

The flora of Bhopal, its analysis and reassessment

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Abstract

The present paper deals with the floristic analysis of the Oommachan's, "The Flora of Bhopal (Angiosperms)" published in 1977. It is a very useful treatise on the subject and has filled the lacuna of systematic studies in the field of floristics (Confined exclusively to Angiosperms) of this area. According to him there are 121 families of dicots incorporating 436 genera and 688 species, whereas the number of families, genera and species of monocots is 27, 108 and 148 respectively. Among dicots herbs dominate with 45.24% species followed by trees (22.89%), shrubs (13.93%), climbers (11.86%) and undershrubs (6.06%). Likewise among monocots 78.94% of the species are herbaceous followed by trees (8.55%), shrubs (6.57%), climbers (5.26%) and undershrubs (0.65%).

He has also recorded 39 species of exotic plants which are included in the above statistics. He has reported both wild and ornamental /cultivated plants. Among the dicots 46 out of 119 families exclusively comprise of ornamental/cultivated plants *i.e.* 38.65% families and do not represent wild plants. In monocots only one family *i.e.* Pandanaceae has 100% cultivated status followed by Araceae with 50% wild plants and rest ornamentals.

Since the publication of the said flora a number of developmental activities have taken place, resulting in the vanishing of the preexisting species from some sites and addition of new species, both indigenous and exotic.

Bhopal the capital city of Madhya Pradesh is situated in the heart of the country. Because of its strategic location and moderate climatic conditions, it harbours a rich floristic composition, especially the angiosperms. The area of the city and its suburbs have witnessed indiscriminate and merciless felling of trees, a process which still continues for the sake of industrialization, urbanization, widening of roads and agricultural pursuits.

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It used to be an unexplored area about six decades before but, Prof. Oommachan working at M.V.M., Bhopal undertook this Herculean task and was able to bring out 'The Flora of Bhopal, (Angiosperms)' which is based on his doctoral work.

Since then, as said earlier a number of changes have been witnessed because of biotic influences. A number of species which used to occur abundantly, are now very scarce, such as *Cassia tora*, *C. obtusifolia*, *Anisochilus carnosus*, *Fumaria parviflora*, *Spergula arvensis*, *Saponaria vaccaria* and some grasses also, such as *Hygrorrhiza aristata*, sedges such as *Kylinga monocephala* and *Cyperus kysoor* etc. The number of several trees has declined. These include *Buchanania lanzan*, *Terminalia chebula*, *Zizyphus xylopyra*, *Anogeissus latifolia* and *Ougeinia Oogeinensis* etc.

The present paper deals with the statistical analysis of the Flora of Bhopal as it was published for the first time in 1977. Most of the matter has been presented in tabular form for the sake of brevity and to have a glimpse

of the floristic scenario presented in the Flora of Bhopal¹⁸. Table-1 gives an idea about the total number of genera, species and families of dicots and monocots in the flora of Bhopal¹⁸. The values given in the parentheses indicate the actual number of families, genera and species. The exotics as recorded by Oommachan¹⁸ are presented in table-2. In table-3 the number of ornamental/cultivated species in each family has been recorded. In table-4 total no. of genera and species as well as the habits of plants in each family has been recorded. Additional species, which Dr. Oommachan couldnt come across have been presented in table-5.

Since the publication of the Flora of Bhopal¹⁸ a number of developmental activities have been witnessed both in the city as well as in the suburban areas and in the neighbouring districts. Oommachan¹⁸ has reported plants not only from Bhopal, but from Sehore, Raisen, Delawari, Obaidullah ganj, Sanchi, Deewanganj and from a number of adjoining areas. Most of the vegetation has been affected by housing activities and expansion of industrial areas. These activities have resulted in the loss of

Table-1. No. of genera and species in Oommachan's Flora of Bhopal (1977) and after its reassessment

Group	Families	Genera	Species
Dicots	121 (119)	436 (453)	688 (725)
Monocots	27 (27)	108 (107)	148 (152)
Total	148 (146)	544 (560)	836 (877)

Note :- The figures in parentheses indicate the actual number of taxa.

