Chapter 2

AREA OF STUDY

The area of present study is Kerala state, a narrow strip of land situated on the south-west corner of the Indian Peninsula which is bounded on the north by Karnataka, south by Tamil Nadu, east by the Western Ghats and west by the Arabian Sea. Kerala lies between latitudes 8° 04’ and 12° 44” N and longitudes 74° 54’ and 77° 12’ E. One of the smallest Indian states, Kerala extends to a maximum of 550 km between Kaliyikavila in the south and Manjeswaram (Kasargod) in the north, with a mean breadth of 70 km, narrowing towards both ends to about 12 km and widening at the central part to 121 km. The state has a total area of 38,863 km² which is about 1.8 % of the total geographical area of India. The state of Kerala is now divided into 14 administrative districts with Alappuzha the smallest district without highland and with a network of rivers and back waters and Palakkad, the largest district with low altitude paddy field to high altitude Western Ghats hills (Map. 1).

2.1. Geology and Soil

Kerala forms a part of the continental fragment of the earth’s surface which is stratigraphically different from the extrapeninsular Indian region. The mountains and the surface relief are considered to be relic in nature and are not formed by uplift. The entire area is geologically divisible into 4 minor belts, (1) a coastal belts of recent deposits, (2) a narrow belt of Pleistocene or late Tertiary, (3) another narrow belt of Laterite and (4) a high mountain belt in the midlands and mountainous zones formed from Precambrian-archean chrystalline hard rock’s consisting of granites, schists, gneisses, quarts etc.

The soil of Kerala is broadly classified as upland soils developed from bedrocks and lowland soils developed from the alluvial materials brought from the uplands. The upland soils are relatively shallow, poor and rocky while those of the lowlands are deep, fertile and fine textured. The soils in Kerala are generally

2.2. **Topography**

Based on physiography the state is divided into 3 natural zones, viz., lowlands or coastal zones (theera bhoomi) bordering the sea coast below 300 m, midlands (idanadu) comprising the undulating low hills and valleys east of the lowlands between 300 and 600 m and highlands (malanadu) on the extreme east covered by dense forest above 600 m. The lowlands are again divided into plains between 30 and 300 m and the coastal zone below 30 m

2.3. **Climate**

Kerala enjoys a warm-humid tropical climate with very little variation in temperature. Meteorologists recognize 4 seasons in Kerala viz., summer from March-May followed by the SW. monsoon which continues till the end of Sep and Oct. and November form the post monsoon (autumn). The NE. monsoon follows and extends up to the end of February with less rain after December. This coincides with the winter. With the environment now having been degraded there is always an overlapping in the seasons and hence the 6 seasons of earlier days cannot be clearly demarcated now as in the past.

The maximum mean daily temperature in the coastal region is $32^\circ$ C (April-May) and minimum is $22^\circ$ C (December-January). The maximum temperature may rise up to $42^\circ$ C in some areas in the plains. The minimum temperature also drops to $7^\circ$ C in the hills varying slightly with altitude. The hilly regions enjoy a cool and pleasant climate.

The state receives a maximum rainfall during the south west monsoon from June–Sept. However, it is less in the south (up to 250 cm). Idukki and Wayanad districts receive the highest rainfall (over 380 cm). During the north east monsoon
the situation reverses and south receives more rains. The average annual rainfall in the state varies from 101.6 to 362 cm.

The atmosphere is highly humid particularly during the South West monsoon. The relative humidity decreases during December–April. It varies from 70-90%.

Wind is light to moderate with some additional force during the South West monsoon. It is stronger in the afternoons from January–May. In the mornings the wind blows between northeast and southwest during October–March and in the afternoons, it is west to northwest. Directions of the wind is primarily westwards or northwestwards throughout the day during the monsoon.

2.4. Vegetation

i. Vegetation of the lowlands and coastal zones

This zone is very vast with a low relief of 4-6 m above the present day sea level. The 2 major characteristic types of vegetation of the coastal zones are strand and estuarine vegetation. Strand vegetation is characterized by open mat-forming pioneers in varying proportions followed by herbs, shrubs and trees distributed on a relief beyond the high tide limit. Estuarine vegetation is characterized by the presence of dense woody plants including succulent herbs and shrubs in varying proportions distributed on a coastal relief under the constant influence of tidal and fresh water resources. The typical estuarine vegetation does not on the coast of Kerala. The estuarine vegetation along back waters of Kerala coast is classified as prohaline, euhaline and tidal mangroves.

ii. Vegetation of the Midlands

Exclusively under laterite cover, the midlands are mostly under cultivation of different crops like coconut, areca nut, cashew, rice, tapioca, pepper, cocoa etc. Owing to population pressure, the midlands have lost their original features, but there still remain in some areas few patches of forest which are the remnants of
moist deciduous and evergreen forest of the past. The midlands have a number of sacred groves establishing the fact that the entire state was once covered by forest

iii. Vegetation of the Highands

The vegetation of the highlands is essentially that of the Southern Western Ghats. It is one of the most common and diverse type find in India. Champion & Seth (1968) classified the forests of India into 6 major types with several subdivision and several variations. The forests of Kerala, according to this classification fall under 4 major categories viz., (1) moist tropical forest, (2) dry tropical forest, (3) moist subtropical forest and (4) montane temperate forest with 24 subdivisions. Chandrasekharan (1962, 1973) classified the Kerala forests into 5 major categories. (1) Tropical wet evergreen forest with 3 climax forest types viz., (a). low level evergreen forest, (b). high level evergreen forest and (c.) ‘low’ tropical ghat forest and 7 secondary forest types viz., (a). semievergreen forest, (b). secondary evergreen forest, (c). moist deciduous forest, (d). open deciduous forest, (e). wet bamboo (reed) brakes, (f). moist bamboo brakes and (g). low level grasslands and 6 edaphic forest types such as (a). myristica swamps, (b). tropical valley fresh water swamps, (c). tropical riverine forest, (d). cane brakes, (e). Xylia mixed forest and (f). laterite scrubs. (2) Tropical deciduous forest with 2 climax forms as Wayanad plateau deciduous forest and moist mixed deciduous forest (3) Tropical dry deciduous forest having only climax and secondary forest types. The climax types are tropical dry deciduous and mixed dry deciduous forest with sandal trees. (4) Montane subtropical forest having only one climax forest i.e. Subtropical wet hill forest and (5) Montane temperate forest with one climax type viz., wet temperate forest and one secondary forest viz., high level (montane) grasslands. According to a recent estimate (Sharma, 2003), the state has 3299 km² of tropical wet evergreen and semievergreen forests, 4100 km² of moist deciduous forests, 100 km² of tropical dry deciduous forests, 70 km² of montane subtropical and temperate
forests, 132 km$^2$ of grasslands and 1701 km$^2$ of plantations, (The geographical, climatic and vegetation details presented here are based on Daniel, 2005).

Owing to its characteristic location in the southwest corner of the peninsula with the Southern western Ghats as its eastern boundary, Kerala enjoys a humid tropical climate endowed with plentiful rainfall. Besides, the varied topography ranging from flat coastal belt to high altitude mighty mountains together provide a congenial environment for the thriving of a very complex and diverse vegetation which makes Kerala a ‘Gods own country’ and one of the floristically rich states in India.