CHAPTER V - CONCLUSION AND DISCUSSION

5.1 The Problem

Biodiversity is the totality of genes, species, and ecosystems in a region. The wealth of life on the Earth today is the product of millions of years of evolutionary history. With the passage of time, human cultures have emerged and adapted to the local environment. These socio-economic refinements in turn have discovered, used/utilised, and altered local biotic resources. Many areas that appear to be 'natural' in fact bear the marks of a million years of human habitation, crop cultivation, and resource harvesting. The domestication and breeding of local varieties of crops and livestock have further shaped biodiversity.

The Earth's plants, animals, and microorganisms interacting with one another and with the physical environment in ecosystems form the foundation of sustainable development. Biotic resources from this wealth of life support human livelihood and make it possible to adapt to the changing needs and environments. The steady erosion of the diversity of genes, species, and ecosystems taking place today will undermine progress toward sustainable society. Indeed, the continuing loss of biodiversity is a telling measure of the imbalance between human needs and wants and nature's capacity (**Peter** 1992). Thus in order to preserve the existing biodiversity a number of conservation measures and strategies are to be adopted. Moreover there should be an inclination towards discovering unexplored areas in the context of India.

Taking into account all the above stated determinants the aim of the present studies has been justified **in making a comparative critique of the existing plant species in the Dangs with the plant species documented by Suryanarayana (1968).** The studies have been made in order to record the shifts and the changes in the plant species occurrence in the last four decades. In order to study these variations the various sites of Dangs were regularly visited every fortnight over the period of three years.

A great deal of meticulateness has been observed in recording the phenological studies and extreme caution has been borne in the identification of even the minor variations in the plant species. These studies have been made with the postulation that in the last four decades the forest vegetation has been eroded in its immense range of ecosystems viz., the forest and the wetlands, owing to the proliferation of human activities. It was thus hypothesized that habitat destruction, overexploitation, pollution, and the introduction of the exotic species might have caused a shift in the floristic composition of the Dang region.

5.2. The Floristic catalogue: a comparative analysis

In the present work a total of 1276 taxa (1266 species and 10 varieties) belonging to 710 genera and 154 families of angiosperm have been collected from Dangs. Of these dicots represented by 895 species belonging to 522 genera and 116 families while monocots represented by 371 species belonging to 188 genera and 38 families. Of the 1266 species 362 are cultivated species.

The Monocotyledons apart from Poaceae and Cyperaceae, have been poorly represented, where as Fabaceae and Asteraceae are the largest families among the Dicotyledons. 75 families are represented by a single genus while 55 families represented by a single species.

Out of the total 1276 species of flowering plants of Dangs, 136 species (10.65 %) are climbers, 74 species (5.79 %) are shrubs, 237 species (18.57 %) are trees and 829 species (64.96 %) are herbs. (Appendix 1). This study shows that herbaceous plants (ephemeral plants) are dominating the forest and their surroundings. This is probably owing to the tropical dry conditions and erratic rainfall.

In the present investigations Fabaceae has been observed as the dominant family, which in turn is followed by Poaceae and Asteraceae.

With reference to earlier studies there is an addition of 363 species of which maximum addition of 40 species is from Fabaceae family while 13 species from Poaceae and Euphorbiaceae, 10 species from Orchidaceae and 9 species from Rubiaceae, 6 species from Asteraceae and Acanthaceae are reported as addition. Most of these species are indigenous to the region.

Seven wild plant species not reported earlier from Gujarat are recorded from the first time from the Dangs are as follows:

1.	*Adelocaryum coelestinum* (Lindl.) Brand Syn. *Paracaryum coelestinum* (Lindl.) C.B.Clarke	Boraginaceae
2.	*Dendrolobium umbellatum* (L.) Benth. Syn. *Desmodium umbellatum* (L.) DC.	Fabaceae
3.	*Erythrina stricta* Roxb.	Fabaceae
4.	*Geissaspis tenella* Benth.	Fabaceae
5.	*Geodorum densiflorum* (Lam.) Schltr.	Orchidaceae

6.	*Lamprachaenium microcephalum* Benth.	Asteraceae
7.	*Limnophila racemosa* Benth.	Scrophulariacee

Some of the important findings of the study are:

