CHAPTER 3: STUDY AREA

A. Bodoland Territorial Area Districts (BTAD)

The Bodoland Territorial Area Districts (BTAD) are situated on the North Bank of the river Brahmaputra along the southern foothills of Bhutan and Arunachal Pradesh. The Bodoland Territorial Area Districts (BTAD) was formed as a part of the Bodoland Accord signed between the Bodo Liberation Tigers (BLT) - the major insurgent group in this area - and the Governments of India and Assam, on 10th February, 2003. As a part of this Accord, the Bodoland Territorial Council (BTC) was formed with a mandate to participate in the administration of the areas under the agreement\(^1\). Thus, the new political set-up offers an opportunity to take a fresh look at the management of protected forests in BTAD areas under community participation and partnership. BTAD is dominated by the Bodos, who are recognized as a plains tribe in the Sixth Schedule of the Indian Constitution, along with Rabha, Rajbongshi, Garo, Kachari, Adibashi, and Santhal communities. The Bodos represent one of the largest of the 18 within the Kachari group (or Bodo-Kachari) of North-East India ethnic sub-groups (Endle, 1911) and belong to the Tibeto-Burman linguistic group. The BTAD comprises the districts of Kokrajhar, Chirang, Baksa and Udalguri, which are highly rich in floral and faunal diversity (Paul and Narzary, 2010). The total area of the council is 8,970 km\(^2\) out of which 2,562 km\(^2\) is delineated as forest area (28.6%), while non forest area is 6,408 sq. km. Kokrajhar district

\(^1\) Memorandum of Settlement on Bodoland Territorial Council, February 10, 2003, signed by Government of India, Government of Assam and Bodo Liberation Tigers.
has the maximum forest area (40%) followed by Chirang (28.2%), Baska (23.3%) and Udalguri (8.5%) (Sarma et al., 2008). The forest of BTAD can be grouped into 13 different types based on the dominant species found (Champion and Seth, 1968). These forest areas are surrounded by some fringe villages with different ethnic communities. Sarma et al., (2008) categorized the forest areas of BTAD into six land use classes based on the present status viz., dense forest, open forest, scrub/degraded land/grassland, agriculture/human settlement area, swampy land, degraded land and rivers/river sand.

B. Chakrashila Wildlife Sanctuary

I. History of management

Chakrashila hill forest was under the ownership of the Bijni estate till its acquisition by the Government during 1956-57. Till that time, there was no management system, and although some degree of protection was accorded by the Bijni rulers, the rules were seldom observed, especially by the influential people who had enjoyed these rights since long and took them for granted. It is said that rhinos were once present in the area, as a village called Gengrabil at the foot hills of Chakrashila still carries its history. These ‘Zamindari’ forests were subsequently upgraded to a hill Reserve Forest with notification vide government notification no. FOR/SETT/296/60/440 dated 26.10.1966. Finally, due to growing public demand, this unique virgin forest patch was declared as Wildlife Sanctuary by the gazette notification no. FEW.6/93/63 dated 14.7.1994 of the Assam Government (Datta et al., 1998). This natural habitat is well-known for harbouring the rare and endangered golden langur (Trachypithecus geei) along with other wildlife. The first working scheme for scientific management of reserve forest (R.F.) and Proposed Reserve
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Forest (P.R.F.) was compiled by the Deputy Conservator of Forests (DCF) Mr. L.C. Das for the period from 1.10.1964 to 30.9.1969. Under this scheme two working circles were operative in the Chakrashila WLS. The area was managed as a RF since 1966 and controlled under the Srigram Beat of the Bahalpur Range of the Haltugaon Forest Division. With declaration as a wildlife sanctuary in 1994, two forest department camps were constructed close to Jornagra village with three staff, while one camp was set up at the north western tip of the Sanctuary at Harinaguri with three staff for coordination of the operational activity with territorial staff. During 2000-01 Dhubri division constructed one beat office at Tintilla (near Dhir beel) with camp facilities and another sub-beat office was constructed in Kaljani wildlife division. Since 2001, Chakrashila was managed under a sanctioned strength of 33 out of which field staff was limited to eight foresters and ten forest guards. The strength was increased and expanded to include 12 foresters, 16 forest guards, and four plantation workers in 2009 (Brahma, 2011).

