CHAPTER II

STUDY AREA = VANGOJADELS FORESTS

Geography and Population:

District LakhsmiNaras is one of the Eastern districts of Gujarat State (Fig. 1). It is located between 20° 31' and 23° 30' N latitudes and 73° 15' and 74° 30' E longitudes. It shares its boundary with Madhya Pradesh in the East and with Rajasthan in the North, whereas, rest of its boundary is shared by Sabarkantha, Saurashtra and Baroda districts in the State. Having Godhra as the district headquarter, at present the total area of the district measuring 8066 sq.km. is divided into two subdivisions and 11 talukas. Its population as recorded in 1971 census is 1,845,604.

Physiography:

The terrain of the district exhibits three major geomorphic units: (1) undulating hilly track, (2) piedmont zone and (3) western plain. The hilly tract in the eastern region, constitutes rolling hills intervened by valleys with longitudinal steep sloped ridges with elevations varying between 213.36 and 406.76 meters. The piedmont zone runs all along the western periphery of hilly zone. It comprises loosely compacted, weathered material and slopes gently.
towards plain. The western plain is a flat country with few hillocks and cut by rivers. The highest hillock of the area, Pavagadh hill (329.36 meters) is also in this plain near Halol (Fig. 2). Its base and lower slopes are thick covered with rather stunted timber. The Ratarmal hill situated in Lakhdada taluka forms another site of attraction. Being well wooded and having rich wildlife, the early princely rulers used to visit this site for camping and hunting. The district is rich in water resource as it is drained by seven main rivers, viz., Nahi, Cema, Kun, Pemon, Kerad, Kali and Sachri. Nahi and Pemon are perennial rivers, whereas the others are of ephemeral nature.

**Geology:**

The Panchmahal district is known for a variety of mineral resources such as limestone, calcite, felspar, graphite, mica, quartz, manganese, clay, building stone etc. The distribution and occurrence of these minerals are not uniform. A major portion of the district in the central and northern parts is covered by metasediments representing an extension of the main Arvalli group of rocks in Rajasthan. The southern part exhibits formations called the Champaner series (Gujarat, 1971). These metasedimentary groups of rocks are often separated by intrusive granites.
Climate:

The district on the basis of distinct humidity and precipitation conditions experiences a three season climatic pattern. An intensive precipitation phase during June through September is recognised as monsoon. This is followed by a phase of lower temperature from October through January and finally the temperature rises and the atmosphere becomes drier. These phases of lower and higher temperatures are recognized as winter and summer. While the average rain fall for the district is 1000 m.m., the annual temperature varies from 44° to 115° F.

Forest:

According to the 1971 census, Panchmahals has 223,378 ha under forests. This amounts to 25.9 % of the total area of the district. According to forest classification 213,790 ha is reserved forest, 392 ha is protected forest, 2576 ha is unclassed forest and 7620 ha is private forest. Even a casual visitor to the district, however, fails to find this much forest area. One reason would be the legal definition which says: "Area under forests include lands classed as forests under any legal enactment dealing with forests whether state owned or private or whether real wooded or maintained as potential forest land."

Since the ecological conditions in various parts of
the district vary greatly, the following locations were
randomly selected for the present investigation (Fig. 2). It
is hoped that this will provide a fair and comprehensive
picture of the total forest.


The characteristic, topographic and vegetational
features of the above-mentioned locations are briefly narrated
as under:

1. Chaewada: Located in Santarupur Taluka, terrain undulating
with some hillocks, teak dominating vegetation. *Holarrhena
antidysenterica* and *Diospyros melanoxylon* constitute other
important species in this region. (Figs. 3 and 4).

2. Kadana: Near Kadana dam the terrain is mostly hilly and
covered by shrub community mainly of *Nyctanthes arbor-tristis.*
The occurrence of *Teak* although less abundant yet
is evident. (Figs. 5 and 6).

3. Panam Dam: This site is located between two hills stretched
parallel from east to west. Its rocky surface is covered
with scanty vegetation and the area is frequently visited by
local population. The major floristic elements include
*Teak* and *Holarrhena antidysenterica.* (Figs. 7 and 8).
4. Shivrajpur: Located at a distance of 5 K.M. from Lunawada, the site at Shivrajpur is covered with small patch of forest. The floristic elements are represented by *Tectona grandis*, *Pterocarpus monoarmon* and *Dioppyros melanocylon* (Fig. 9).

