Chapter 2

Review of Literature

Conservation approaches across state and community forests in the tropics- with special emphasis on northeast India

The tropical forests are the richest biota of the world and are currently known to hold 75% of the global terrestrial biodiversity (Jenkins et al. 2013). Overlapping with some of the most populous, poor and rapidly developing regions (Fisher & Christopher 2007), they are also among the most threatened ecosystems (Bradshaw et al. 2008). In the last four decades alone, the tropics recorded a 56 per cent reduction in the populations of 1,638 species (WWF 2014).

Habitat loss due to deforestation, animal loss due to hunting and the implicit negative synergism between the two are the biggest threats to the tropical forests (Laurance & Useche 2009). The underlying drivers of such threats are numerous and can be broadly classified into two types: 1) proximate- these are largely local in nature and are most commonly expressed in the form of shifting cultivation, hunting, collection of timber and non-timber forest products (NTFPs) and 2) ultimate- often underpins the proximal drivers and are embedded in the larger socio-political economy and are usually expressed in the form of market-demands, global and/or national policies and programs, trade-agreements political instability and war (Geist & Lambin 2002). The future of conservation would depend on how these threats originating due to proximate and ultimate drivers are tackled (Laurance 2007).

State and community conserved areas

Till date, the conservation response to counter such threats can be categorised into two broad approaches: Protected areas (PAs) and community driven conservation (community based conservation or CBC).
State Protected Areas (PAs)

PAs are often initiated by the state and their underlying conservation agenda and priorities are often set at regional or global scale. However, there have been instances when non-governmental organisations (NGOs), communities, religious institutions and private individuals have initiated PAs but they are relatively smaller in size and currently very few in number (Shahabuddin & Rao 2010). IUCN lists several typologies and categories of PAs based on its own criteria as well as the large diversity that exists across the globe (IUCN 2015). Currently PAs occupy 13% of the global terrestrial area (Bertzky 2012) and are known to be the most successful models of species and biodiversity conservation (Watson et al. 2014).

PA and conservation effectiveness

The measurements of PA’s effectiveness hasn’t followed any standard protocols and has been based on several parameters viz. their ability to control fire (Nepstad et al. 2006), linking ecological landscapes (DeFries et al. 2005), maintaining forest cover (Andam et al. 2008; Ellis & Porter-Bolland 2008; Joppa et al. 2008) and species diversity and abundance (Klorvuttimontara et al. 2011; Rayner et al. 2013). Multiple meta-analyses of PA’s effectiveness in terms of meeting biodiversity and conservation goals through coverage of species rich areas, preventing habitat-loss and species extinction has also been carried out (Coetzee et al. 2014; Jenkins et al. 2013; Le Saout et al. 2013).

Majority of these studies conclude that PAs have been fairly successful in its key objectives of maintaining habitats and species diversities (Watson et al. 2014). However their performance hasn’t matched goals and expectations due to their limited spatial coverage (Chape et al. 2005), poor implementation of the legal provisions (Wiersma & Nudds 2009) and dearth of adequate staff, capacity and funds (Wittemyer et al. 2008). Such deficiencies has made many existing PAs vulnerable to managerial shortcomings and conservation threats (Ervin 2003) while many others have been downgraded, downsized or de-gazetted altogether (Mascia et al. 2014). Recent cuts in PA funding has further diminished their effectiveness and made them vulnerable to threats (Watson et al. 2014). Attempts at reinforcing existing PAs with funds, staff, capacity and expanding the current network has been opposed by the human rights activists who highlight the forest dwellers’ innate aversion to the centralized and
‘protectionist’ approach as they violate social justice and diminish democracy (Agrawal & Redford 2009; Brockington 2004).

**Community Based Conservation (CBC)**

CBCs as a conservation models have started gaining ground initially as a critique of the PAs. Later case studies showed that they could potentially form a cheaper, democratic and socially just alternative to PAs (Agrawal & Gibson 2001). In CBCs, the involvement and participation of local communities, particularly in the decision making processes, right from the inception of a programme to its implementation, is paramount (Kothari et al. 1998). Adopting a bottoms-up approach, the tenure rights in CBCs are usually with the communities and the conservation priorities are fixed according to local demands and understanding. Like PAs, CBCs too are limited by coverage, funding and trained manpower (Berkes 2007).