Table-2. Exotics of Bhopal
(Oommachan, 1977)

S.No.	Name of the species	Nativity
1.	<i>Nigella sativa</i> L.	Mediterranean region & West Asia
2.	<i>Michelia champaca</i> L.	Java
3.	<i>Annona squamosa</i> L.	West Indies
4.	<i>Artabotrys uncinatus</i> (Lam.) Merr.	Java & Southern China
5.	<i>Argemone mexicana</i> L.	Mexico
6.	<i>Papaver somniferum</i> L. (Opium poppy)	W. Asia
7.	<i>Brassica oleracea</i> Var. <i>botrytis</i> L. (Cauliflower)	Western Europe
8.	<i>Coronopus didymus</i> (L.) sm	Tropical America
9.	<i>Raphanus sativus</i> L.	China & Japan
10.	<i>Dianthus chinensis</i> L.	China
11.	<i>Portulaca grandiflora</i> Hook.	Brazil
12.	<i>Abelmoschus esculentus</i> (L.) Moench	S. Africa
13.	<i>Althaea rosea</i> Cav.	Crete & Greece
14.	<i>Hibiscus rosa-sinensis</i> L.	China
15.	<i>Malvaviscus konzattii</i> Green	South America
16.	<i>Adansonia digitata</i> L.	Sub Saharan Africa
17.	<i>Bombax insigne</i> Wall.	Burma
18.	<i>Chorisia speciosa</i> St. Hil	Brazil & South America
19.	<i>Eriodendron pentandrum</i> Kurz.	S. America, West Indies
20.	<i>Dombeya cayeuxii</i> Hort.	Tropical Africa
21.	<i>Kleinhovia hospita</i> L.	Moluccas
22.	<i>Pterocarpus marsupium</i> Willd.	Chittagong, Burma
23.	<i>Grewia asiatica</i> L.	East Tropical Africa
24.	<i>Galphimia gracilis</i> Bartl.	Mexico
25.	<i>Oxalis latifolia</i> H.B & K.	Mexico
26.	<i>Melia azedarach</i> L.	Baluchistan and Persia

27.	<i>Swietenia mahagoni</i> Jacq	Central America & W. Indies
28.	<i>Litchi chinensis</i> Sonner	China
29.	<i>Sapindus mukorossi</i> Gaertn	China & Japan
30.	<i>Anacardium occidentale</i> L.	Tropical America
31.	<i>Arachis hypogaea</i> L.	South America, Philippines
32.	<i>Cajanus cajan</i> (L.) Nillsp.	Tropical Africa
33.	<i>Crotolaria juncea</i> L.	Australia, Malay Islands
34.	<i>Gliricidia maculata</i> H.B.K.	Tropical South America & W. Indies
35.	<i>Glycine max</i> (L.) Merr.	Cochin China, Japan & Java
36.	<i>Lathyrus aphaca</i> L.	Europe
37.	<i>Medicago sativa</i> L.	W. Temperate Asia
38.	<i>Trifolium alexandrinum</i> L.	Egypt & Syria
39.	<i>Vicia sativa</i> L.	Europe

Table-3. Showing number of ornamental/cultivated species in the flora of Bhopal (Oommachan, 1977)

S.No.	Family	Total no. of species	No. of ornamental/cultivated specas	Percentage
1.	Ranunculaceae	03	03	100
2.	Dilleniaceae	01	01	100
3.	Magnoliaceae	01	01	100
4.	Annonaceae	05	04	80
5.	Menispermaceae	03	01	33.3%
6.	Nymphaeaceae	01	01	100
7.	Nelumbonaceae	01	01	100
8.	Papaveraceae	03	02	66.6
9.	Fumariaceae	01	00	0.0%
10.	Brassicaceae	11	08	
11.	Cleomaceae	04	00	0.0%
12.	Capparidaceae	03	01	33.3
13.	Violaceae	01	01	100.0
14.	Cochlospermaceae	01	00	0.0
15.	Flacourtiaceae	01	00	0.0
16.	Polygalaceae	02	00	0.0

