CHAPTER – 1: GENERAL INTRODUCTION

The challenge is not to preserve “the wild” but peoples’ relationships with the wild.

— Bill Adams, Cambridge University

A. Introduction

Community is a group of geographically, culturally and traditionally linked people, sharing an interest in and/or interacting with a common natural resource base (ecosystems and species). In its exploitation of and interaction with natural ecosystems and species, most communities also devise ways and means to their protection and sustainable utilization. Community based conservation (CBC) basically gives us an idea about the simultaneous achievement of conservation and development and at the same time serving the interest of both (Berkes, 2004). In the broadest sense community-based conservation includes natural resources or biodiversity conservation by, for, and with the local community. The co-existence of people and nature is its central characteristic (Western and Wright 1994). Now-a-days, the move towards community-based conservation (CBC) is occurring in highly diverse forms, and therefore not a single definition would be sufficient to explain it. Broadly, CBC could be described as conservation of biological diversity based on the involvement of local communities in planning or implementation along with decision making. As a whole the main idea is that community-based conservation activities also uplift the socio-economic condition of local people, who are, therefore, more likely to support it. For meaningful policy implementation it is also necessary to make the common people aware of it and it can
be only achieved by improving the knowledge and understanding skill of local communities. Lastly, local people’s right and opportunities need to be encouraged by entrusting them the responsibilities for protecting and preserving nature in their area and making them a part of participatory conservation.

Communities of indigenous people the world over initiated the process of conservation by creating sacred forests, springs, lakes, rivers and caves along with their living components since long. These areas have been managed and conserved in accordance with the cultural knowledge and value system of the community concerned. About 5000 to 8000 indigenous communities in the world account for as much as 90 to 95 percent of its cultural diversity. It is also seen that, before the European worldwide exploration, indigenous people of all countries had social systems that dealt with the management of natural resources. It is a fact that world’s remaining areas of high biodiversity are found on indigenous people’s lands and in their waters (Alcorn, 1996).

In India, there are many examples that point to community based forest management (Gadgil and Iyer, 1989). A symbiotic relationship existed between forest and the forest dwelling communities, especially the tribal. While the tribal people extract their livelihood from forest, they also create an environment conducive for its regeneration and sustainable use. British colonial rule in India disrupted the traditional system of forest management and sustainable resource use, and led to an uncontrolled access to natural resources (Gadgil and Iyer, 1989). Extensive state takeover of the forests took place through the creation of reserve forests with policy and legal support through the Forest Policy of 1894 and the Forest Act of 1927. This policy was further pursued in the post-independence period by the Indian Government through
nationalization of forest resources. The revised Forest Policy of 1952, while laying partial emphasis on conservation, remained essentially revenue-oriented and did not take into account the traditional rights of tribal to the forest. Subsequently, the Wild Life Protection Act (IWPA), 1972, and the Forest Conservation Act (FCA), 1981, were framed with an accent on conservation. While these legislations could reduce the rate of forest destruction and decimation of wildlife to some extent, they nevertheless did not bring any remarkable improvement because of the lack of access of tribal and other forest-dwelling communities to forest resources. However, the National Forest Policy of 1988 marked a change in approach by putting the interest of the local communities as central to the management of forests. To begin with, the programme of Joint Forest Management (JFM) was launched in various states to give communities some stake in the management of forests and forest products, under supervision and control of the forest department. This was followed by the enactment of the Panchayat (Extension to Scheduled Areas) Act, 1996, which gave the communities in scheduled (tribal) areas the right to minor forest produce. Besides, some state governments have also allowed benefit-sharing from products inside protected areas such as fodder grass. Since 1990, the government has also embarked upon eco-development projects, which are meant to reduce the pressure of communities on protected areas by providing them alternative livelihood means. In spite of these measures, most conservation programmes, while improving the status of wildlife, have primarily benefited tourism agencies, tour operators, hoteliers, etc., rather than the local communities, which have to pay costs such as physical displacement, loss of livelihood, conflicts with wildlife, loss of
traditional knowledge and disruption of cultural practices, disempowerment, and loss of self-respect and dignity (Pathak and Kothari, 1998).