**CBCs and conservation effectiveness**

The multiplicity of goals embedded within CBCs makes the evaluation of their performance difficult (Berkes 2007). However, CBC’s decentralised model has been found to reduce management cost (Somanathan et al. 2009), ensure social justice as well as improve livelihood and income of the communities (Pokharel et al. 2007), but the fate of the forest habitat and biodiversity within such community managed forests are not clear (Persha et al. 2011). Shahabuddin and Rao (2010)’s comprehensive meta-analysis, the first global attempt to contextualise the performance of CFs in terms of their ability to conserve biodiversity (Watson et al. 2014), concluded that the tenure of the forests were important determinants of their capacity to conserve and sustain biodiversity.

**Conservation assessments across state and community forests**

Very few studies have formally contrasted biodiversity across state PAs and CFs (Setsaas et al. 2007; Shahabuddin & Rao 2010). Fewer even attempted to empirically assess the effectiveness of conservation across the PAs and CFs at a landscape scale (Barber et al. 2012; Urquiza-Haas et al. 2011).

Often on-site primary empirical evaluations use merely one criterion at a single scale for example richness and abundance of species or deforestation rates (Ellis & Porter-Bolland 2008; Urquiza-Haas et al. 2011), thereby focussing merely on the proximate causes and drivers. Such evaluations tend to provide an eclipsed view of the threat and instead of
expanding, limits our understanding of the approaches vis-à-vis local threats alone. Detailed case level studies are important because to a large extent, local institutional and managerial variations, even within similar typologies of conservation approaches, may produce differential outcomes based on how they respond to proximate and ultimate drivers of threats (Berkes 2004; Persha et al. 2011; Shahabuddin & Rao 2010). Therefore, to make sound conservation decisions, it is important to measure impact of both ultimate and proximate pressures on biodiversity and outcomes of conservation regimes (Beumer & Martens 2013).

**Biodiversity and Conservation in India**

**Protected Areas**

India is exceptional both in terms of biological and cultural diversity and overlaps with four biodiversity hotspots (Mittermeier et al. 2004) and is an important ecoregion for threatened vertebrate taxa (Jenkins et al. 2013). PAs, the cornerstone of India’s conservation efforts, has been instrumental in conserving both large, charismatic mammals and non-charismatic flora and fauna (WII 2014) and are ‘irreplaceable’ last refuge for many threatened, endangered and critically endangered species (Le Saout et al. 2013). Currently PAs occupy 58,645.05 km² in India and includes 103 National Parks (NP= 40,332.89 km²), 525 Wildlife Sanctuaries (WLS=116,254.36 km²), 4 Community Reserves (CR=20.69 km²) and 60 Conservation Reserves (CoR=2037.11 km²) (WII 2014).

Successes notwithstanding, PAs in India have been under criticism for failing to maintain important species populations (Reddy 2008) and habitats (Shahabuddin & Kumar 2007), for constricting science and research (Madhusudan et al. 2006), causing ‘conservation displacements’ and for failing to rehabilitate the displaced (Shahabuddin & Bhamidipati 2014). PAs in India has also been criticised for being top-down and ‘exclusivist’ model of forest control with little or no participation of the local communities (Shahabuddin 2009). With a limited coverage of mere 4.83% of the total geographic area (WII 2014), the PAs of India also fail to adequately protect the ecological ranges of many threatened flora and fauna (Das et al. 2006; Khan et al. 1997).

**Community Based Conservation in India**

Such shortcomings of and criticisms against PAs have fuelled a renewed interest in implementing CBCs in the forests which have been under the direct, indirect and/or de facto
control of the communities (Shahabuddin 2010). Such forests are variously known as community forests, unclassed forests and community conserved areas (FSI 2013). For the purpose of this review I would stick to calling them as community forests (CFs).

The CBC movement has gained considerable traction in India during the last one and a half decade (Kothari 2006). The passage of the historic Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or the RFRA (Govt of India 2006) was a recent milestone which recognised the forest-dwelling and dependent communities’ rights over their forests, even if they were ‘inviolable’ PAs (Shahabuddin 2010). Subsequently, even the forest establishment of India, which was generally considered anti-people began to legitimise community rights over their lands and the government lands they used through the inclusion of CRs or CoRs under the section 36A&C of the 2002 amendment of the Wildlife Protection Act, 1972 (Kothari 2006). CRs are usually notified for private and common lands and management is different from CoR which are strictly declared for government owned lands although they allow communities usufruct rights. It is also important to note that all the 60 CoRs are restricted to the ten states of India out of which 34 CoRs are located in the state of Jammu and Kashmir alone. The size of these CRs and CoRs range from 299.52 km² to 0.03 km² with the average size being 32 km² (WII 2014).