17.	Caryophyllaceae	08	02	25.0
18.	Portulacaceae	04	02	50.0
19.	Etainaceae	02	00	00
20.	Malvaceae	22	09	
21.	Bombacaceae	05	05	100.0
22.	Sterculiaceae	06	03	50.0
23.	Tiliaceae	10	01	10.0
24.	Linaceae	01	01	100.0
25.	Malpighiaceae	02	02	100.0
26.	Zygophyllaceae	01	00	0.0
27.	Averrhoaceae	01	01	100.0
28.	Oxalidaceae	04	00	0.0
29.	Tropaeolaceae	01	01	100.0
30.	Balsaminaceae	01	01	100.0
31.	Geraniaceae	01	00	0.0
32.	Rutaceae	08	08	100.0
33.	Simaroubaceae	02	00	00.0
34.	Burseraceae	02	00	0.0
35.	Meliaceae	04	03	75.0
36.	Celastraceae	03	00	0.0
37.	Rhamnaceae	05	01	20.0
38.	Vitidaceae	04	01	25.0
39.	Leeaceae	01	01	100.0
40.	Sapindaceae	06	05	
41.	Anacardiaceae	05	02	400
42.	Moringaceae	01	01	100.0
43.	Papilionaceae	65	20	
44.	Caesalpiniaceae	21	14	66.6
45.	Mimosaceae	16	10	
46.	Rosaceae	07	06	
47.	Crassulaceae	02	02	100.0
48.	Droseraceae	01	00	0.0
49.	Haloragidaceae	01	00	0.0
50.	Combretaceae	09	03	33.3
51.	Myrtaceae	07	07	100.0
52.	Barringtoniaceae	01	00	0.0
53.	Melastomataceae	01	00	0.0
54.	Lythraceae	09	03	33.3

55.	Punicaceae	01	01	100.0
56.	Onagraceae	02	02	0.0
57.	Trapaceae	01	01	100.0
58.	Turneraceae	01	01	100.0
59.	Passifloraceae	01	01	0.0
60.	Caricaceae	01	01	100.0
61.	Cucurbitaceae	14	12	
62.	Begoniaceae	01	01	100.00
63.	Cactaceae	05	05	100.0
64.	Molluginaceae	03	00	0.0
65.	Aizoaceae	01	00	0.0
66.	Apiaceae	07	06	
67.	Alangiaceae	01	00	00
68.	Naucleaceae	02	02	100.0
69.	Rubiaceae	15	07	
70.	Asteraceae	63	14	
71.	Lobeliaceae	01	00	00
72.	Campanulaceae	01	00	0.0
73.	Plumbaginaceae	02	01	50.0
74.	Primulaceae	01	00	100.0
75.	Theophrastaceae	01	01	100.0
76.	Sapotaceae	04	04	100.00
77.	Ebenaceae	01	00	0.0
78.	Nyctanthaceae	01	01	100.0
79.	Oleaceae	07	07	100.0
80.	Apocynaceae	12	07	
81.	Periplocaceae	03	01	33.3
82.	Asclepiadaceae	05	01	20.0
83.	Buddlejaceae	01	01	100.0
84.	Spigeliaceae	01	00	0.0
85.	Gentianaceae	05	00	0.0
86.	Menyanthaceae	02	00	0.0
87.	Polemoniaceae	01	01	100.0
88.	Heliotropiaceae	05	00	0.0
89.	Ehretiaceae	06	03	50.0
90.	Convolvulaceae	17	06	
91.	Cuscutaceae	02	00	00
92.	Solanaceae	14	08	