In recent years, grassroots level forest protection movements have become widespread in India. These local groups have started protecting the forest adjoining their villages in response to forest degradation and the resultant hardships they were facing (Agarwal and Saigal, 1996). Nevertheless, conservation laws and policies of our country have not recognized the independent effort of communities in conserving habitats and wildlife. Considerable biodiversity exists outside the protected areas, including areas conserved by village communities, such as sacred groves, tanks, pastures, yet the formal legal structure has not recognized them nor has policy noted the need for such recognition. Resource management practices among the tribes of northeast India are deeply interwoven in their day-to-day lifestyle and forest related livelihood pursuits (Ramakrishnan, 1992, 1995). Their understanding of the environment is also reflected in their philosophy which embodies a host of traditional beliefs and practices and acts as a cultural means of conservation. For example, among the Nagas, destruction of forests in close proximity to the villages is prohibited as it is believed that this will result in loss of prosperity and disease outbreak. Behind traditional practices like conserving certain trees while clearing *jhum* fields (Changkija 1996a) and a taboo on hunting during the mating season of animals, lies the belief that if such rules are broken, it will bring ill-luck to the villagers. The traditional Naga practice of shifting (*jhum*) cultivation in association with the alder tree (*Alnus nepalensis*), which is nitrogen fixing, is also an innovation towards sustenance and soil conservation. Another important aspect of this region is the existence of sacred forests
in villages, which are widely known as sacred groves. Such types of forests are generally controlled by the local community. It is taboo to cut trees, hunt game, or even collect herbs from there. Children are strictly restricted from entering such forest for fear that the range of the spirit would be invoked if the forest was disturbed in any way (Changkija, 1997). Meghalaya has several types of sacred groves where total conservation is enforced in certain categories of groves. Many examples of conservation through community effort among these societies can be found in the traditional systems of landholding and tenure, forest and forest resource management, water management and even agricultural practices. Other examples of community based conservation can be seen in clan- or community controlled village forest of different categories in most tribal villages of Arunachal Pradesh, Manipur, and Nagaland. These forests are managed and protected by community efforts under village councils. The novelty of such forests is that management and protection are through oral law and no formal protection force is needed as in conventional state-managed forest or even in JFM. While resource use for the day-to-day requirements of the villagers is permitted, any forest product removal for personal gain is severely structured and cannot be carried out without the knowledge of the traditional institution managing these forests.

Like the other states of North-east India, Assam comprises mountains, hills, mighty rivers and plains covered with rich vegetation. Its description in early Assamese literature reminds us that nature is an integral part to the making of Assamese society and culture (Deka, 2001; Neog, 1986; Barman, 1997; Ayyappapanicker, 1997). As in the other parts of India, forests in Assam too were overexploited under revenue-
oriented policies in the pre-independence period and for a considerable time in the post-independence period as well. Reduction of community forest and disqualification of tribal rights over forest further disrupted the symbiotic relation between forest and forest dwelling communities. The reserved forest Acts could do little to protect the forest and its wildlife. Local communities are vulnerable to the establishment of Protected Areas (PA), particularly in developing countries since their livelihoods are dependent on them (Rodgers, 1989; Gadgil, 1990; Mishra et al., 1992). Creation of a number of protected areas has contributed to conservation, while depriving the forest-dwelling communities of their customary rights and privileges. However, in the recent years it is being increasingly recognised that PAs should play a role in sustaining local people’s livelihoods (IUCN, 1980; McNeely, 1995; Ghimire and Pimbert, 1997). The problems were further compounded in western Assam due to the growing militancy, ethnic assertion and aggression, which had negative effects on forest resources and forest conservation. It has been shown that as a consequence of ethnic violence, extremist domination of the forest, and illegal log cutting and smuggling in western Assam, one third of the Reserve Forests have become decimated in the past 10 years. The parts of “protected” Reserve Forests that are adjacent to communities essentially have few or no trees. More recently, accords have been signed by the Bodo Liberation Tigers (BLT), the major insurgent group in this area, with the Central Government of India, along with the formation of the Bodoland Territorial Council (BTC) to participate in administering areas under agreements. Illegal logging and smuggling have also decreased to a large extent. Thus, the new political set-up offers an
General Introduction | Chapter 1

opportunity to take a fresh look at the management of protected forests in BTC areas under community participation and partnership.

