTrIPES, that automates the way in which forest patrolling is done. This has led to control over the labour process being taken away from forest staff

resulting in deskilling of labour and increasing worker precarity. However, my findings also demonstrate that the use of MSTrIPES was resulting in upskilling and a tool for resistance. The differential impacts of the tool were based on intersectional markers of caste and age. Younger forest staff were regarding the use of MSTrIPES as upskilling while older forest staff considered it as deskilling. I argue that the context in which the technology is used, its method of deployment and the underlying intersectional social structures drive resultant labour processes that may range from complete disempowerment to a tool of resistance against disempowering structures. Furthermore, my research reveals that the use of MSTrIPES was perceived to have been causing an increase in animal attacks on forest labour. This is an important research finding since, there is no study that examines risk of death on a labour force due to the introduction of a digital monitoring tool.

8.3. Limitations

Although I have attempted to be as rigorous as I could and explore as many different perspectives as possible in the objective of answering my research question, there are some limitations that merit discussion. My work was focussed on a case study, focussed on the Corbett Tiger Reserve (CTR). I chose CTR because of its high profile and glamorous nature in the Indian conservation discourse and because of a range of CSTs deployed in the reserve. Within the CTR landscape, my study was limited to villages in the southern and eastern boundaries of the tiger reserve. This was a conscious choice, due to the perceived sensitive nature of the southern boundary. Furthermore, the most intensive forms of surveillance were deployed on the southern boundary. The eastern boundary on the other hand had the greatest number of contestations over forest resources due to the presence of multiple forest villages, other closely occurring villages from the park boundary, a burgeoning tourism economy, that has had differential economic impacts on the lives of local communities. I could not conduct any interviews on the northern and western boundaries of the park due to logistical constraints related to everyday access. I identify this as a possible limitation as the northern boundary of the CTR has some villages that have community managed 'village forests' or 'van panchayats'. These forests have presence of large wildlife like tiger and elephant and CSTs like camera traps have also been used here. Practices of forest produce collection and contestation over forest spaces may be significantly different in these villages as compared to villages I studied. Furthermore, during the course of my fieldwork, village communities having 'van panchayats', actively resented researchers deploying camera traps in their forests due to lack of trust and no participation of village members. Although I was informed about these developments, it was logistically difficult to relocate to the northern boundary, and effectively conduct interviews in these villages without compromising on the rigorous trust building measures I had practiced in the villages I worked in. However, it is evident that

examining the social impacts of CSTs in village forests would have added new perspectives, complementing my already novel research findings.

I have attempted to select a diverse range of interviewees, with most interviews concentrated on residents and frontline forest staff. However, while doing fieldwork I also came across a large category of people that may have made the arguments in this thesis richer. These people were trained wildlife biologists from the Wildlife Institute of India (WII) that are responsible for training forest staff on how to deploy camera traps correctly and effectively. They are also responsible for conducting workshops on the use of MSTrIPES with forest staff for two weeks every year. I believe that conducting participant observation and interviews with wildlife biologists as they went about training forest staff on the use of CSTs would have provided important insights into the extent to which the training informs how CSTs are deployed and used. Due to time constraints and a delay in getting official permissions to interview these government employees, I could not pay enough attention to this aspect.

8.4. Final Reflections

8.4.1. Why coercive surveillance practices have not been actively resisted in the CTR?

My research has revealed that the use of CSTs has significant social impacts on communities living alongside or inside the CTR. These impacts are differential in their nature as certain groups are more marginalised over others. I have demonstrated that CSTs can become tools of state repression and are co-opted by powerful caste and class groups directing structural violence against marginalised communities such as Dalits, Van Gujjars, Rai Sikhs and the Buxas. However, it is worth reflecting on why coercive surveillance practices are not, as yet, actively resisted in a region that has a history of resistance movements against coercive forest policies.