93.	Scrophulariaceae	22	05	
94.	Orobanchaceae	01	00	0.0
95.	Lentibulariaceae	03	00	0.0
96.	Bignoniaceae	11	11	100.0
97.	Pedaliaceae	01	01	100.0
98.	Martyniaceae	01	00	0.0
99.	Thunbergiaceae	03	03	100.0
100.	Acanthaceae	29	07	
101.	Verbenaceae	21	13	
102.	Labiatae (Lamiaceae)	21	07	33.3
103.	Nyctaginaceae	06	04	
104.	Amaranthaceae	18	03	00
105.	Chenopodiaceae	05	05	100.00
106.	Basellaceae	01	01	100.00
107.	Polygonaceae	05	02	40.00
108.	Podostemaceae	02	00	00.00
109.	Aristolochiaceae	02	02	100%
110.	Proteaceae	01	01	100%
111.	Loranthaceae	02	00	0.0%
112.	Santalaceae	01	01	100%
113.	Euphorbiaceae	40	17	
114.	Ulmaceae	01	00	0.0%
115.	Urticaceae	04	02	50%
116.	Moraceae	14	11	
117.	Casuarinaceae	01	01	100%
118.	Salicaceae	01	01	100%
119.	Ceratophyllaceae	01	00	0.0%
120.	Hydrocharitaceae	04	00	0.0%
121.	Orchidaceae	03	00	0.0%
122.	Zingiberaceae	05	04	80.0%
123.	Cannaceae	03	02	
124.	Musaceae	01	01	100.0%
125.	Strelitziaceae	01	01	100%
126.	Hypoxidaceae	01	00	0.0%
127.	Amaryllidaceae	03	03	100.00
128.	Agavaceae	07	07	100.0
129.	Dioscoreaceae	05	04	80.0
130.	Liliaceae	09	05	

131.	Ruscaceae	01	01	100%
132.	Smilacaceae	02	01	50.00
133.	Pontederiaceae	01	00	0.0
134.	Commelinaceae	11	02	
135.	Arecaceae	08	07	
136.	Pandanaceae	01	01	100.00
137.	Typhaceae	01	00	0.0
138.	Araceae	04	02	50%
139.	Lemnaceae	03	00	0.0
140.	Alismataceae	01	00	0.0
141.	Najadaceae	03	00	0.0
142.	Aponogetonaceae	01	00	00
143.	Potamogetonaceae	05	00	00
144.	Eriocaulaceae	01	00	0.0
145.	Cyperaceae	14	00	0.0
146.	Poaceae	53	09	

Table-4. Statistical analysis of various plant habits in the Flora of Bhopal
(Oommachan, 1977)

S. No.	Family	Number of							
		Genera	Species	Herbs	Under shrubs	Shrubs	Climbers	Trees	Total
1.	Ranunculaceae	03	03	02	-	-	01	-	03
2.	Dilleniaceae	01	01	-	-	-	-	01	01
3.	Magnoliaceae	01	01	-	-	-	-	01	01
4.	Annonaceae	04	05	-	-	01	-	04	05
5.	Menispermaceae	03	03	-	-	-	03	-	03
6.	Nymphaeaceae	01	01	01	-	-	-	-	01
7.	Nelumbonaceae	01	01	01	-	-	-	-	01
8.	Papaveraceae	02	03	02	01	-	-	-	03
9.	Fumariaceae	01	01	01	-	-	-	-	01
10.	Brassicaceae	06	11	11	-	-	-	-	11
11.	Cleomaceae	01	04	04	-	-	-	-	04
12.	Capparidaceae	02	03	-	-	01	01	01	03
13.	Violaceae	01	01	01	-	-	-	-	01
14.	Cochlospermaceae	01	01	-	-	-	-	01	01
15.	Flacourtiaceae	01	01	-	-	-	-	01	01
16.	Polygalaceae	01	02	02	-	-	-	-	02
17.	Caryophyllaceae	06	08	08	-	-	-	-	08