The present study area, i.e. Chakrashila wildlife sanctuary was under the ownership of Bijni estate till acquisition by the Government during 1956-57 and before that, this Bijni estate was in the undivided Goalpara district of Assam. The forests in Goapara mostly comprise Sal (*Shorea robusta*), Chama (*Artocarpus chama* Buch.-Ham) and Titachapa (*Michelia champaca* L.) were initially inspected in 1868, with the deputation of Gustav Mann, an assistant conservator of forest (Ribbentrop, 1900, p. 77). The department remained in an unorganized form till 1873. The province was divided into two divisions- Lower Assam and Upper Assam. The forests of Gauhati and Goalpara sub-division were included under the Lower Assam division (Stebbing, 1923, p. 423). Goalpara Forest Division was first created in 1857 (Annual report, 1875-76, para. 8-27). In 1878, the open forests were converted into protected forest. However, till 1881, the open, protected and district forests (other wastelands), were exclusively managed by the Deputy Commissioner and assisted by a Forest “Daroga”. Beginning in 1901, the Forest Department started establishing forest villages for obtaining readily available labour services. Peasants belonging to the Rabha community, who had migrated from North-Bengal, were provided around 12 bighas of land per family (Annual Report, 1902-03, para. 76). On the other hand, by the end of 1880, the British brought the Santhals from the Santhal Pargnas of Bengal (now in Bihar) to Assam as tea garden labour. (Kurmi, 1983). Some of them were also settled inside the forested tracts. In this way, several forest villages came up in this area, which were inhabited by different indigenous communities such as the Bodo, Garo, Rajbongshi, and others. In 2001, the
Chakrashila wildlife sanctuary was brought under control of the Kokrajhar Wildlife Division, which had been created in 1992.

This is one of the virgin forests with valuable trees, medicinal plants and a rich diversity of animals, including the endemic Golden langur (*Trachypithecus geei*). Chakrashila Wildlife Sanctuary, dedicated to the golden langur (Dutta, 1996; Datta, 1998), is the largest Indian forest outside the Manas Biosphere Reserve that contains this species. Community conservation intervention that led to almost complete community protection of golden langur habitats in this area, (Ghosh, 2008a, b; Anon, 2009).

**I. Indigenous communities of Bodoland Territorial Area Districts (BTAD)**

Around 3082 villages are located within the framework of the Bodoland Territorial Council (BTC) which was created in 2003 by taking parts of eight districts of western Assam; it is an autonomous administrative unit formed under the sixth schedule of the Indian constitution and covers an area of about 8795 sq km. These villages of BTC are dominated by Bodos, which is recognized as a plains tribe in the Sixth Schedule of the Indian Constitution. Other communities like Rabha, Rajbongshi, Garo, Kachari, Adibashi, Santhal, Nepali, and others also reside in the BTC.

The Bodos comprise one of the major and oldest tribal communities of Assam. They are categorized as a plains tribe in the sixth schedule of the Indian Constitution. They are early settlers of Brahmaputra valley in northeast India (Gait, 2008) migrating from China and Tibet in the pre-Christian era. They belong to the Tibeto-Burman stock of According to Rev. S. Endle, “the Bodos are the original
autochthones of Assam” (Endle, 1975). Presently, they are concentrated in the north bank of R. Brahmaputra along the north boundary of Assam adjoining the southern foothills of Bhutan and Arunachal Pradesh (Roy, 1995). According to the 2011 census, their population is around two million, mostly residing in the north bank of R. Brahmaputra.

The Santhals are an aboriginal tribe settled now mostly in the state of Bihar, Bengal, Orissa and Assam and in smaller numbers in other states of the country. They are known as *Hor Hopon* (means child of human being), Santal, Santhal, Saontar or Santar. Santhals are considered as the largest homogenous scheduled tribe of India (Troisi, 1978), while others place them as the second largest tribe of India (Kochar, 1979) after the Gonds and Bhils. Ethnically the Santhals, Mudas and Kharias belong to the same family of the Kolarian race (Roy, 1970). Linguistically the Santhals are classed with the Munda family of language, a language of Austirc group to whom Max Muller gave the name of Munda family of languages (Hembr, 1996). The main areas where Santhals live include Jharkhand, Western West Bengal, parts of Bihar and Odisha. Their presence in Assam is well known, but their numerical strength and geographical spread are data deficient (Ahmad, 1999). Towards the end of the nineteenth century, the British brought Santhals to Assam to serve as tea garden labour (Kurmi, 1983) and that is how they came to be settled in the Chakrashila area as well.

