

1. THE WESTERN GHATS IN THE STATE OF KARNATAKA

1.1 Introduction

Karnataka in many ways epitomises the diversity of India. Karnataka State was formed in 1956 by the merger of Kannada speaking areas of the Bombay and Madras provinces, the princely State of Hyderabad, the whole of Mysore State and the centrally administered State of Kodagu (Coorg). Covering a land area of some 190,000 square kilometres, it is an important state in Southern India with the city of Bangalore as capital. It has a coastline of 400 kms and a seaboard, 10 to 80 km wide, which has had trade links with the outside world for more than a thousand years. Next to the coast a continuous mountain range, 30 to 80 kms in width, rises to a height of 1,800 meters, declining gently to the east to a plateau some 100 m. above sea level. While in the west the rain is in summer in the north east it is in winter. Agumbe in the mountain belt receives over 7,500mm rain, and there are places in the north east parts with less than 250mm. While we have the Tropical Wet Evergreen forests in the mountain range, we also have, in parts around Bellary, arid conditions, similar to desert.

1.2 Geology and Topography

Along the river banks, in holy places in India, steps are formed to facilitate bathing. These are known as 'ghats'. The mountain belt, known in Indian epics as Sahyadri, running parallel to the West coast of India over a length of 1,600 kms. (1,000 miles) is called the Western Ghats, in allusion to the step formation in the northern half. This has resulted from differential erosion of the layers of lava and ash. In Kannada, the local language, the Western Ghat belt is known as Malnad or mountain region.

The geology of the Karnataka Western Ghats is Pre-Cambrian, among the oldest in India. Rocks are gneiss with intrusions of granite. The soil is generally lateritic, hardening on exposure, a factor of considerable significance relative to land use practices.

The forests occupy the interior tracts of the coastal plain, the foot of the ghats and the mountain range, which rises as a wall, with quite often vertical slopes. East of the crest the gradient becomes less steep and the topography undulating with locally small areas of steep terrain.

1.3 Climate

The climate is typical of the tropics with heavy rain received during a short period of the year when the temperature is also high, resulting in humid conditions. A few strong pre-monsoon showers in April and May accompanied by thunder and lightening precede the regular monsoon. The monsoon lasts barely for 15 weeks, during which period more than 90% of the annual rain is received (Ministry of Works and Housing 1982). This is the feature in the entire area, varying only in degree of intensity. By and large, the minimum temperature does not fall below 12°C and the maximum may reach even 45°C at the canopy level (Rai 1990). Rainfall decreases rapidly away from the coast due a rain shadow effect in parts falling from 7500 mm to 750 mm in 50 kms.

1.4 Forests and Vegetation

Within an area of 20,000 sq kms. there are four main forest types and twelve sub-types as classified by Champion and Seth (Tiwari 1993). The main types are:

- a. Southern Tropical Wet Evergreen Forest
- b. Southern Tropical Semi-Evergreen Forest
- c. Tropical Moist Deciduous Forest
- d. Tropical Dry Deciduous Forest

In addition to the sub-types, there are distinct degradation stages and stages of serial succession providing a bewildering biodiversity.

The importance of biodiversity for the future of mankind cannot be overstressed. The survival and well being of a large fraction of today's human population depends crucially on a number of antibiotics and anti-cancer drugs provided by obscure plants and animals. Yet in harnessing their benefits, we have only made a beginning. No more than 2% of the flowering plants have been screened for useful alkaloids (Chandrashekar undated).

Of the 13,000 species of higher plants recorded in India, about 27% or 3,500 species occur in the Western Ghats. Many more species will become known when a systematic survey is undertaken. There are 58 endemic genera mostly confined to the Western Ghats (Abraham 1984). These forests are centres of progenitors or relatives of many cultivated plants e.g. rice, banana, turmeric, pepper, cinnamon and cardamom. It is a centre of genetic diversity for orchids (Chauhan 1993). It is the home of mango with over 100 identified varieties in the wild (Reddy 1993). The value of drugs obtained from, herbs and plants in the Western Ghats is put at Rs800 million per annum (MWH op cit).

1.5 Wildlife

The Western Ghat region is extremely rich in wildlife. The area is the home of the Asian elephant whose migratory movements cover the Dry Deciduous and Moist Deciduous forests, with infrequent forages into the Semi-Evergreen and Evergreen Forests. Bison (Bos gaurus) and Sambhar (Cervus unicolor) have a similar range while Spotted Deer (Cervus) is confined to the Deciduous Forests. The companions of Spotted Deer, in lesser numbers are the Barking deer (Mutiacus muntjac) and Mouse deer (Tragulus meminna). Tiger, considered to be at the apex of the wild life community, occurs in reasonable numbers in the Deciduous Forests while Panther is present in larger numbers. Hyena and Jackal frequent the outer limits of the forests and Wild Dogs, though in lesser numbers, are encountered in the entire region. Jungle Fowl are common in the wetter areas and Pea Fowl prefer the drier parts.