18.	Portulacaceae	01	04	04	-	-	-	-	04
19.	Elatinaceae	01	02	02	-	-	-	-	02
20.	Malvaceae	11	22	05	07	08	-	02	22
21.	Bombacaceae	04	05	-	-	-	-	05	05
22.	Sterculiaceae	06	06	-	01	02	0	03	06
23.	Tiliaceae	03	10	02	4	01	-	03	10
24.	Linaceae	01	01	01	-	-	-	-	01
25.	Malpighiaceae	02	02	-	-	01	01	-	02
26.	Zygophyllaceae	01	01	01	-	-	-	-	01
27.	Averrhoaceae	01	01	-	-	-	-	01	01
28.	Oxalidaceae	02	04	04	-	-	-	-	04
29.	Tropaeolaceae	01	01	01	-	-	-	-	01
30.	Balsaminaceae	01	01	01	-	-	-	-	01
31.	Geraniaceae	01	01	01	-	-	-	-	01
32.	Rutaceae	05	08	-	-	02	-	06	08
33.	Simaroubaceae	02	02	-	-	01	-	01	02
34.	Burseraceae	02	02	-	-	-	-	02	02
35.	Meliaceae	04	04	-	-	-	-	04	04
36.	Celastraceae	03	03	-	-	01	01	01	03
37.	Rhamnaceae	02	05	-	-	02	01	02	05
38.	Vitidaceae	02	04	-	-	-	04	-	04
39.	Leeaceae	01	01	-	-	01	-	-	01
40.	Sapindaceae	06	06	-	-	01	01	04	06
41.	Anacardiaceae	05	05	-	-	-	-	05	05
42.	Moringaceae	01	01	-	-	-	-	01	01
43.	Papilionaceae	35	65	42	-	02	12	09	65
44.	Caesalpinaceae	09	21	04	02	01	-	14	21
45.	Mimosaceae	08	16	-	01	-	01	14	16
46.	Rosaceae	03	07	01	-	01	-	05	07
47.	Crassulaceae	01	02	-	02	-	-	-	02
48.	Droseraceae	01	01	01	-	-	-	-	01
49.	Haloragidaceae	01	01	01	-	-	-	-	01
50.	Combretaceae	04	09	-	-	-	2	07	09
51.	Myrtaceae	05	07	-	-	-	-	07	07
52.	Barringtoniaceae	01	01	-	-	-	-	01	01
53.	Melastomataceae	01	01	-	-	01	-	-	01
54.	Lythraceae	05	09	04	-	02	-	03	09
55.	Punicaceae	01	01	-	-	-	-	01	01
56.	Onagraceae	01	02	02	-	-	-	-	02
57.	Trapaceae	01	01	01	-	-	-	-	01

58.	Turneraceae	01	01	-	-	01	-	-	01
59.	Passifloraceae	01	01	-	-	-	01	-	01
60.	Caricaceae	01	01	-	-	-	-	01	01
61.	Cucurbitaceae	10	17	-	-	-	17	-	17
62.	Begoniaceae	01	01	01	-	-	-	-	01
63.	Cactaceae	02	05	-	-	05	-	-	05
64.	Molluginaceae	02	03	03	-	-	-	-	03
65.	Aizoaceae (Ficoidaceae)	01	01	01	-	-	-	-	01
66.	Apiaceae (Umbelliferae)	07	07	07	-	-	-	-	07
67.	Alangiaceae (Cornaceae)	01	01	-	-	-	-	01	01
68.	Naucleaceae	02	02	-	-	-	-	02	02
69.	Rubiaceae	11	15	06	01	05	-	03	15
70.	Asteraceae	46	63	60	02	01	-	-	63
71.	Lobeliaceae	01	01	01	-	-	-	-	01
72.	Campanulaceae	01	01	01	-	-	-	-	01
73.	Plumbaginaceae	01	02	-	-	02	-	-	02
74.	Primulaceae	01	01	01	-	-	-	-	01
75.	Theophrastaceae	01	01	-	-	01	-	-	01
76.	Sapotaceae	03	04	-	-	-	-	04	04
77.	Ebenaceae	01	01	-	-	-	-	01	01
78.	Oleaceae	01	07	-	-	03	04	-	07
79.	Nyctanthaceae	01	01	-	-	-	-	01	01
80.	Apocynaceae	07	12	01	01	04	03	03	12
81.	Periplocaceae	03	03	-	-	-	03	-	03
82.	Asclepiadaceae	04	05	-	01	01	02	01	05
83.	Buddlejaceae	01	01	-	-	01	-	-	01
84.	Spigeliaceae	01	01	01	-	-	-	-	01
85.	Gentianaceae	05	05	05	-	-	-	-	05
86.	Menyanthaceae	01	02	02	-	-	-	-	02
87.	Polemoniaceae	01	01	01	-	-	-	-	01
88.	Heliotropiaceae	03	05	05	-	-	-	-	05
89.	Ehretiaceae	03	06	01	-	-	-	05	06
90.	Convolvulaceae	07	17	01	-	01	15	-	17
91.	Cuscutaceae	01	02	-	-	-	02	-	02
92.	Solanaceae	08	14	08	02	04	-	-	14
93.	Scrophulariaceae	18	22	20	-	02	-	-	22
94.	Orobanchaceae	01	01	01	-	-	-	-	01
95.	Lentibulariaceae	01	03	03	-	-	-	-	03
96.	Bignoniaceae	10	11	-	-	02	03	06	11
97.	Pedaliaceae	01	01	01	-	-	-	-	01

