

CHAPTER - VI

NATURAL VEGETATION OF THE STUDY AREA

Forest conservancy in Bengal dates back to 1864 when Mr. T. Anderson, M.D., was appointed temporary Conservator of Forests, in addition to his duty as Superintendent of the Botanical Gardens in Calcutta and Mr. Mann (who was in charge of Cinchona Cultivation in Darjeeling) as Assistant Conservator of Forests. The first Division to be formed was the Sikkim Division which comprised the area surrounding the station of Darjeeling. During 1864-65 the first nursery was established near Darjeeling with the aid of British troops and local labour, and the first plantations were formed in 1868 a teak plantation at Damanpokhri in the Terai, and a plantation of hill species near Darjeeling. The earliest reservation was that notified in January 1866 in the Bengal Gazette constituting certain lands Reserved Forests and framing certain Forest Rules.

Composition and Distribution of Vegetation

Since 1879 most of the forest blocks in the districts of Darjeeling and Jalpaiguri in the north and in the tidal flats of the 24 Parganas in the south were declared as Reserved or Protected Forests, only minor additions having been made after that date.

The present position of the forests of the State is as follows :

The forest areas of the State are

	Sq. miles
Reserved Forest	2,673.00
Protected Forests	1.27
Private Forests	1,508.00
Unclassed State	15.00
Total	<hr/> 4,197.27 <hr/>

This is 13.63 per cent of the total area of West Bengal (30,775 sq. miles). In view of (a) the northern mountainous region, cut up by a number of rivers and streams which swell enormously in the monsoon, and (b) the undulating lateritic tracts of the south-western districts where the soil is subject to severe erosion, this forest cover is hopelessly inadequate even as a protection against natural forces. Compared to the population (24,810,308) the area of forest is only about a ninth of an acre per capita.

The unsatisfactory position will be more clearly apparent when the distribution of the forests is considered. 1,630 square miles of reserved forest in the south occur on the tidal flats of the Ganges-Brahmaputra delta. Both the growth and the density of stocking of this mangrove vegetation are very poor, especially in the more saline areas in the west that have been allotted to the Indian Union. Of the remaining 1,041.6 square miles (in the northern region), 27 per cent (284 square miles) is either inaccessible or has to be retained for protective purposes. Much of the 1,400 odd square miles of private forests are on poor lateritic soils and are far from being in a good state of preservation because of unrestricted fellings in the past, though there has been a definite improvement in their condition since the exercise of control on their working after the promulgation of the Private Forests Act in 1945.

The improvidence with which the more accessible forests have been destroyed has given rise to a situation where the majority of agriculturists are unable to obtain their requirements of firewood, timber and other forest produce within reasonable reach. Timber for industrial purposes has also to be transported over uneconomical distances.

Natural vegetation of the West Bengal Plain can be grouped into several classes according to distribution, growth and expanse (about 9,00,000 hectares).

The regional distribution of forests in the State is extremely uneven. Six districts of West Bengal do not have any forest cover. The

following forest belts in the State may be distinguished: (i) Coniferous forests in the districts of Darjeeling and Jalpaiguri in the Himalayan region, at different elevations. (ii) West ever-green forests in the sub-montane and comparatively plain tracts of Jalpaiguri, Darjeeling and Cooch Behar where rainfall exceeds 80" annually. (iii) Wet deciduous forests in the southern parts of Jalpaiguri, Cooch Behar and Dinajpur and the western districts of the State. (iv) Mangrove forests in the district of 24 Parganas

The mangrove and tidal forests in the Sundarbans and humid tropical forests in the extreme north of the region are the only preserves of natural vegetation while the western fringe is covered by tropical deciduous forests mostly in the induced form.

At different altitudes in the Darjeeling Himalayas different types of vegetation occur which have been studied by J.D. Hooker¹ and other authorities. The principal trees found according to them at different elevations in the Darjeeling district include the following: (i) Firs (*abies Wabbiana*), different varieties of rhododendron, juniper, polly, red-current bushes, cherry, pear or paper tree, creeping raspberry, *Hypericum*, balsam, lichens, etc. They are found at elevations between 12,000 to 10,000 feet above sea level. (ii) Oak, chestnut, magnolia, arboreous rhododendron, *michelia* or champa. Olive, fig, laurel, maple, lily, white rose, etc., occur at a height of from 10,000 to 9,000 feet. (iii) Magnolia, maple, rhododendron, oak, laurel, *simplocus*, *vivernum* and *vaccinium* among others are found at a height of 9,000 to 8,000 feet. (iv) Peach, oak, chestnut, maple, alder, olive, walnut, birch, magnolia, raspberry, strawberry and *hypericum* among others are seen at elevations of 8,000 to 6,500 feet. (v) Alder, oak, maple birch, acacia, *terminalia*, *cryptomaria japonica*, cherry, olive, alder, pear, pepper, etc., are found at altitudes of 6,500 to 4,000 feet. (vi) Sal, tun, bombax or cotton tree., banyan, fig, orange, peach, pine, banana, lemon, wormwood, etc. occur at elevations of 4,000 to 1,000 feet. (vii) Different kinds of figs, dates, bamboos, wild mulberry, orchids, fern, ginger and many types of grasses are found from 1,000 feet down to the plains. Sal, sisu, and chilauni are found in the plains of Siliguri.