Additionally, many communities have also been preserving biodiversity rich areas governed by customary laws and/or through sacred/religious beliefs, taboos and customs since ‘time-immemorial’ (Malhotra et al. 2007; Tiwari et al. 1998). Such forests have been protected around the world for a variety of reasons viz. to perform religious ceremonies, as burial grounds and for their watershed value (Bhagwat & Rutte 2006). These areas are known to provide ecosystem services, such as erosion control and maintenance of high water quality (Ormsby & Bhagwat 2010). With an estimated 100,000 and 150,000 sacred forests, India has the highest concentration of sacred forests in the world (Malhotra et al. 2007). They are often associated with or believed to house gods, and are typically named after deities (Chandrakanth et al. 2004). However, such sacred forests are often very small and isolated and faces limitations in protecting large bodied, landscape level species (Osuri et al. 2014) while many others are losing their sacredness owing to rapid cultural transitions (Ormsby 2013).

Although CFs are celebrated as potential instruments of social justice for the historically deprived and disempowered indigenous communities (Schwartzman & Zimmerman 2005),
the CF experience in India hasn’t been even and at times fail to reflect the democratic ideals. Prevalence of the dominant communities within the CBC management bodies (and within that community the dominant members, often male) highlighted the deep fault lines of caste and gender inequity so deeply embedded in Indian grassroots institutions (Guruswamy & Singh 2010; Lele et al. 1998). Also owing to the complex nature of rule formulation and their implementation in the CFs, lack of social cohesiveness, common in multi-cultural Indian societies, often hampers their performance (Pathak et al. 2004).

**Grey Conservation Areas**

Within the PA-CBC dichotomy exists a large ‘grey’ conservation zone which hasn’t got adequate conservation attention. Globally they are represented by both state and community forests but without any clear or explicit biodiversity conservation objective. In India such areas are represented by reserve forest (RFs), protected forests (under state’s ownership) and ‘unclassed forest’ (often under *de facto* or *de jure* control of the communities). Unclassed forests hide within it a great diversity of use and management typologies and forest governance arrangements whose ability to conserve habitats and species is largely unknown (Tiwari et al. 2013).

These ‘grey’ zones are important because most PAs were formed with political and administrative considerations rather than ecological ones (Rodrigues & Gaston 2001) and doesn’t encompass many important, endemic and endangered plant and animal groups (Das et al. 2006; Khan et al. 1997; Pawar et al. 2007). PAs are also, almost always, not large enough or are not connected to other landscapes and exist as islands in a sea of intense human use (DeFries et al. 2005). In many biologically important natural areas, proportion of PAs to the total forest is often too miniscule or PAs are completely absent to be of any significant conservation impact (Rands et al. 2010).

The schematic below (Figure 2.1) attempts to depict the relative size and access-regimes of the various types of forest based on ownership in India. Most of the focus has been on the white zones represented by state-initiated PAs, CoRs, community and privately owned CRs and sacred groves.
Figure 2.1: Complex forest ownership patterns and their overlap in India. The informal community forests and the formal reserve and protected forests shaded in grey represent bulk of the 'grey' conservation zones of India.

Often such ‘grey’ zones are sites for not only wildlife but also for many forest-dwelling traditional human societies whose links to these forests are crucial for their survival (Tynsong et al. 2012). Since these areas lack any water-tight loss prevention mechanisms and are managed and used based on customary (formal and/or informal) rules, these areas have become extremely vulnerable to pressures of economic growth and industrialisation often driven by global-regional pressures (Kothari & Pathak undated). Such loss therefore threatens not only the forests but also the cultural linkages, forest-based livelihoods and the inherent traditional knowledge systems (Berkes 1999).

