3. Floristic analysis

3.1. Statistical synopsis

Detailed studies conducted from 1972-1980, at and around Surat, have yielded a huge collection of 884 angiospermic plants spread over 527 genera and 138 families. Out of a total number of 884 species, 687 are dicotyledons, spread over 411 genera and 113 families. They form the major part of the vegetation and constitute 78% of the plants present in the area. Monocotyledons are 197, representing 22% of the total species, which are distributed in 116 genera of 25 families. Ratio of genera to species for the entire area is 1 : 1.67, in contrast to 1 : 7 of the Flora of British India (Hooker, 1907). It confirms that, the smaller the area, the smaller is the genera species ratio within the same floral region. The ratio of monocots to dicots are 1 : 4.5 of families, 1 : 3.5 genera and 1 : 3.48 of species. The proportional relationship of dicots and monocots is given in the Table V.

Out of 687 species of dicotyledons, 335 belong to Polypetalae, 254 to gamopetalae and 98 to Apetalae.

Except for the Poaceae and the Cyperaceae, the monocotyledons are poorly represented. Of the 197 species of monocots, 122 belong to the Poaceae and Cyperaceae and the remaining 75, to 23 families. Orchidaceae, the most dominant family of the Indian Flora (Hooker, 1907) is represented by only two species, which are naturalized in moist localities. The five dominant families of

TABLE - V.

Showing the proportional relationship of Dicotyledons and Monocotyledons.

Groups	Families		Genera		Species	
	No.	%	No.	%	No.	%
Dicots	113	81.9	411	77.99	687	77.72
Monocots	25	18.1	116	22.01	197	22.28
Total	138	100.0	527	100.00	884	100.00

monocotyledons are the Poaceae, the Cyperaceae, the Arecaceae, the Commelinaceae and the Liliaceae. The Arecaceae is ranked third in monocotyledonous taxa, because most of its members are cultivated in various gardens. Out of 197 species of monocots, 56 are cultivated and 29 are noted as aquatics.

3.2. Dominance of the families

As regards the number of species, the Poaceae occupy the first position (Graph 2) with 79 species, followed by the Fabaceae (76), the Cyperaceae (43), the Euphorbiaceae (37), the Asteraceae (35), the Malvaceae (30), the Caesalpiniaceae (30), the Convolvulaceae (30), the Acanthaceae (22), the Scrophulariaceae (20), the Amaranthaceae (20), the Cucurbitaceae (18) and the Verbenaceae (16). When the species of Fabaceae, Caesalpiniaceae and Mimosaceae are taken together, the Leguminosae, occupy the first position. Table VI presents a comparative list of the ten dominant families with those of adjoining regions and urban centre like Delhi.

There are 11 families in which the number of species is more than 20. They are the first 10 dominant families as shown in the Table VI, constitute 43.5% of the total taxa occurring in this area.

There are 9 families, having the number of species between 10 to 19 and they represent 14.5% of the total plants. There are 21 families, having the species between 5 and 9, which constitute

GRAPH-2
COMPARATIVE DOMINANCE OF 10 MAJOR FAMILIES
NUMBER OF GENERA & SPECIES
0
10
20
30
40
50
60
70
80
POACEAE
FABACEAE
CYPERACEAE
EUPHORBIACEAE
ASTERACEAE
MALVACEAE
CAESALPINIACEAE
CONVOLVULACEAE
ACANTHACEAE
SCROPHULARIACEAE
GENERA
SPECIES

TABLE - VI

Ten dominant families of Surat and adjoining regions.
(Fabaceae, Caesalpiniaceae and Mimosaceae are included under Leguminosae).