II. Name and location

Chakrashila WLS is a wildlife sanctuary in western Assam falling under Kokrajhar (BTAD) and Dhubri districts, with an area of 45,658 sq. km. It is at present administered under the Wildlife Division Kokrajhar. Geographical location of Chakrashila WLS is: latitude 26°15' to 26°26' N; longitude 90°15' to 90°20' E.

This sanctuary is spread over an undulating terrain having several hills that are surrounded by metalled and unmetalled roads. The road distance from Kokrajhar is 10 km and from Dhubri is 70 km. Chakrashila is one of the largest isolated hill areas along the northern bank of river Brahmaputra in lower Assam. Geographically hillocks are
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considered as extensions of the Khasi Hills range that were formed during the movement of the tectonic plates and the formation of the Himalaya. It is said that the seismic activity resulted in series of folded mountains and these are known as ‘Inselbergs’. Chakrashila is one such inselberg that abruptly protrudes out in the Brahmaputra valley plains. Historically, Chakrashila hill comprises of some ancient stone structures, which are believed to be sacred by the local villagers since long. These stone structures (‘shila’ in sanskrit and assamese) resemble circuluar objects (‘chakra’ meaning wheel or circle), as a result of which the local people call this area as “Chakrashila”. However, it is also believed that the name Chakrashila is originally derived from the Bodo word ‘Sikri Sila’ which means a fairy with butterfly wings. The presence of these sacred structures, the association with a fairy, and the presence of the golden langur, which is also considered as a sacred animal according to the Hindu religious beliefs, led to the entire habitat getting traditionally protected by the local communities. Some monoliths, megaliths and surrounded by village who in term keeping this forest from time immemorial with out much damage in the core area, and claims as a unique platform for community management and tourism avenue.

The richness of biodiversity in Chakrashila coupled with its proximity to the major towns of Kokrajhar and Dhubri creates an immense potential for turning it into a nature tourism hub in lower Assam. It also provides ‘green cover’ and numerous perennial springs for maintaining the ecological balance in the nearby areas. The streams feed two internationally recognized water bodies namely Dhir and Diplai beels. These wetlands are important habitats for migratory birds and indigenous fishes. Also they provide livelihood subsistence for nearby fringe villages, which eke out a living from fish
These wetlands and streams also serve as major sources of irrigation for the agricultural fields in the nearby villages.

III. Boundaries

Chakrashila is surrounded by naturally and artificially drawn boundaries. The valley of Jonri Nala with revenue villages like Mauriagaon, Dabargaon and Anajuli, interspersed with forests such as Buxamara Proposed Reserve Forest (PRF), Kolobari PRF, Bangaldoba PRF and Anajuli Unclassed State Forests (USF) are situated in the east; Katrigacha Reserve forest(RF), Harinaguri USF and revenue villages of Taraibari, Harinaguri, Gendra beel and Bhaluk Jhora are situated in the west; Bahalpur-Kokrajhar PWD road, Nayekgaon PRF part 1 and part 2 are in the north; and Sriram RF, Sorpomari RF and revenue villages like Tintilla, Jornagra, Abhayakhuti, Salbari, Choudhuripara are on the southern margin of the Wildlife Sanctuary. The soil of Chakrashila comprises sandy loam and exposed ferruginous rocks. The gradient ranges from gentle to moderate and steep with a predominance of abrupt changes in altitude. The northern side is more hilly and steep with several peaks compared to the other parts. The highest peak is Bakuamari at 458 m followed by Dibli Thakur at 357.5 m. The entire protected area consists of a series of parallel hill ranges that run in the north south direction and can be classified as the hill ranges of Bakuamari, Chakrashila and Damodar. The terrain is undulating interspersed with flat valleys and streams (Brahma, 2011).
IV. Climate

The climate is hot and humid and has the characteristics of a semi-evergreen tropical zone. The average maximum and minimum temperature is 29.6 °C and 17.95 °C, respectively. Annual ambient temperature ranges from minimum 8°C to a maximum 32°C. Highest temperature is experienced during July and the lowest temperature is experienced during the month of January.