To summarise, few conservation efficacy assessments of state and community forests have been carried out at landscape scale and most of them was used to measure variables which informs us about their response to a single variable. Moreover, assessments have overlooked a vast ‘grey’ area embedded within the PA-CBC dichotomy and we do not know their conservation potential as well as their threat-dealing capacity. In India large forest and biodiversity rich areas are under such ‘grey zones’ which has stayed beyond the purview of conservationists and forest-managers. To address these gaps, this thesis attempted to assess
conservation efficacy across state (reserve) and community (‘unclassed’) forests, by analysing landscape changes across large spatiotemporal scales (to detect response against ‘ultimate’ drivers of threats) and estimating direct local level pressures on biodiversity (to see the impact of ‘proximate’ drivers of threats).

To do so, the thesis adopts a comprehensive conservation evaluation framework (Figure 2.2) which uses appropriate landscape variables nested across the two conservation regimes- state and community forests. The broad goals are stated below:

1. Assess forest-cover loss at a landscape level across the two conservation regimes to understand their response against ultimate (global-regional scaled) drivers of threats.
2. Assess the proximate (local-scaled) drivers of threats to biodiversity such as hunting and its impact on animal abundances across the two conservation regimes.
3. Discuss the potential roles of the existing institutional structures across the two regimes in the context of their ability to counter these threats and in conserving biodiversity.

![Figure 2.2: Comprehensive research framework to study conservation relevant changes across space and time. The boxes represent the parameters of research. The ones highlighted in bold were covered in this research.](image-url)
Study area characteristics

I would now discuss the specific study area characteristics within the broad context of the resources they have, their conservation and ownership regimes, the nature of threats that affects them and their current state of conservation.

North-East India; biodiversity and conservation regimes

The northeast India falling within the Indo-Burma Biodiversity Hotspot (Mittermeier et al. 2004) is the richest region in India, both in terms of biological as well as cultural diversity. Occupying a mere 7.7% of India’s total geographical area, it supports a staggering 50% of the flora (ca. 8000 species) (Rao 1994) of which 31.58% (ca. 2526 species) is endemic (Nayar 1996). It is very rich in faunal diversity with more than 900 species and sub-species of birds and 269 species of mammals recorded so far from the region (Choudhury 2000, 2013). About 225 different ethnic communities reflect the cultural melting pot nature of the region (Chatterjee 2008). The region is also richly endowed with crude oil, important minerals like coal, limestone, uranium as well as a huge untapped hydro-electric potential (World Bank, 2007).

In the northeast, particularly in hilly and tribal dominated regions, large forest areas are officially ‘unclassed’ (see Table 2.1). On ground however, local communities are the de facto or de jure owners. Given the region’s ethnically sensitive nature, remoteness, near absence of the forest department except within RFs and PAs and the political autonomy granted through articles 244(2) and 275(1) of the Indian Constitution, all such forests stays beyond purview of forest and wildlife laws. The state of wildlife, forests or the conservation of such forests are virtually unknown today even as these forests are under grave threat. Long history of local hunting might have emptied these forests even while maintaining intact forest cover (Datta et al. 2008) while the demands of the rapidly growing neo-liberal economy is exerting pressures on it from outside owing to rich forest and mineral resources they contain (Karlsson 2011). Therefore it is important to see how these large forest areas or grey conservation zones, has fared in the wake of these pressures while remaining beyond legal forest regulations.
Table 2.1: Proportion of 'unclassed' forests in states of northeast India (Source: State of forests, FSI, 2013).

<table>
<thead>
<tr>
<th>States of northeast India</th>
<th>Total area (km²)</th>
<th>Total State Forest (km²)</th>
<th>Unclassed Forest (km²)</th>
<th>% State Forest</th>
<th>% Unclassed Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meghalaya</td>
<td>22429</td>
<td>1125</td>
<td>8371</td>
<td>11.85</td>
<td>88.15</td>
</tr>
<tr>
<td>Manipur</td>
<td>22327</td>
<td>5638</td>
<td>11780</td>
<td>32.37</td>
<td>67.63</td>
</tr>
<tr>
<td>Arunachal Pradesh</td>
<td>83743</td>
<td>20502</td>
<td>31039</td>
<td>39.78</td>
<td>60.22</td>
</tr>
<tr>
<td>Tripura</td>
<td>10486</td>
<td>4177</td>
<td>2117</td>
<td>66.36</td>
<td>33.64</td>
</tr>
<tr>
<td>Assam</td>
<td>78438</td>
<td>17864</td>
<td>8968</td>
<td>66.58</td>
<td>33.42</td>
</tr>
<tr>
<td>Mizoram</td>
<td>21081</td>
<td>11477</td>
<td>5240</td>
<td>68.65</td>
<td>31.35</td>
</tr>
<tr>
<td>Nagaland</td>
<td>16579</td>
<td>9308</td>
<td>508</td>
<td>94.82</td>
<td>5.18</td>
</tr>
<tr>
<td>Sikkim</td>
<td>7096</td>
<td>5841</td>
<td>0</td>
<td>100.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