- 51 Plant species reported earlier from Dangs by Suryanarayana (1968), Shah and Suryanarayna (1969) and Shah (1978) could not be relocated in the present studies.
- 5 endemic genera of Angiosperm recorded from Dangs.
- 33 plant species are having restricted distribution to Saputara- Malegaon region only probably due to high moisture content and high altitude. Most of these plant species have been collected from the steep slopes of Saputara at higher altitude. *Boehmeria scabrela*, Nicandra physilodes, Bridelia squamosa, Dendrobium species are few rare plant species with restricted distribution. Details of other species has been depicted inTable no. 4.5 (Chapter IV).
- Of the 1276 plant species collected from Dangs, 197 plant species are of exotic origin. Lantana camara species is one such species which has become aggressive and has invased various part of the forest. Harming the indigenous vegetation.
- 33 wild plants were used as food plants by tribal people of Dangs. Most of these species are underground tubers. Especially Dioscorea sps. Are used in various ways by the tribals.
- Though cultivation is not a major profession of the tribals of Dangs. However, 7 Cereals, 10 Pulses, 7 Oil yielding, 10 Fruits, 9 Spices, 18 Vegetables, 1 sugar, 1 fiber and 1 masticatory plant are cultivated plants in Dangs.

Threat to the biodiversity of Dangs could be owing to heavy rainfall by which the fallen seeds, insects, microorganisms get washed away with wate. Heavy rainfall also lead to formation of gully and heavy soil erosin. Among the anthropological activity fuel wood collection is the major threat to biodiversity of Dangs. Most of people depends on fuel wood as the district has 94 % are tribal population. People depends on fuel wood from the forest area as the Dang has 77.69 % forest cover (FSI, 2011). Fuel wood collection result in degradation of forest and natural habitat. Direct cutting results in the falling of trees and loss of the shed barrier for the upcoming seedlings.

Shifting cultivation is practiced by many farmers in Dangs, where local people are allowed to use the forest land surrounding the village according to tribal act, 2006. These resulted in loss of the 3% forest area from 2009 to 2011 aasessment (FSI, 2011).

Grazing results in stampeding young saplings or by peeling off the bark of young trees. The forest has been exploited especially for timber for household purposes. Thus illicit cutting is practiced mainly for two purposes (I) Building and repairs of their own house (II)Selling the wood/fuelwood in nearby townships through train and other transport system.

Non timber forest products are continuously gathered from the forest. Different organs are used for medicine, fuel, fodder, forage, fruits, vegetables, gums etc. This basically includes roots, tubers, bulbs, (under ground organs), bark and wood, stems, leaves, fruits, seeds and flowers. The collection methods are by and large destructive. In case of small herbs normally whole herbs are collected, dried and used as medicines. In case of climbers, shrubs and trees, one of the organs is used. Roots, tubers, bulbs and seeds are vital organs. Therefore, as and when vital organs are used, the further reproduction survival by progeny is discontinued. Gradually the species disappears. In case of gums and exudates the bark is ruthlessly chopped off. In such cases either the tree dies of ringing or by a secondary infection. *Sterculia urens, Terminalia crenulata, Pterocarpus marsupium, Bombax ceiba, Garuga pinnata* meet with such a fate.

One more point that needs attention is the collection of material in a large quantity than the actual need of a tribal. Collection primarily includes wood collection for agricultural implement, house repairs or material for thatching the house or the medicine to treat their ills. Since the user collects himself, just guided by the human nature, and also the fact that one does not have to pay for it, one collects generously, more than the actual need. Leftover is a waste. It has to be efficiently managed in a way that there is equilibrium in the input and output usage of the resources.

Detail vegetation of the area is given including forest types. However, for the better understanding of the vegetation pattern, it is described under the following heads: (A) Forest vegetation, (B) Ruderal vegetation, (C) Riperian vegetation, (D) Aquatic vegetation, (E) Vegetation of cultivated fields, and (F) Epiphytes and parasitic vegetation.

Vegetation of the area surrounding Ahwa, Saputara, Subir, Mahal differes in vegetation composition. At Ahwa and Subir *Tectona grandis* and *Terminalia crenulata* are predominant while at Saputara *Terminalia chebula, Sapium insigne, Lagerstroemia parvifolia* also observed along with *Tectona grandis* and *Terminalia crenulata.* While at Mahal bamboos are predominant.

The present study has resulted in collection of maximum plant diversity from single district of Gujarat for the first time. Further detailed study may results in addition to the present knowledge of floristic diversity of Dangs. The addition in Dangs will still continue owing to its humid climatic condition and has the human interventions which is rapidly increasing in the region owing to the growing tourism.The impact is already seen in Saputara where in on side we still have number of unexplored species and on the hand many of these sites are slowly and gradually getting converted into Concrete Jungle.