Winter is dry followed by hot summer and heavy monsoon rains between May and August. The driest months are December, January and February. Annual rainfall varies from 2000-3000 mm with highest rainfall in the month of July. Most of the rain water is discharged through the perennial springs and the two water bodies namely Dhir and Diplai beels that lie on the southern part of the sanctuary. Average humidity is 92.5% in the morning and 55.5% in the evening. The highest humidity is recorded during the monsoon months when it can go up to 95%. The high humidity combined with high rainfall is characteristic of a tropical climate. The highest wind speed ranges from 25-32 km/hour during April to July. Heavy storms occur during monsoon and post monsoon. Because of its north-south alignment, the protected area experiences a constant mild wind from north east in the morning and from south west in the evening. All the storms generally come from the south west direction. Due to the hilly terrain, most of the rain water is drained out through the numerous streams and valleys. During winter months, the region suffers an acute shortage of water and then crop and vegetation becomes very dry. For wildlife, water is available only in the five perennial streams and three valleys in the vicinity of Dhir and Diplai beel. Besides this annual occurrence, major droughts have not been reported in the last one decade in this area.
V. Water resource

A large number of seasonal and perennial streams originate from this hill range. Two relatively large drainage systems are present in the western and eastern parts of the sanctuary. In the western side of Chakrashila, streams like Dilkhoba, Babujhora and Gildhara, originating from the Damodar hills drain into Tarang river that joins the Gourang river near Alengmari with the latter flowing into the Brahmaputra. In the East, Jonri Nala stream originates from Naddengiri hills and collects several other small streams such as Ketengajhora Nala before entering into the Dheer beel situated in the southern foothills of the sanctuary. A perennial spring called sikri-sikla dwisa is also located in this southern part of the sanctuary. Dheer beel, an International Bird Area (IBA), is a large water body with a total area of over 750 ha. Its southern part is connected to the Brahmaputra river and thus it acts as a storage area as well as an outlet for excess water during the monsoon period. Another water body called Diplai beel has an area of over 375 ha and lies in the western part of the sanctuary. Both are important habitat for migratory birds, indigenous fishes and other aquatic flora and fauna as well. In the south there are other perennial and seasonal springs such as Mansem jhora, Daduri jhora, Bamuni jhora, Bor Jhora, Howhowi Jhora and Sindur jhora that drain into the Sati river. This river enters the Dakra beel that lies at a distance of 2.5 km in Dhubri district. During the monsoon season numerous water falls are visible that pleases the eye with their scenic beauty.
VI. Wildlife and habitat

The sanctuary was particularly designated for the conservation of golden langur (*Trachypithecus geei*), an endemic primate found only in western Assam. More than 500 golden langurs have been reported from the sanctuary area (Ghosh, 2009). Besides this, 34 mammalian species, 273 species of birds, 26 species of herpetofauna and 60 species of fishes have been recorded. The vegetation in Chakrashila comprises 107 species of plants including 11 species of epiphytes, 27 species of ferns, 58 species of herbs, 18 species of under shrubs, 42 species of shrubs, 34 species of small trees and 58 species of trees (Datta *et al.*, 1998).

(a) Wild animals

Both vertebrate and invertebrate taxa have been reported from this protected area. A total of 154 species of butterflies belonging to six families during the period of May-October in 2008 have been reported (Ghosh, 2009). Nymphalidae family was found to be dominated in the region followed by Pieridae, Lycanidae, Hesperidae and Papillionidae. Among the butterflies, the Danaid eggfly (*Hypolimnas misippus*) is enlisted in the Schedule –I according to IWPA, 1972.