98.	Martyniaceae	01	01	-	01	-	-	-	01
99.	Thunbergiaceae	01	03	-	-	01	02	-	03
100.	Acanthaceae	16	29	24	03	02	-	-	29
101.	Verbenaceae	12	21	01	02	13	01	04	21
102.	Labiatae (Lamiaceae)	13	21	14	06	01	-	-	21
103.	Nyctaginaceae	03	06	02	-	04	-	-	06
104.	Amaranthaceae	09	18	14	04	-	-	-	18
105.	Chenopodiaceae	04	05	05	-	-	-	-	05
106.	Basellaceae	01	01	-	-	-	01	-	01
107.	Polygonaceae	04	05	03	-	01	01	-	05
108.	Podostemaceae	01	02	02	-	-	-	-	02
109.	Aristolochiaceae	01	02	-	-	-	02	-	02
110.	Proteaceae	01	01	-	-	-	-	01	01
111.	Loranthaceae	02	02	-	-	02	-	-	02
112.	Santalaceae	01	01	-	-	-	-	01	01
113.	Euphorbiaceae	19	40	16	03	14	-	07	40
114.	Ulmaceae	01	01	-	-	-	-	01	01
115.	Urticaceae	02	04	04	-	-	-	-	04
116.	Moraceae	03	14	-	-	01	01	12	14
117.	Casuarinaceae	01	01	-	-	-	-	01	01
118.	Salicaceae	01	01	-	-	-	-	01	01
119.	Ceratophyllaceae	01	01	01	-	-	-	-	01
		453	725	328	44	101	86	166	725
MONOCOTYLEDONES									
120.	Hydrocharitaceae	04	04	04	-	-	-	-	04
121.	Orchidaceae	03	03	03	-	-	-	-	03
122.	Zingiberaceae	03	05	05	-	-	-	-	05
123.	Cannaceae	01	03	03	-	-	-	-	03
124.	Musaceae	01	01	01	-	-	-	-	01
125.	Strelitziaceae	01	01	-	-	-	-	01	01
126.	Hypoxidaceae	01	01	01	-	-	-	-	01
127.	Amaryllidaceae	02	03	03	-	-	-	-	03
128.	Agavaceae	03	07	-	01	05	-	01	07
129.	Dioscoreaceae	01	05	-	-	-	05	-	05
130.	Liliaceae	08	09	05	-	03	01	-	09
131.	Ruscaceae	01	01	-	-	01	-	-	01
132.	Smilacaceae	01	02	-	-	-	02	-	02
133.	Pontederiaceae	01	01	01	-	-	-	-	01
134.	Commelinaceae	06	11	11	-	-	-	-	11
135.	Arecaceae	06	08	-	-	-	-	08	08