5. Belwa: In a portion of undulating terrain near Shehra, this region still indicates preserved premature denser teak forest. The forest floor however is partly rocky in nature (Fig. 10).

6. Ashnala: Near Godhra, away from easily approachable roads, this site is also in a form of undulating terrain of hard rocks here and there. The site is covered with a mature forest stand dominated by teak plantation (Fig. 11).

7. Pavagadh: This is major hillock. Being a seat of religious temple of Mahakali, there is a constant flow of people from remote places of the Gujarat State and some parts of the country. Constructed for roads and cart tracks offer facilities for frequent transportation. As a result, most of the forest has been degraded to shrub site. Among the tree species *Knightia tinctoria* and *Tectona grandis* are observed scattered (Fig. 12).

8. Narukot: In the near bounds of the princely State of Jambughoda, Narukot provides with an example of a well protected forest. It is located in the valley amidst the cliffs on the hills. The characteristic flora comprises *La crenulata* and *Sootoaa fraxinifolia*, with tracks offering facilities for frequent transportation. Most
of the forest is dense and offer sizable amount of wood. (Fig. 13, 14)

9. Betarri: This is a remote site from district headquarters Sadrana and beyond Dev Sadh Baria. Being a plateau on the top of the hill across the river is hardly visited by intruders. Its black soil is fertile and supports dense plant community. *Terminalia orenulata* is a predominantly occurring species. Betarri forest and its neighboring counterpart in the State of Madhya Pradesh is known for its wildlife viz., bears and panthers. (Figs. 15 and 16).

10. Dengwai: Located on the slope, this site provides with a mixed type of vegetation. The floristic elements comprise *Tectona grandis*, *Holarrhena antidysenterica* and *Nyctanthes arbor-tristis*. (Fig. 17)

11. Chhayam: Towards the interstate border with Rajasthan about 30 kilometers from Dohad, the site at Chhayam is hilly terrain. The forest comprising *Tectona grandis*, *Holarrhena antidysenterica* and *Terminalia orenulata* presents a mixed vegetational pattern in natural areas. There are also several plantations. (Fig. 18)

12. Chakaila: It is located very close to Chhayam and exhibits more or less similar physiographic and vegetational features. (Fig. 19)
Fig. 1

Map of Gujarat State showing Panchmahals District
FIG 2

Map of Ranchmahala District showing selected locations.
Fig. 3  **Tectona grandis** dominating forest with *Holarrhena antidysenterica* and grass as undergrowth - a patch where grazing is not possible at Ghana. 

Fig. 4  **Tectona grandis** and *Holarrhena antidysenterica* forming dense forest near Ghana.

Fig. 5. Typical shrubby forest dominated by *Kystanthes arbor-tristis* with stray Teak sapling at Kadana.

Fig. 6. Distant view of shrubby land at Kadana.
Fig. 7 *Ficus grandis* along with *Helopsphora antidysenterica* in sapling stage at Penam Dam.

Fig. 8 Forest view at Penam Dam.

Fig. 9 Shivrajpur forest view during its leafless period. The big tree seen is *Leuca comendelica*.

Fig. 10 Premature forest dominated by *Ficus grandis* at Dalwada.
Fig. 11 *Tectona grandis* trees with *Pterocarpus* forming a community at Ashhala. It is comparatively mature stand.

Fig. 12 Pictorial view of much damaged Pavagadh forest.

Fig. 13 Mature and heterogeneous forest at Narukot.
Fig. 14 Forest view at Narukot where selected research plot begins.

Fig. 15 Peculiar *Terminalia grenulata* forest on Batamal plateau during its leafless period.

Fig. 16 Rare *Dendrocalamus strictus* (Bamboo) seen on the edge of Batamal plateau.
Fig. 17  Dangaria forest having *Festuca grandis*, *Holarrhena antidysenterica* and *Ficus tinctoria* as major constituents with a big tree of *Madhuca indica* showing white board.

Fig. 18  A premature *Festuca grandis* in planted stand near Chhayan research plot.

Fig. 19  Chakalia forest with *Festuca grandis* and *Holarrhena antidysenterica* as main elements.