Rabha is a little known Scheduled Tribe community of West Bengal and Assam. The language/dialect spoken by the Rabha people is also of the same name. The Rabhas belong to the Indo Mongoloid group of people and have similarities with other members of Bodo group such as Garos, Kachari, Mech, Koch, Hajong and others. In
West Bengal, Rabha people mainly live in Jalpaiguri and Cooch Behar districts. In Assam, the Rabhas live mostly in Goalpara and Kamrup districts. The Rabhas who live in the forest villages have retained their original Rabha dialect to a great extent.

The Garos are a tribal people of Meghalaya, India, some of whom are also found in the neighboring areas of Bangladesh. The Garos are mainly distributed in the Garo Hills districts of Meghalaya, in the Kamrup, Goalpara and Karbi Anglong districts of Assam, and in Khasi Hills in Meghalaya. The Garo language belongs to the Bodo–Garo branch of the Tibeto-Burman language family. The Garo language has some similarities with Bodo-Kachari, Rabha, Dimasa and Kok-Borok languages of the northeastern region of India.

Koch-Rajbongshi or Rajbongshi is an ancient people originally from the Kachari Kingdom in North Bengal and Assam. The word “Rajbongshi” literally means "royal community"). They have a rich cultural heritage but have been largely amalgamated into Assamese language and culture.

The present study area namely Chakrashila Wildlife Sanctuary lies at the boundary of Kokrajhar district in Bodoland Territorial Area Districts (BTAD) () and Dhubri district in non-BTAD area of Assam. Consequently, there is a drastic change in the ethnic composition in this area with the northern and north western villages mostly dominated by Bodos followed by Garos; the eastern part dominated by Adivasis; and the southern part mostly inhabited by Rabhas and Muslims. There is also a significant population of Rajbongshi, Assamese and Nepalis residing in these villages. Among
these communities living in forty-one villages around the sanctuary, Bodo is dominant in seventeen villages.

II. Community attitudes and perceptions of forest and wildlife

The Oxford Dictionary defines attitude as “a settled way of thinking or feeling about something”. In the context of resource extraction, attitude may be defined as people’s feeling towards over exploitation of the resource for fuel wood, lodging, construction, settlement, agricultural expansion and any other purpose (Temesgen, 2007). Public attitudes need to be fully understood to determine reasons for conservation policy failures (Mordi, 1991). Socioeconomic conditions are important in explaining people’s attitudes to conservation. The demographic factors include sex, age, marital status and family size of the respondents. There are also certain socio economic variables which have strong relation with knowledge, attitudes and practice towards forest conservation. Such variables are literacy status, occupation, land ownership and contact with conservation agents.

III. Forest resources used by communities

In the pre-modern era, the human species has always existed in close interaction with the physical components of his natural habitat, but without too much tempering of the latter. Generally speaking, primitive and preliterate societies are excellent examples of man in nature. Natural resources are likely the key sources of energy in all forms consumed by human beings for their existence. Humans derive food, fodder and a range of other forest product from nature. Forest products play an important role in meeting national socio-economic functions mainly the improvement of rural life (Mbuvi and
Boon, 2009). People have been using plants as healing materials since the beginning of civilization; even the Neanderthal man is believed to have used plants for healing. Thus the process of deriving drugs from plants is not new. Over the centuries, people have used more than 20000 plant species in various human cultures around the world for medicinal purpose (Lewington, 1993). Therefore, medicinal plants have always played a crucial role in world health maintenance. It is estimated that 1 billion people worldwide depend on drugs derived from forest plants (World Bank, 2004). All these components provide security and an important source of income for the poor in many developing countries. Moreover, non-timber forest products (NTFP) are often common property resources, like fuelwood, fodder, charcoal, fencing material, pole, medicinal plants and edible items like meat, fruit and nuts, mushrooms, fibre and resins (Arnold, 1995). NTFPs have potential for contributing to the local economy and improved natural resource management, leading to ecosystem conservation and biodiversity of an area (Subedi, 1997).