The CTR is a high-profile tiger reserve with a large tourist footfall and a burgeoning tourism economy (Badola et al 2010, Rastogi et al 2015). Although the economic advantages of tourism have been hegemonized by landed upper caste and class groups, marginalised communities still benefit in albeit small ways (Rastogi et al 2014). This could be one of the reasons why organised resistance movements against practices of surveillance are secondary, as protests are instead directed towards the restrictive policies of the Forest Department which often revolve around access to the tourism economy. For instance, during my fieldwork, villages in the adjoining Pawalgarh Conservation Reserve organised large protests, demanding 100% quotas for their youth as safari guides and drivers in the new tourism zones being created

adjoining their villages. While residents of Shyami village protested to have their demands of opening nature walking trails in the Ramnagar forest division fulfilled. However, these protests had almost negligible representation from lower caste and scheduled tribe groups. The neoliberal tourism economy of the CTR is omnipresent even for individuals passing by the city of Ramnagar. The brand name of Jim Corbett is commodified to the extent where the name Corbett is used from barber shops to luxury wildlife lodges. Although the benefits from this neoliberal economy are completely captured by landed elite often from outside the region, the vulnerable and marginalised such as Van Gujjars and Buxas too earn a living, albeit in marginal and exploitative ways. Van Gujjars supply milk in reduced rates to tourist lodges while Buxa men do menial labour as plumbers, carpenters, and gardeners. The absence of organised resistance and protest surveillance practices in the CTR is possibly due to concern about losing access to benefits of the tourism economy, even though they are unequally distributed.

Furthermore, resistance against state surveillance is not common in India, and is limited to urban areas where there is some awareness around issues of privacy and recognition of legal rights of an individual. Even then, resistance to surveillance is contentious as can be seen from the divided views on *Aadhar* as a surveillance tool which was made mandatory by the state of India (Prabhakar 2020). This decision was challenged in the Supreme court that ruled against it being mandatory, however government and private institutions continued to demand *Aadhar* as the only valid identity document to access government schemes or open bank accounts (Bhatia et al 2021). It has been argued that the *Aadhar* resulted in docile and disciplined subjects making resistance to it, divided amongst groups. While dalits, adivasis and working-class people are materially the most impacted by the *Aadhar* scheme, their voices are made invisible by upper caste and elite groups that have embraced it as good governance tool (Parikh 2019, Chavali & Mavuri 2020). Similar processes may be happening through the application of CSTs wherein acts of resistance against surveillance may be marginalised due to the docility and support of most residents who have become subjects to the neoliberal tourism economy around the CTR.

8.4.2. Context and the neutrality of surveillance technologies

As shown by my research, the social and political impacts of CSTs are very evident from the Corbett Tiger Reserve. However, the nature of these impacts may differ in an alternate geography and according to the social and political context of the region. My research focussed on an immensely popular tiger reserve that garners global attention. Most tiger reserves and protected areas in India do not have such attention, have very low investment and an almost negligible tourism economy. However, the use of CSTs such as camera traps, are prevalent in most tiger reserves. The social and political impacts of CSTs may be significantly

different in these reserves due to different social compositions of local communities and enforcement strategies. These impacts could range from being more severe than the CTR or there could be very limited impact of CSTs. For instance, a heavily militarised National Park like Kaziranga or Manas in the north-eastern state of Assam would presumably use surveillance technologies to complement their extremely coercive methods such as extra judicial killings and torture that have violated human rights on multiple occasions (Barbora 2019, Dutta 2020). Many of India's protected areas are also active sites for active insurgency movements, in these landscapes CSTs could easily be co-opted by security forces to be used for surveillance against militants. In contrast, conservation projects in human dominated landscapes outside the jurisdiction of the Forest Department may use CSTs in very different ways. There are some anecdotal reports from Western India on how camera trapping done with consent and participation of local communities resulted in goodwill for the conservation project and decreased theft of the devices.

However, I argue that in the use of CSTs, it is particularly important to consider who controls the technology and towards what end. Drones have been used for community-based counter mapping by indigenous communities, suggesting that just as CST's are appropriated by the state for repression, they have the potential to be appropriated and used as tools for social and environmental justice. Placing drones and cameras in the hands of indigenous communities as is being increasingly argued, may seem politically neutral and benevolent. But as argued by Radjawali & Pye (2017) this largely depends on the political ecology of the context. For instance, a counter mapping project for community based natural resource governance by the indigenous San group called Khwe resulted in them asserting ethnic authority in the region by excluding other ethnic communities from the process (Taylor 2008). In a country like India, with deeply entrenched economic and social inequalities based on caste, gender, and class, it is very likely that CSTs will be used by communities that hold power to subjugate or marginalise the less powerful. Hence, it is important to consider that the use of CSTs may never truly be value neutral and will always depend on who is surveilling and towards what end. By examining the impacts of CSTs through the intersectional markers of caste, gender, and labour in my thesis, I have provided the foundation through which the use of CSTs can be examined in different contexts and settings.