In the districts of Jalpaiguri and Cooch Behar as well the vegetation changes according to altitude. On sandy and gravelly soils to the west of the Bhagirathi, occurs sal (*Shorea robusta*). Teak or segun is not found in abundance. The tropical evergreen forests (167,000 hectares) are concentrated in Duar regions. Deciduous and scrub vegetation covers greater part (299,000 hectares) of the western regions of the Lower Ganga Plain in Midnapore, Bankura, Burdwan and Birbhum. Scattered and isolated patches are also visible in Howrah and Hooghly districts of the Delta Proper. In the tropical evergreen forest the natural vegetation comprises of gurjun; the tropical moist deciduous forests comprise of sal, and tropical dry deciduous forests, teak, shisham, bamboo, etc.

In the south the two most important types are the tidal forests of the Ganges-Brahmaputra delta (Type 3b/1S-1) and the dry sal forests of Midnapore, Bankura, Birbhum, etc. (Type 4b-C2). The importance of these forests lies in their extensiveness rather than in the value of individual trees and in their relative proximity to well developed regions of the State. The tidal forests are made up of goran (*Cerriops roxburghiana*), gewa (*Excoecaria agallocha*), stunted sundri (*heritiera minor*), baen (*Avicennia officinalis*), dhundal (*Carapa obovata*), etc. The privately owned dry sal forests have been mostly kept as coppiced fuel jungle in which also occur fire-resisting species like peasal (*Pterocarpus marsupium*), kendu (*Diospyros melanoxylon*), mahua (*Bassia latifolia*), *Terminalia tomentosa*, *T. Belerica*, *Butea frondosa*, etc.

A curious forest type is the *Barringtonia* swamp (3b/1S-4 of Champion) which occurs on large areas in the Malda district.

Forests and Economic Life of the People

In relation to the population, the forests resources are indeed modest. At least 25 per cent of the total geographical area of the State has to be brought under forests in order that forests may help in the economic rehabilitation of the State. The State and heavily wooded areas even at the end of the nineteenth century in Darjeeling, Jalpaiguri, Duars, Cooch Behar, Dinajpur, Malda, Birbhum, Burdwan, Midnapore and 24 Parganas.

The only low-level pine in the eastern Himalayas (where the climate is very much moister than in the western Himalayas) is *Pinus longifolia* which occurs in one small forest at Badamtam (Darjeeling district) in mixture with sal, being an intrusion from Sikkim where this mixture is to be found on dry southern slopes from 1,000 feet to 3,000 feet elevation.

Extension of ten plantations in Darjeeling and Jalpaiguri necessitated the denudation of forests. Destruction of forests accelerated soil erosion, and silting of rivers. Deforestation is considered as one of the contributory causes of floods in North Bengal rivers. Extension of frontiers of cultivation in wide areas in Dinajpur, Malda, Murshidabad, Hooghly, Howrah, Birbhum, Burdwan, Bankura and Midnapore also necessitated the destruction of forests. Deforestation resulted in the loss of sub-soil water and lowering of the water table. Water supply for drinking and irrigation has thus been affected adversely. Besides, pasture facilities have been denied to very large areas due to deforestation.

Forest Products

Timber: Among the important types of timber are the *Acacia arabica* (babul), *Anthocephalus cadamba* (Kadam), *Artocarpus chaplasha* (Chaplash), *Betula alnoides* (Indian birch), *Bombax malabaricum* (Semul), *Castanopsis hystrix* (Indian chestnut), *Cedrela toona* (Tun), *Cedrus deodar*, *Canarium strictum* (dhup), *Dalbergia sissoo* (Sissoo), *Gmelina arborea* (Gamari), *Herilliera fomes* (Sundry), *Lagerstroemia flos-regina* (Jarul), *Picea morinda* (Spruce), *Shorea robusta* (Sal), *Tectonia grandis* (Teak), for railway sleepers, household furniture, constructional, and agricultural purposes timber is obtained, though not in good abundance, from the forests of West Bengal. Various types of timber available in the Sundarbans deserve special mention. They include the Balai, Bhalia, Bhara Bonjam, Chaila Dabur, Damal, Jhau, Khalsi, Pancheoli, Singra, etc., for firewood, Dal Karamcha for charcoal and Garan, Geoa, Hental, Kankra, Karai, Keora, Kirpa, Loha Kaera, etc., are used for building purposes. Sundri and Pasur are used for planks and house-posta. The coconut plam, the Indian palm and the areca palm are highly useful for house building and bridge-making. The sundari trees (Sundarbans)

provide base for the indigenous woodworks as well as large scale forest-based industries including paper mills.

The fruit trees, mainly mang, jack and the jam (Blackberry), occur over wide areas and particularly in the district of Dinajpur Malda, Murshidabad, 24 Parganas, and Hooghly.

The forests of West Bengal are well-managed. New forest areas have to be developed in the State for its economic rehabilitation. A deliberate policy has to be pursued for afforestation in the State. The eroding and marginal lands in the Darjeeling Himalayas, the reclaimed lands in the tidal forests should be kept for afforestation. Sal, teak and other commercially valuable trees may be grown alongside the roadways in the plains and foothills in the state. It may sometimes be more economic to exchange the industrial products of the State for food crops from other States instead of augmenting areas under food crops. A systematic land utilisation survey of the State has yet to be made for selection of lands to the profitable uses to which they can be put.

Another 10 per cent of the area of the State has to be brought under forests for soil conservation, increasing agricultural productivity and sustaining the forest-based industries both large and small-scale.