The World Health Organization (WHO) has defined traditional medicine as “the sum total of all the knowledge and practices, whether explicable or not, used in diagnosis, prevention and elimination of physical, mental or social imbalance and relying exclusively on practical experience and observation handed down from generation to generation, whether verbally or in writing” (Anonymous, 1978). Therefore, traditional medicine includes the ancient and culture bound healthcare practices that existed before the application of modern science to health. Different synonyms for traditional medicines are “indigenous”, “alternative”, “folk”, “ethno”, “fringe” and “unofficial” medicine and healing.
Besides medicinal value, plants have been used as food materials from the dawn of human civilization. Different agricultural crop varieties that are consumed today are basically derived from the wild plants. Thus, these wild plants contributed a lot to human diet and have been the basis for technological innovation (DMP, 1982). Generally people residing in remote areas do not have easy accessibility to modern commodities and therefore they heavily depend upon food items derived from the forest. People have been using different parts of plants such as roots, tubers, fruits, leaves and rhizomes derived from wild plants as a source of food. Besides providing nutritional value, forest food provides variety and taste. (Arnold, 1995). Besides, many communities maintain certain sacred plants that are necessary for rituals and are thus liked to their culture. Some areas like sacred groves are recognize as holy places where harvesting is completely banned. Certain species may play a crucial role in spiritual ceremonies, or have taboos associated with them that forbid certain harvests.

The north-eastern region of India forms a unique biogeographic province that harbours about 50% (±8500 sp.) of the floristic wealth of India, 40% of which are endemic. This area supports luxuriant growth of several wild edible, medicinal, aromatic and other valuable plants. Northeastern India comprises of grasslands, meadows, marshes, swamps, scrubs, mixed deciduous forest, temperate forest, humid evergreen and alpine vegetation (Mao et al., 2009) and this region is regarded as the progenitor of many cultivated crop variety. Assam is an important region in the Indo-Burma Biodiversity Hotspot and harbours a mosaic type of vegetation (Sarma and Sarma, 2008; Sarma et al. 2008). This state has a forest area of 28,748 km² where 3895 species of flowering plants, 293 species of orchids, 38 species of bamboos, 10 species
of canes, 355 species of ferns and fern allies, and 23 species of gymnosperms have been recorded (Chowdhury, 2005). Tribal communities, which contribute 12.8% of the total population, have rich indigenous knowledge on the use of natural components. A total of 362 species of wild edible plants have been recorded from Assam (Patiri and Borah, 2007).

IV. Human-wildlife Conflict

It has been reported that every ecosystem on the Earth’s surface has now been influenced by human activities (Vitousek et al., 1997) and around 40-50% of the earth’s surface is estimated to have been transformed by humans. This expansion of human influence into even the remotest corners of the globe and ever-increasing pressure on remaining natural resources has greatly intensified the issue of human-wildlife conflict making it a very common global phenomenon. Human-wildlife conflict has been defined as ‘When the needs and behaviour of wildlife impact negatively on the goals of humans or when the goals of humans negatively impact the needs of wildlife’ (Recommendation 5.20, 2003 World Parks Congress).

A set of global trends has contributed to the escalation of human-wildlife conflict worldwide. These can be grouped into human population growth, land use transformation, species habitat loss, degradation and fragmentation, growing interest in ecotourism and increasing access to nature reserves, increasing livestock population and competitive exclusion of wild herbivores, abundance and distribution of wild prey, increasing wildlife population as a result of conservation programmes and climatic factors (Vitousek et al., 1997; Wangchuk, 2001; Nyhus et al., 2005; Sprague and
Iwasak, 2006; Riley, 2007; Chauhan and Pirta, 2010a, b; Nijman and Nekaris, 2010a, b; Nekaris et al., 2013).

The state of Assam in Northeast India also exemplifies many evidences of human wildlife conflict amongst marginalized agricultural communities (Zimmermann et al., 2009; Das et al., 2012). Assam has a dense human population, majority of who are involved in agriculture, which accounts for 69% of its workforce. Yet, Assam remains a poorly developed state. Its per capita income is 40% lower than the national average. Food grain production has been steadily declining in recent years (Census of India, 2001). These factors place local rural communities at high risk from both natural disasters and human-wildlife conflict.