8.5. Surveillance Futures

Surveillance mechanisms are becoming widespread in India as part of increasing securitisation driven by a revival of Hindu Nationalism (Prabhakar 2020). The Indian state now regularly intercepts telecommunications, deploys drones, CCTV's, and visible markers of surveillance such as watchtowers and human agents even during student protests (ibid). In 2019, digital spyware called Pegasus made by the

Isreali cyberarms firm was used to spy on Dalit activists, human rights activists and members of the civil society who were vocal critics of the government (Abraham 2021). Furthermore, India's national crime records bureau is in the process of creating a facial recognition system linked to the Aadhaar, in their objective to create the world's biggest facial image database (Jauhar 2021). As the Indian state rapidly expands its surveillance apparatus, it is not far-fetched to consider that CSTs with their perceived unthreatening image, could contribute to the surveillance regimes of the state. In chapter 5, I have demonstrated how drones were being used to initiate surveillance on the Muslim Van Gujjar community following the abrogation of article 370 and a wave of nationalism across India. My research shows that CSTs are already being co-opted for such purposes. In such a context, tools like the e-Eye system can be repurposed for a multitude of security purposes making conservation just a cover for overt forms of targeted surveillance of certain communities.

Conservation surveillance technologies are rapidly evolving, with new devices being designed and used for a range of different purposes. There have been advancements in many sensing tools, camera traps can now be equipped with facial recognition software, acoustic sensors can hear sounds and conversations in the forest. Together these technologies are forming what has been called a 'surveillant assemblage' (Haggerty & Ericson 2000) wherein a multiplicity of surveillance systems can be interconnected and integrated to form powerful surveillance regimes. I argue that these regimes need not only comprise of digital tools such as CSTs, but also of other forms of traditional surveillance and policing as described in my empirical chapters. In the context of conservation spaces, foot patrolling by frontline forest staff, satellites, camera traps, drones, ranger-based LEM tools, acoustic sensors, long range thermal cameras are establishing these new surveillance regimes that have the potential to change the very nature of forest space itself (see representational figure below). Such surveillance is anchored in the techno securitization of society and needs to be examined in all its intricacies, alterations, and interconnections.

These advancements may well be carried out by well-meaning wildlife researchers and technocrats genuinely concerned about biodiversity conservation, but the fundamental question remains- what happens when these technologies are used by the state for targeted surveillance as I demonstrate? Conservation researchers and NGOs often introduce these technologies to governments and like in the case of India they have little control after the government starts using technologies on its own accord. Hence, civil society groups and conservationists themselves should advocate for strict laws on privacy, data protection and consent. These legal mechanisms are almost non-existent in many low-income countries in the global south, where most of these conservation interventions are applied.