Sr. No.	Surat and environs (Present Work)	Gujarat (Shah, 1980)	Bombay Presidency (Cooke, 1901-1908)	Delhi (Maheshwari, 1963)
1.	Leguminosae	Leguminosae	Leguminosae	Poaceae
2.	Poaceae	Poaceae	Poaceae	Leguminosae
3.	Cyperaceae	Cyperaceae	Asteraceae	Asteraceae
4.	Asteraceae	Asteraceae	Euphorbiaceae	Cyperaceae
5.	Euphorbiaceae	Acanthaceae	Acanthaceae	Acanthaceae
6.	Malvaceae	Euphorbiaceae	Orchidaceae	Euphorbiaceae
7.	Convolvulaceae	Malvaceae	Scrophulariaceae	Convolvulaceae
8.	Acanthaceae	Convolvulaceae	Lamiaceae	Malvaceae
9.	Scrophulariaceae	Lamiaceae	Convolvulaceae	Amaranthaceae
10.	Amaranthaceae	Scrophulariaceae	Urticaceae	Scrophulariaceae

16.3% of the total number of plants, represented in the area.

There are 64 mono-generic families, of which 55 belong to dicots and rest to monocots. This may probably be the reason, for having 138 total families of this area. The monogeneric families constitute 46.37% of the total number of the families present in the area.

The genera, which have 10 or more than 10 species are : Cyperus (21 species), Cassia (17 species), Ipomoea (16 species), Euphorbia (13 species), Fimbristylis (10 species) and Eragrostis (10 species).

Fifteen genera have the species between 5 and 9. They are Hibiscus (9 species), Indigofera (9 species), Alysicarpus (8 species), Ficus (8 species), Crotalaria (7 species), Solanum (6 species), Scirpus (6 species), Sida (6 species). Tephrosia, Heliotropium, Blumea, Vigna, Amaranthus and Leucas having 5 species each.

Because of urbanisation, more than 300 plants being introduced in cultivation for various reasons, both aesthetic and practical.

There are about 165 trees, of these 57 are meso-phanerophytes (i.e. 8-30 meters high) and rest are nanophanerophytes - reaching the height of 8 meters. There is not a single species of tall tree - megaphanerophytes (more than 30 meters high). There are 23 families represented by the tree species only.

Table VI indicates a close similarity between the floras of two urban centres viz. Surat and Delhi. All the first ten families are alike, although there is slight variations in their ranks.

3.3. Noteworthy plants

The following plants are not included in Cooke's Flora of the Presidency of Bombay.

Tephrosia jamnagarensis Sant.

Melilotus alba Medic.

Turnera ulmifolia Linn.

Acanthospermum hispidum DC.

Parthenium hysterophorus L.

Merremia quinquefolia (L.) Hall f.

Convolvulus deserti Hochst ex Steud.

Ipomoea triloba L.

Rivinia humilis L.

Aerva javanica (Burm. f.) ex Sch. var. bovei Webb.

Amaranthus dubius Mart. ex Thell.

Gomphrena celosioides Mart.

Alternanthera ficoidea (L.) R. Br. ex R. & S.

Alternanthera paronychioides St. Hill

Alternanthera pungens H. B. & K.

Euphorbia prostrata Ait.

Euphorbia perbracteata Gage.

Cyperus rectangularis (Kue.) Bennet

Fimbristylis sieberiana Kunth.

Lipocarpha chinensis (Osb.) Kern.

Rhynchospora glauca Vahl.

Chloris quinquesetica Bhide

Chloris virgata SW.

Eragrostis nigra Nees

Setaria pallide-fusca (Schum.) Stapf & Hubb.

Sporobolus virginicus (L.) Kunth.

The following plants are not mentioned in Shah's (1980) 'Flora of Gujarat State'.

Acanthus ilicifolius L.

Aerva javanica (Burm. f.) Juss. ex Sch. var. bovei Webb.

Amaranthus dubius Mart. ex Thell.

Convolvulus deserti Hochst ex Steud.

Cuscuta chinensis var. ciliaris Engelm.

Cyperus pulcherrimus Willd.

Lipocarpha chinensis (Osb.) Kern.

Eriocaulon cinereum R. Br.

Eragrostis nigra Nees

It is my very humble claim that the data presented in the thesis are of value being first hand and reliable and will, to a great extent, solve the problem of the students of Botany at post-graduate and under-graduate level of South Gujarat University. If they find it useful for their day-to-day work, my efforts, I feel, will be amply rewarded.