V. Crop raiding
Crop raiding can be simply defined as wild animals moving from their natural habitat onto agricultural land to feed on the produce that humans grow for their own consumption. Crop raiding is not a new phenomenon; it has most likely been occurring since humans first settled down and started practicing agriculture. Crop damage has traditionally been viewed as a fault of a wide range of invertebrates. However many mammals and birds are also pests and/or raiders that cause significant losses (Sukumar, 1989; Nyhus et al., 2000). Mammals from a variety of taxa are potential crop raiders, viz. elephant, deer, antelope, wild pigs, rodents, and primates (Sillero-Zubiri and Switzer, 2001). Crop raiding is still a frequent event and the cause of a major conflict between wildlife and people. This is especially true of areas adjacent or close to protected areas, which can harbour large populations of wildlife (Naughton-Treves,
Crop raiding is also a major concern amongst the agricultural communities of Assam. In one extreme scenario of conflict and raiding, 4000 villages belonging to 900 families fled their villages and took shelter in government relief camps (Choudhury, 2004). Many wild animal raiding causes direct economic losses to famers of Assam (Choudhury, 2004; Nath et al., 2015).

VI. Rhesus macaque (Macaca mulatta) behaviour

Among mammals, rhesus macaque, an old world monkey, belongs to Order- Primates, Family-Cercopithecidae, Genus-Macaca and Species mulatta (Wilson, 2007). It is distributed ubiquitously throughout mainland Asia, from Afghanistan to India, Pakistan, Bangladesh, Bhutan, Nepal and Thailand to Southern China (Ferris et al., 1980; Groves, 2001; Smith and McDonough, 2005). In India, it is found in considerable numbers in north and north-west, central, eastern and northeastern, and peninsular regions (Seth et al., 2001). It is a semi-wild species in northern part of India. They usually remain in the periphery of forests and rarely penetrate it to the depths, except when they move to seek denser cover (Prater, 1971).

VII. Food and feeding behaviour of rhesus macaque

Feeding is a crucial part of rhesus macaque activity and it affects almost all other activities performed by them. For survival, they must get enough food to balance their energy budget on maintenance and reproduction. All primates have the same general needs to acquire energy, amino acids, minerals, vitamins, water and certain fatty acids and meet these requirements in a variety of way. These nutrient requirements also
greatly vary within and between the species, depending on the age difference, sex, reproductive stage and social troops. Also these dietary requirements are greatly enhanced by spatial and temporal factors as well as physiological and anatomical variations within and between the primate species (Cord, 1986). Rhesus macaque is considered as omnivorous in its feeding habits as it was reported to feed on eggs, termites and moulds in addition to plants (Lindburg, 1971). In human influenced areas, macaques focus on fruits, flowers, leaves, seeds, gums, buds, clover, roots, bark and also they supplement their diet with termites, grasshopper, ants, beetles and mushrooms (Fooden, 2000; Wolfe, 2002). They choose their environment in respect to the availability of food. During winter, when they switch to lower quality of food, they may lose their body weight, but do not exhibit higher mortality rate (Nowak, 1991; Parker, 1990) In general ripe fruits (74%), invertebrates along with plants (12%) and vertebrates (14%) constitute their daily dietary habits (Fa and Donald, 1996). In some areas, rhesus macaques depend, directly as well as indirectly, on parts of their diet from human activities (Richard et al., 1989; Southwick and Siddiqi, 1994).
B. Objectives

The present study has the following objectives:

1. To document the traditional ethnic knowledge on sustainable resource utilization and management and nature-centric cultural practices of the different communities residing around protected areas in Bodoland Territorial Council (BTC), Assam, and to assess their present status.

2. To analyze community attitudes towards wildlife conservation in communities living near protected areas in BTC, Assam.

3. To record the effect of anthropogenic activities on the ecological integrity of wildlife habitats.

4. To study the human-wildlife conflict, if any, in the study area and analyze its causes and consequences.

5. To suggest sound practices of resource utilization and their management by the community.