In these ‘unclassed’ forests (henceforth community forests or CFs), hunting is widely practiced even though all kinds of hunting is considered as a legally punishable offence (Anonymous 1972). The reasons ranges from poor to total absence of forest-law enforcement structures, remote locations with difficult access to many of these forests, to a general tolerance of state agencies to hunting since it is considered as a traditional practice.

The volatile and deeply antagonistic political history between many states of the region and the Federal Government of India (Baruah 2005) too plays a role, both in the sustenance of hunting (and ‘poaching’) and the tolerance of the state agencies towards it. Many communities in the northeast are in a conflict mode and complete disregard for state laws and structures often becomes expressions of such struggles (Goswami & Ganesh 2011). During such conflicts, the remote forests becomes the natural refuge and training camps of the anti-state rebel groups who maintain a nebulous political autonomy over such areas, thereby further decimating conservation and management of forests. Even high-profile PAs in the northeast have become victims of such violent conflicts where destroying management and
protection infrastructure and hunting wildlife for trade becomes important expressions of struggle as well as means to fund the war expenses (Goswami & Ganesh 2014). In such PAs, large mammals, particularly those of high trade/monetary value, occurred in lower abundances after a period of prolonged violent political conflict (Goswami & Ganesh 2014). Even where it has power to enforce and control, the state still tolerates localized customs such as hunting even though they are against the law, as means to maintain good public relationship and manage security threats (Lacina 2009). In view of such legal ambiguities and lack of law enforcement, it becomes critical to gather information on the current extraction and dependence levels on these forests to check if they are within subsistence levels.

*Jaintia Hills, Meghalaya*

The field-work for this research was carried out in the southern slopes of the Jaintia Hills, also known as ‘War-Jaintia’ region of Meghalaya, located in the north-eastern corner of India. Meghalaya is one of the newer states of India and was carved out of Assam in 1972 comprising the Khasi, Jaintia and Garo Hills. The state is dominated by three tribal communities namely Khasi, Jaintia and Garo (>90% of the total population). The total area of the state is ~ 22,429 km² with more than 75 % its total area under forest cover (FSI 2013). The state is rich in mineral resources while its predominantly rural and tribal communities has high dependence on forest resources for livelihood, enterprise and subsistence (Tynsong & Tiwari 2012). The altitude of the state ranges from 30-1900 m with a central highland plateau (average altitude 1300m) and steep hills merging with the plains of Brahmaputra valley on its northern side and the Barak and the Surma Valley on its southern side.

![Figure 2.3: Autonomous District Councils of Meghalaya.](image-url)
The specific and the relevant bio-geographic and climatic descriptions of the study-sites will be provided in the respective chapters. Here I would instead like to point out the details of its unique socio-political character of the state as a sixth schedule area within the context of forest management and biodiversity conservation.

A Sixth Schedule State? A brief political history

Prior to being declared as a state, the current constituents of Meghalaya namely Khasi, Jaintia and Garo Hills represented two Autonomous District Councils (ADCs) within the state of Assam. The United Khasi-Jaintia Hills ADC and the Garo Hills ADC enjoyed financial, administrative, judicial and land-revenue autonomy within the provision of the sixth schedule of the Indian constitution (Prasad 1979). The main ideology behind the sixth schedule was to allow integration of a multitude of diverse cultures within a multicultural India while maintaining the cultural diversity and integrity of each constituent. Thus the tribal dominated Khasi, Jaintia and Garo Hills, which although fell within Assam, was completely unique and different from the caste-Hindu people who dominated the Brahmaputra Valley. To protect their unique identity and traditional customs, the ADCs were empowered to make their own laws while the laws passed by parliament and the state legislatures did not apply to them. However, once Meghalaya became a full-fledged state in 1972, the sixth schedule was amended under Article 12 (A), to fulfil the federal structure requirements. Therefore, unlike before, the laws passed by Parliament and state legislature came to gain supremacy over the ADC laws. In some sense, the whole point of the ADC was lost since the new state, its politics and administration came to be dominated by the indigenous tribal population (Mukhim 2013). Elsewhere in the northeast, Nagaland had abolished these councils after attaining statehood in 1963 whereas Mizoram retained 3 ADCs, namely Chakma ADCs, Lai ADCs and Mara ADCs to allow self-autonomy to its four non-Mizo ethnic minority groups. Therefore, the ADCs in Meghalaya remains a political anomaly, with its future intensely debated today. However, it is the ADCs which make the political and administrative of Meghalaya uniquely complex.