1.6 Water Resources

The Western Ghats gain elevation rapidly in the west presenting a high escarpment almost parallel to the coast. This causes the heavy moisture laden monsoon winds to part with a major share of their moisture on the western slopes of the ghats. The areas east of the crest receive significantly less rain and are rain shadowed. There are therefore a large number of west flowing rivers with short courses while the east flowing rivers, are fewer in number. The major irrigation projects in Karnataka, Andhra and Tamil Nadu depend on the catchment areas of the ghats.

The swift flowing western rivers, which lose height of around 1,300 to 1,500m. in a short distance before joining the sea have very high power generation potential. The installed capacity of hydel projects in the State at present is 2310 MW (Rudrappa 1993).

1.7 Agriculture and Horticulture

The zone with its characteristic features of high erodability of exposed lands and poor moisture retentive capacity is not ideal for agriculture. Despite this a quarter of the land area is under the plough. Irrigation is available in barely 125,000 ha. The major agricultural crops are paddy rice, ragi (a coarse millet), horsegram, and groundnut (Agriculture Finance Corporation 1992).

In the sphere of horticulture, arecanut from palm trees is important in the northern districts while coffee is important in the south. Amongst the States in India, Karnataka leads in production of coffee and areca and second in cardamom and pepper, all cultivated in the Western Ghats (Agriculture Finance Corporation 1992).

Coffee was introduced in the Western Ghats in 1670. (Buchanan - Hamilton, 1807). The cultivation of coffee, in estates, was encouraged by the British beginning in 1870. In the old Mysore parts of Western Ghats, Government land suitable for coffee was classified separately and made available through grants for its cultivation. In Kodagu, land was freely made available for the purposes of coffee cultivation from community privilege areas (Someswar 1991).

1.8 Land Tenure

Individual Privilege Areas

Individual privilege areas are forests outside reserve forest and attached to agricultural land or horticulture gardens for benefiting cultivated crops, mainly for providing mulch. Grants of forests were liberally made in the past for privilege purpose. In Uttara Kannada district, the privilege area for areca was up to eight times the extent under areca. In Kodagu areas up to 300 acres were allocated. Privilege areas are found in all parts of the State in the Western Ghat belt and are known by a variety of names such as 'betta'. The very purpose for which the privilege is granted, for lopping, guarantees degradation of trees and forest cover in these areas.

Community Privilege Areas

Prior to reservation of forest, the land belonged to the Revenue Department. Hence, the Forest Settlement Officer who conducted the reservation, was from the Revenue Department. At the time of reservation, an essential criterion investigated by the Forest Settlement Officer was the extent of forest land available outside the reservation areas (Cleghorn 1861, Stebbing 1921). These lands are intended to meet the local needs of small timber, firewood and fodder. Community privilege areas in the malnad belt were equal in extent to the reserved blocks (Shyam Sunder and Parameshwarappa 1987). The Royal Commission on Agriculture in India (1928) had suggested that there should be two divisions within the Forest Department. The first for managing protection forest, preservation of which is desirable on climatic or physical grounds and also commercial forests. The second for managing minor forests, fuel plantations, village woodlands and such areas classified as waste land or unclassed forest. This indicates the extent of the second category of land with tree cover during the period.

1.9 Contribution of the Western Ghat Forests to the People

The importance of the forests in the Western Ghats to society at large has been aptly described as follows:

"The Ghats influence to a great extent the climate of the plains and possess the resources of water power and above all the restorative hopes to the ecological upsets of the plains. Until and unless adequate measures for development without destruction, for a balanced utilisation and conservation of the environment are ensured in these hills, most of the present problems of the plains will remain unsolved affecting the economy of the entire area adversely" (MWH op cit).

In rural India firewood is the most common source of fuel, used as a nonmonetised item; as a result 90% of all wood grown ends up as fire wood. As stall feeding is uncommon, cattle depend on public lands for fodder. In hill regions the use of mulch collected from the forests has been integrated into agriculture and horticulture systems. In the Western Ghats, forests have provided these requirements since the days of settled agriculture. The pressing question now is can this be sustained.

It was the considerations of ecological and environmental benefits which accrue from forests, and which extend far beyond the immediate forest zone, that resulted in the National Forest Policy of 1952 (Ministry of Food and Agriculture 1952). It was noted that: "The accident of a village being situated close to a forest does not prejudice the right of the country as a whole to receive the benefits of a national asset While therefore the needs of the local population must be met to a reasonable extent, national interests should not be sacrificed because they are not directly discernible nor should the rights and interests of future generations be subordinated to the improvidence of the present generation."

The latest policy statement of the Ministry of Environment and Forests in 1988 while not disputing the importance of forest from ecological and environmental points of view, has stressed that rights and concessions enjoyed by people living within and near forests should be fully protected. Their domestic requirements of fuelwood, fodder, minor forest produce and construction timber should be the first charge on forest produce. In other words, the significance of forests for the well being of the country as a whole does not take priority over resource use for the local population (Shyam Sunder 1992).

This appears to be more from an understanding of the situation on the ground rather than from an ecological or environmental perspective. Much has changed between 1952 and 1988. As indicated earlier, reservation had excluded a considerable extent of the original forest, to meet the rural needs (Brandis 1897).



A.1 The forested slopes of the Western Ghat hills in Karnataka



A.2 The major rivers of all southern India rise in the forests of the Western Ghats