136.	Pandanaceae	01	01	-	-	-	-	01	01
137.	Typhaceae	01	01	-	-	01	-	-	01
138.	Araceae	04	04	04	-	-	-	-	04
139.	Lemnaceae	03	03	03	-	-	-	-	03
140.	Alismataceae	01	01	01	-	-	-	-	01
141.	Najadaceae	01	03	03	-	-	-	-	03
142.	Aponogetonaceae	01	01	01	-	-	-	-	01
143.	Potamogetonaceae	01	05	05	-	-	-	-	05
144.	Eriocaulaceae	01	01	01	-	-	-	-	01
145.	Cyperaceae	08	14	14	-	-	-	-	14
146.	Graminae (Poaceae)	42	53	51	-	-	-	02	53
		107	152	120	01	10	08	13	152

Table-5. Addition to the flora of Bhopal

Family	Name of the species
Magnoliaceae	<i>Magnolia grandiflora</i> L.
Nymphaeaceae	<i>Nymphaea stellata</i> Willd.
Papaveraceae	<i>Escholtzia californica</i> Cham ex Nees
Violaceae	<i>Viola odorata</i> L.
Malvaceae	<i>Abutilon graveolens</i> Wight et Arnott.
Sterculiaceae	<i>Pterygota alata</i> (Roxb.) R.Br. <i>Sterculia foetida</i> L.
Balsaminaceae	<i>Impatiens sultanii</i> Hook. f.
Geraniaceae	<i>Pelargonium zonale</i> (L.) L. Her ex Aiton
Meliaceae	<i>Chukrasia tabularis</i> A.Juss. <i>Toona ciliata</i> M. Roem.
Papilionaceae	<i>Erythrina suberosa</i> Roxb. <i>Erythrina cristagalli</i> L. <i>Milletia ovalifolia</i> Jewls. <i>Trigonella polycerata</i> <i>Lupinus albus</i> L.
Caesalpinaceae	<i>Bauhinia acuminata</i> L. <i>Caesalpinia sappan</i> L. <i>Cassia biflora</i> L.
Crassulaceae	<i>Kalanchoe blossfeldiana</i> Poelin <i>K. beharensis</i> Drake
Caprifoliaceae	<i>Lonicera japonica</i> Thunb.

Combretaceae	<i>Sambucus canadensis</i> L. <i>Conocarpus lancifolius</i> Engl. <i>Combretum comosum</i> G. Don.
Barringtoniaceae	<i>Barringtonia acutangula</i> (L.) Gaertn.
Passifloraceae	<i>Passiflora vitifolia</i> Kunth.
Begoniaceae	<i>Begonia obliqua</i> L.
Cactaceae	<i>Pereskia grandiflora</i> Haw.
Araliaceae	<i>Dizygotheca elegantissima</i> (Veitch ex Mast) R. Vig & Gullaumin <i>Polyscias pinnata</i> Marginata syn. <i>P. balfouriana</i> <i>P. fruticosa</i> <i>P. guilfoylei</i> <i>Schefflera arboricola</i> (Hayata) Kanehira <i>S. leucantha</i> Viguiet
Rubiaceae	<i>Mussaenda erythrophila</i> Schumach <i>M. philippica</i> A. Rich <i>M. lutea</i> <i>Gardenia jasminoides</i> J. Ellis
Asteraceae	<i>Senecio confusus</i> <i>Vernonia arborea</i> Buch.-Ham. <i>V. scandens</i> Dc. <i>Cosmos sulphureus</i> Cav. <i>Coreopsis tinctoria</i> Nutt. <i>Arctotis stoechadifolia</i> P.J. Bergius <i>Bellis perennis</i> L. <i>Calendula officinalis</i> L. <i>Tithonia diversifolia</i> (Hemsl.) A. Gray
Apocynaceae	<i>Urechites lutea</i> L. <i>Beaumontia grandiflora</i> Wall.
Asclepiadaceae	<i>Asclepias physocarpa</i> (E. Mey) Schitr
Gentianaceae	<i>Enicostema hyssopifolium</i> (Willd.) Verdoom.
Convolvulaceae	<i>Ipomoea horsfalliae</i> Hook. <i>Jacquemontia grandiflora</i> Dammer
Solanaceae	<i>Solanum seaforthianum</i> Andrews <i>Iochroma cyaneum</i> (Lindl.) Green <i>Datura tatula</i> L.