Owing to the presence of ADCs, there is a three tiered administrative-institutional structure in Meghalaya. At the apex level is the state government with constitutional powers to legislate and implement laws for the State. At the next level are the three ADCs, also with constitutional powers to legislate and implement laws for their respective councils, and at the third level are the traditional institutions (TIs) which operates at village and the elaka (cluster
of villages) level, and instead of the state, falls under the jurisdiction of the ADCs under the provisions of the sixth schedule.

Figure 2.4 : Three-tier governance structure across the state and the autonomous district councils. Figures in parenthesis indicate number of that particular administrative unit in Meghalaya.

**Autonomous District Councils**

Unlike ‘districts’ which are apolitical and non-ethnic administrative units, ADCs are much larger and the ethnic and cultural aspirations becomes the key criteria while designing their autonomous political territories (Stuligross 1999). They were designed, formed and governed under the articles 244 (2) and 275 (1) of the sixth schedule of the Indian constitution (Prasad 1979). ADCs were formed to integrate, instead of assimilating, the highly diverse tribal dominated (>90% of the total population) northeast hills within the modern Indian state, without disrupting their customary, traditional and cultural way of life.

They are assigned powers to perform functions across subjects of revenue (taxes and royalties), education, finance and forest. They are also empowered to administer justice and enact laws on matters related to forest and land management, succession of traditional leaders, marriage, divorce and inheritance of properties. They function independently of the state and report directly to the Governor, who also has to ensure that the laws and legislations
enacted by the councils are not only in conjunction with their traditional customs but also in consonance with the secular and democratic values of Indian state (Stuligross 1999).

Each ADCs comprise of an ADC assembly whose members (members of district council, MDCs) are elected in a process similar to the members of legislative assembly. The leader of the winning party is formally appointed by the state Governor as the Chief Executive Member (CEM) who elects his own executive members who heads and runs the various departments under the ADC. As per the Section 3(a) of the sixth schedule, the ADCs are the key authority to manage and regulate all forests except PAs and the state reserve forests. However, in practice it is the respective traditional institutions (TIs) (in the case of common forests) and the owners (in case of private forests) who exercise real authority throughout Meghalaya (Tiwari & Kumar 2008).

*Jaintia Hills Autonomous District councils and forest management*

With an area of 3,819 km², JHADC is the smallest ADC in Meghalaya and provides political and territorial autonomy to the Jaintia tribal community who comprise of Bhois, Biates, Hadems, Lalungs, Pnar and War sub- groups. JHADC are “expedient to make laws relating to the management and control of forests” in the areas under their jurisdictions as per the United Khasi-Jaintia Hills Autonomous District (Management and control of forests) Act, 1960 i.e. over all the ‘unclassed’ forests within Jaintia Hills (~2,546 km²). A key requirement of the 1958 Act was that these forests were to be registered with the Chief Forest Officer of JHADC, giving the home addresses of all the people owning forest, together with the forest boundaries and other particulars. However, many chose not to register them and owing to the council’s lack of enforcement capacities, they exercise little control over these forests today.

Constitutionally, the JHADC were empowered to collect taxes, which was supposed to be one of the main sources of revenue. These taxes should have come from land-revenue, market-taxes but owing to the fact that they didn’t perform the necessary forest or land surveys, they are not able to set out targets. In the case of market, the taxes are usually collected by the relevant doloi and the waheh chong, who have been doing so before the JHADC was formed. In most cases, they haven’t given it up and JHADC too, to avoid confrontation with the Tis, collect taxes only from a few markets that it setup itself. Thus bulk of JHADC’s revenue is generated from resource royalties’ and taxes collected from non-tribal. Resource royalties primarily come from coal, limestone and forest products. Such extensive reliance on resource royalties automatically has put a great deal of pressure on the
Jaintia Hill’s forests and environment today (Goswami & Jesudasan 2012; Goswami et al. 2012). Prior to coal and limestone boom, JHADC had relied heavily on forest-based resource royalties for revenue generation, and therefore promoted timber-extraction on a high scale. The resultant rapid loss of forests catalysed the timber ban of 1996 imposed by the supreme court of India, expressing deep concern about the degrading environment (Nongbri 2001). The coal and limestone mining, with huge forests and environmental cost, has come to similar situation today. In 2014, coal mining was halted in the state following an NGT issued ban-order after Dima Hasao student groups from Assam filed a complaint regarding the pollution of its largest source of drinking water from coal mines in Jaintia Hills. Limestone mining, however, continues unabated today, without the ADCs or the dolois attempting to regulate or manage them based on existing forest-laws or environmental regulations.