Asian waterfowl censuses are being conducted in Dhir and Diplai beel in recent years. A total of 3955 birds in Dhir and 1111 in Diplai were recorded during 2006 (Singha *et al.*, 2007). A total of 62 species of birds belonging to 17 families were recorded from Dhir beel and Anatidae family has the highest representation with 13 species, followed by Scolopacidae with 8 species.
Among the primates, 66 troops of golden langur (*Trachypithecus geei*) and 27 troupes of rhesus macaque (*Macaca mulatta*) were recorded in 2008-2009 (Ghosh, 2009). Initially the population of golden langur showed an increase as compared to the previous count (Biswas *et al.*, 2002) where a total of 200 individuals were recorded in Chakrashila wildlife sanctuary and Nayekgaon PRF. Both species are sympatric, although langurs tend to prefer the interior of the forest. Sometimes, concentration of primates is more near water bodies and villages. Because of its high endemicity and restricted numbers, it has been listed under the Schedule-I of the Wildlife Protection Act,1972; Appendix-I of the CITES; and in ‘Endangered’ category of IUCN Red Data Book because of a serious decline in its population, estimating fewer than 2500 mature individuals. There is a continuous decline in the number of mature individuals and no subpopulation contains more than 250 mature individuals (Das *et al.*, 2008). There is a rescue record of slow loris in the sanctuary, although now they are not seen. Presence of leopards with cubs has been reported from a fringe village of Chakrashila. Smaller cats including Jungle cat (*Felis chaus*) and Leopard cat (*Felis bengalensis*) occur in good numbers. Barking deer is very common. Chinese pangolin, wild boar and Malayan giant squirrel have also been recorded.

VII. Bio-Geographical Classification

According to the biogeographical classification, Chakrashila wildlife sanctuary comes under 9A: Northeast Brahmaputra Valley province (Rodgers *et al.*, 2002). The entire forest is dominated by Sal (*Shorea robusta*) mixed with some evergreen species. Patches of bamboo, cane and grasses also occur in the valley and flat plains. More than 80% of the
protected area is covered with natural vegetation. The creation of plantations started from 1958-1959 and only the teak (*Tectona grandis*) plant was introduced. Vegetation and under growths are thick near the water sources. As per Champion and Seth (1968), the forest type of Chakrashila can be broadly classified into four categories:

a. Assam valley Semi-Evergreen forest;
b. Northern Secondary Moist Mixed Deciduous forest;
c. Moist Plains Sal forest; and
d. *Barringtonia* Swamp forest

**IX. Communication**

No metalled road exists within the sanctuary. Because of the hilly terrain and lack of any settlement within the protected area, there is no sign to develop such an infrastructure. Forest tracts occur inside the sanctuary; however they are limited to the fringe areas. Some of the non-metalled forest tracts that have been maintained by the Forest Department by jungle clearing and sand-gravel laying include: Choraikhola camp to Siljan-Khakrikhola and hilltop; Mauriagaon camp to Mauriagaon watchtower and hilltop; Mauriagaon camp to Sikri-Sila dwisa; Anujuli camp to hilltop; Chakrashila camp to Tintilla camp; Tintilla camp to Kaljani camp; Chakrashila camp to Jornagra; Jornagra camp to Hilltop; Jornagra to Howhowi Jhora; Abhayakuti check gate to Hilltop; Harighola village to Hilltop; and Bhalukjhora camp to Harinaguri camp. The most important road is the Kokrajhar-Bahalpur Road on the eastern boundary and the
Kokrajhar-Salkocha Road on the western boundary of the sanctuary. Most of these are maintained by the PWD department of BTAD.

**X. Communities in fringe villages**

More than forty five villages are located in the vicinity of the sanctuary. Consequently, the inhabitants of these villages are dependent to varying extent on the forest for their subsistence, especially for their supply of fuelwood. The sanctuary is located at the boundary of Bodoland Territorial Area Districts (Kokrajhar district) and Dhubri (Non-BTAD) districts of Assam. Consequently, there is a drastic change in the ethnic composition as one proceeds from the northern to the southern fringes of the sanctuary. The northern and north western villages are mostly dominated by Bodo followed by Garo tribes, while the eastern part is dominated by Adivasis. The southern part is mostly occupied by Rabha and Muslims. There is also a significant population of Rajbongshi, Assamese and Nepali communities residing in some villages in this area. These communities have influenced the developments in this forested area in their unique ways. For example, Jornagra, a small Rabha village had pioneered the movement to protect the forest of Chakrashila that was finally instrumental in getting the area declared as a protected area. In terms of economic development, this part of Assam is one of the most backward areas with a large number of families living below the poverty line. All the villages have revenue land for agriculture, and majority of the villages are also working as woodcutters and occasional laborers.