Bignoniaceae	<i>Petunia hybrida</i> <i>Hyoscyamus niger</i> L. <i>Oroxylum indicum</i> (L.) Benth. ex Kurz. <i>Tabebuia alba</i> (Cham.) Sandwith <i>Tabebuia chrysantha</i> (Jacq.) Nicholson
Thunbergiaceae	<i>Thunbergia alata</i> Bojer ex Sims.
Amaranthaceae	<i>Alternanthera philoxeroides</i> Griseb.
Euphorbiaceae	<i>Tragia involucrata</i> L.
Ulmaceae	<i>Ulmus parvifolia</i> Jacq.
Moraceae	<i>Artocarpus altilis</i> (Parkinson) Fosberg. <i>Ficus benjamina</i> L. <i>F. longifolia</i> Schott. <i>F. panda</i> <i>F. repanda</i> <i>F. microcarpa</i> L.f. <i>F. Krishnae</i> C.Dc. <i>Salix tetrasperma</i> Roxb.
Salicaceae	
Monocots	
Hydrocharitaceae	<i>Monochoria vaginalis</i> (Burm.f.) C. Presl ex Kunth
Asparagaceae	<i>Ophiopogon japonicus</i> (L.f.) Ker-Gawl
Orchidaceae	<i>Bletilla striata</i> R. Chb.
Palmae	<i>Chamaedorea elegans</i> Willd.
(Arecaceae)	<i>Licuala grandis</i> (Hort. ex W. Bull) Wendl. <i>L. peltata</i> Var. <i>peltata</i> <i>L. spinosa</i> Roxb. <i>Wodyetia bifurcata</i> Irvine
Poaceae	
(Graminae)	<i>Bambusa ventricosa</i> McClure <i>Oplismenus hirtellus Variegatus</i> (L.) Beauv

natural flora and at the same time plantation of species of economic and ornamental value. This has been possible, because of mushrooming of plant nurseries, which supply plants from far flung areas of the country. In a preliminary survey, the present author has presented a list of 77 genera and 97 species (Table-5) which have not been reported in the Flora of Bhopal.

In addition to these species, a number of species are added intentionally or accidentally through anthropogenic activities, with the addition of new plant species, the number of dicot genera becomes 510 where as the number of species rises to 791. However, the number of families remains almost the same, with the exception of the addition of the family Araliaceae.

Some plants which have been reported by Oommachan¹⁸ but have not been witnessed since a long time include *Cleome gynandra*, *Fumaria indica*, *Polycarpaea corymbosa*, *Scilla hyacinthina*, *Desmodium latifolium*, *Smilax proliferata*, *Hymentherum tenuifolium*, *Porana paniculata*, *Vallaris solanacea*, *Dombeya cayeuxii*, *Anisochilus carnosus*, *Adenantha pavonina*, *Anisomeles malabarica*, *Asphodelus tenuifolius*, *Brya ebenus*, *Campanula modesta*, *Jacquinia ruscifolia*, *Melastoma malabathricum*, *Molucella laevis*, *Nothosaerva brachiata*, *Orobancha aegyptiaca*, *Podostemon ceratophyllum*, *Rotala indica*, and *R. serpyllifolia* etc.

After reassessment the ratio of species belonging to monocots and dicots is 1: 4.76, where it was 1:4.64 in the Flora of Bhopal (Oommachan, 1977) of genera 1:41, whereas it was 1:4.07 in the said flora. The ratio of monocot to dicot families is 1:4.4, whereas it was 1:4.48 in flora of Bhopal. The total genera to species ratio comes out to be 1:1.56, which is much higher than the one (1:1.53) given in the said flora.

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