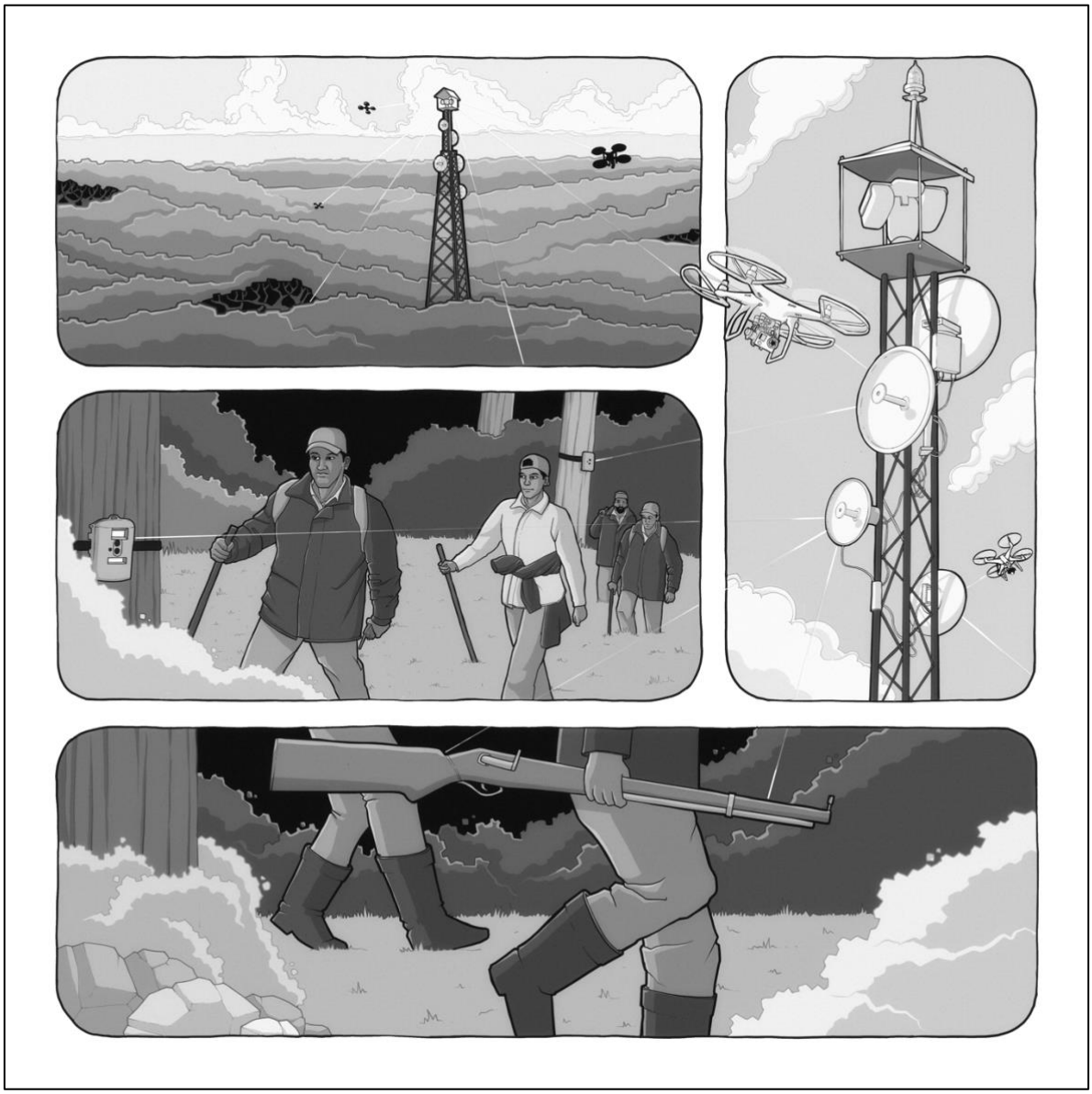

Figure 23: Surveillance regimes in Forest Spaces

I also wish to emphasize the importance of not seeing CSTs from a good-bad binary perspective. It is a force with the potential to transform the work of protected area managers, conservation agencies, and scientists. In that light, I hope that more interdisciplinary engagement on the topic is galvanized in academic and non-academic sectors. Such an engagement will result in concerted thinking that ensures that the application of CSTs remains ethical and democratic. Conservationists must capitalize on the opportunities provided by CSTs while being mindful of their associated social impacts and willing to take steps to mitigate potential harm where necessary. Doing so will not only benefit people it is also likely to benefit conservation itself in the long term. There has been some welcome work on this front, as researchers and conservation practitioners are increasingly developing principles and regulatory mechanisms for the socially responsible and ethical use of CSTs (Sandbrook et al 2021, Sharma et al 2020).

As mentioned before, conservation of nature has an inconsistent record in terms of its social impacts. It has led to the displacement and eviction of indigenous communities, propagated fortress conservation, and generally lacked diverse stakeholder involvement in conservation decision- making (Adams 2004). Hence, it is imperative to pay attention to and critically examine who benefits from the use of technologies in conservation and who does not—or indeed, suffers from it. This thesis has attempted to bring attention to these conundrums by making visible entrenched social inequalities, that get exacerbated by conservation surveillance technologies.

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