The revenue which is collected from forest and mineral resources is hardly invested back to manage the system well. Instead, bulk of the revenue that is collected goes on to meet the salary, overhead and maintenance of infrastructure budgets. The management and conservation of the forests by the ADCs is completely absent today (Dasgupta & Symlieh 2006). Tiwari and Kumar (2008) points out that in practice, JHADC’s control on these forests is mainly limited to collection of royalty on the forest products exported outside their own area of trade. Thus in effect the JHADC lack on-ground authority to impose anything on the people who own the forests, despite far-reaching powers to regulate the forest operations (Gassah 1998). These forests are under the full control and management of the TIs who manage and use them through their customary laws without any overarching regulatory, management or conservation authority of the JHADC (Tiwari & Kumar 2008).

Figure 2.5: Hierarchy of the JHADC TIs under the Sixth Schedule.
Elakas headed by dolois, are the most important TIs of the Jaintias. Doloi is equivalent to a traditional chief who presides and rules over all the villages (chnongs) under his elaka (see Figure 2.5). The origin of the institution of elaka dates back to 500-800 years (Gassah 1998). The original clans, who first formed/founded their respective elakas, are very important and only their members (males alone) can stake a claim to the seat of doloi. The appointment of doloi has to be approved by the JHADC and is through nomination and election by the prominent elders of the elaka. The tenure of a doloi is for life. An elaka council comprising of executive and non-executive members assists the doloi in administering the elaka and its resources. Important decisions are supposed to be made through ‘dorbar’ an assembly of the commons comprising of all adult male members of the elaka. Dorbar is central to the decision making system at the elaka level. The dolois work pro bono and are not entitled to any salary. But they were entitled to collect taxes and control rek (service) lands for their benefit, livelihood and income. However, in the War region, where this study was conducted, none of the dolois are entitled to any rek lands. In these region, the main source of monetary income was through collecting fees in lieu of issuing no-objection certificates (NOCs) for various reasons, details of which are provided below (pers. comm Mr. Manbha Kyndoh, doloi, elaka Narpuh).

In JHADC, There are eighteen elakas and one sirdarship, which is an equivalent of elaka but headed by a sirdar instead of a doloi. They are of variable size ranging between 50-300 km². Depending upon the size, an elaka can encompass from 5 to upto 40 villages. Each Jaintia village under a doloi is headed by waheh chnong (headman) who is elected by the elders and prominent members of the villages for an initial tenure of two years, and can be extended unlimited number of times. He is always a male and is the chief custodian of village resources (pers. comm. Mr. Manbha Kyndoh, doloi, elaka Narpuh).

Doloi, elaka and forests

The key functions of the doloi ranges from resolving conflicts, performing administrative functions and religious duties (in the absence of Lyngdoh, the traditional head-priest), issuing patta (permanent private land titles) and NOCs for forest to non-forest conversion.

In the context of forest management, the last two functions are important so I will discuss it briefly. Doloi’s NOC and affirmative reporting is mandatory in the process of issuing
permanent land-titles. Only local tribal communities of Meghalaya can own, sell and buy land under the protective provisions of the Meghalaya Transfer of Land (Regulation) Act, 1971 (Government of Meghalaya, 1971). A person earns the right to make a land-title on his own name if she/he makes long-term or permanent changes to the land viz. building a house or creating a plantation or orchard or fishery tanks. At village level, privatisation of forest land is a common trend and the size of the land varies considerably. Privatisation of forest land is one of the growing threats to the common elaka forests today as large parts are converted to areca plantations and orchards.

*Issuing NOC for forest to non-forest conversion*

The permission for small scale forest conversion activities like shifting cultivation, betel nut or orchard plantations and mining for sand or boulders is not mandatory from the doloi and the village headman can officiate such permission alone or in case it demands, through the summon of the village dorbar. However, it is in the purview of large scale conversion viz. mining for major minerals like limestone and coal, setting up of large industries, that the permission of the doloi is compulsory. Without his positive recommendation and NOC, neither the office of the district council nor the state government can give green signal to any developmental activity. Similarly, any activity deemed and flagged to be harmful to his elaka by the doloi can be immediately stopped.

Lately, there has also been an increasing advocacy for the democratisation of these bodies by the civil society. However, many within the same society views such demands as a threat to their traditional customs and infringement of the rights guaranteed by the constitution (Lyngdoh 2015). An impending reformation of the ADCs is on the cards to bring them under the 73rd and 74th amendments of the constitution, which seeks to create stronger, grassroots administration at the local village and town level.

*Hunting and the hunted*

As mentioned earlier, hunting is a major cause of concern in the northeast (Aiyadurai et al. 2010) and studies on hunting are only beginning to emerge (Aiyadurai et al. 2010; Hilaluddin et al. 2005). However, almost no studies have been carried out to document the impact of hunting on animal abundances and the hunting practices distributed in the landscape within a matrix of ownership patterns and gradient of hunting intensity. Previous empirical studies have shown that sustained local hunting leads to shifts in relative abundance and population
structure of the hunted species and therefore may serve as an indicator of levels of hunting (Fa & Brown 2009). Among the species hunted, vertebrates, particularly mammals, are highly sensitive to anthropogenic pressures and hence, I used the hunting intensity and abundance of mammals across a gradient of hunting to estimate the current impacts of hunting. Since large forest habitats in the northeast exist outside the PA network and the fact that law-enforcement in many of these forests are very poor, it is critical to understand if the tokenism of ‘PAs’ or Government’s ownership merely has any impact on hunting levels. To understand whether there is voluntary compliance to laws is important in India because in a large proportion of the forests, enforcement is minimal or absent. Within Jaintia Hills too since the only state forests are one of the least priority forests vis-à-vis biodiversity conservation, it is important to understand if in terms of local hunting pressures, they are equal to the elaka forests.

Jaintia Hills is experiencing the following nature of biodiversity threats which, in microcosm, also reflects the overall threats that affect most tropical forests rich in bio-cultural and resource diversity:

1. Hunting driven mostly by local proximate causes although remote market demands shouldn’t be ruled out. Such pressures may have impacted the abundance of the hunted animals.

2. An intensification of commercial plantations such as betel- nut and leaf plantation which is an important cash crop with high demands across both local, national and international markets. Therefore, these changes too seem to be largely driven by proximate drivers although the market demands outside the state and the country seems to be increasing.

3. Extractive mining based industrial intensification has also been observed which are clearly driven by ultimate causes and has led to the loss of forests and agricultural habitats to the increasing demand for land there.

Therefore to assess how the CFs and state forests perform in tackling pressures at multiple scales, I used the research framework mentioned earlier (Figure 2.2) to evaluate the conservation outcomes across a large community owned forest (>220 km²) and a large RF (>160 km²) located adjacent to each other in a continuous landscape dominated by low elevation dense tropical evergreen and semi-evergreen forests.
At a landscape level I looked at how the forest habitats have changed over time across the state and CFs while at a local scale I quantified how animal abundances respond to hunting pressures across the state and the CFs.

Today, owing to a globalised world order, the nature of threats to the biodiversity has changed. India and most of the tropical countries were untouched by such changes till the last two and a half decade. But today across the poor tropics, which houses the most biodiversity and natural resources, rapid transformations are taking place to counter which we need to re-evaluate our understanding of the best approaches to conservation (Shahabuddin 2010). But fundamental to such understanding should be the way the threats are perceived and measured(Peres et al. 2006). The key aim of this thesis is to understand how the two dominant conservation approaches respond to both landscape-level as well as the local-level threats, and thus has widespread relevance across the tropics.

References


IUCN. 2015. IUCN Protected Areas Categories System. Global Protected Areas Programme. IUCN, Gland, Switzerland.


WII. 2014. Protected Areas of India. ENVIS Centre on Wildlife & Protected Areas. WII, Govt. of India, Dehradun.
