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Floristic analysis of Igatpuri Forest of Nasik District M.S. (India)

D.U. Ahire

Department of Botany, M.S.G. College, Malegaon Camp – 423203 (India)

ABSTRACT

The present work has been done to collect the information about different plant species of the igatpuri forest area. The flora is highly diversified in vegetation and have rich number of floristic composition due to topography , climate and edaphic factors which are favourable for such luxurious vegetation. The present paper deals with synoptical analysis of the flora w.r.t. 1114 species belonging to 570 genera spread over 121 families.

Key words : Floristic composition, Igatpuri forest, Nasik district.

Floristic studies have acquired increasing importance in recent years in response to the need of developing and under developing countries to assess their plant wealth. Igatpuri forest area was visited regularly from 2006 to 2009 to collect the plant specimens. The plant specimen were collected & kept in news papers & polythene bags & brought to laboratory. The specimens were poisoned with 1 % Mercuric chloride solution in alcohol as pesticide & later on treated specimens were dried under blotting papers. The well dried & treated specimens were numbered & mounted on standard herbarium sheets & kept in the department. The mounted herbarium sheets were identified using standard floras[1-8].

Flora of the Bombay Presidency, by Cooke[3], Flora of Gujarat by Shah[7], Flora of the Savantwadi by Almeida[1], Flora of Maharashtra state (Monocotyledons) by Sharma *et al.*[8], Flora of the Nasik dist. by Lakshimnarsimhan & Flora of Marathwada by V.N. Naik[5], Flora of Sahyadri by Ingalhalikar[4] have been referred for identification of species.

Igatpuri is a small Taluka of Nasik district. It is lies between 20 N latitude & 74 E longitudes of 599 m above main sea level. The climate is cool through out the year. The soil is black &red. The average annual rainfall is 10345 mm. The temperature fluctuates seasonally. The temperature ranges from 18°C to 46°C.

Synoptic analysis and comparison with other Flora

A Status of flora :

The total number of wild angiosperm species so far recorded or collected from Igatpu-

riforest is 1114 belonging to 570 genera spread over 121 angiosperm families (Table-1).

B. Monocot - Dicot Ratio and percentage :

The ratios of monocots and dicots are 1:6.05, 1:4.25 and 1:2.65 respectively at family, genus and species levels (Table-2). A comparative account of the present areas and floras of adjoining areas like Nashik District, Bombay Presidency and Maharashtra State in Tables 3 and 4.

C. Family - Genus - Species Ratio :

Monocot and dicot ratios for family : genus, genus : species for the present area are 1:6.05, 1:4.25 and 1:2.65 respectively.

However, these ratios are relatiely larger in monocots than those of dicots (Table 2).

The genus : species ratios of the present areas is compared with adjoining areas (Table-3). From the general rule *i.e.* within the same floral region, smaller the flora, smaller the genus : species ratios.

Thus the present analytic and comparative account of the diversity of Igatpuri forest (Table-3) indicates near correlation, if not exact, with that of adjoining areas are geographically similar.

D. Dominant Families :

The ten dominant families depending on their strength of species for the present as shown in Table-6. This order of dominance is compared with the flora of adjacent areas Nashik District, Bombay Presidency and Maharashtra State (Table-4). From it is evident that the dominant families are almost same with that of adjoing areas with few exceptions. Convolvulaceae is not represented in Nashik District. Malvaceae which occupies 8th position in present areas and not occurs in Bombay Presidency and Maharashtra. However it is clearly seen that all over Poaceae, Fabaceae Asteraceae Cyperaceae and Acanthaceae occupy in position in between 1 and 6. Igatpuri forest and Manahashtra State Poaceae is at top followed by Fabaceae. Cyeraceae occupies in 3rd position except in Bombay Presidency and Nashik District Asteraceae in 4th position and Orchidaceae in 6th position. in order of dominance. Acantheaceae 5th Position except Bombay Presidency and Maharashtra State.

The order of dominance in all areas suggests a trend of wide distribution of taxa of these families. The order remaining dominant families slightly variable in the adjacent areas. The similarities and variations in the position of the dominant families may be attributed to the geography, topography and size of the areas and biotic interferences.

E. Floristic Composition at Family Level :

A critical analysis of the floristic composition of the area (Table-5) show that monotypic families dominate the floral with the largest number, *i.e.* 31 families constituting 25.62 perecent. However, the number of monogenric families is 21 out of the total 121 families (17.36%). Thus in the order of dominance, penta-multigeneric families occupy the 3rd position with 30 families constituting (24.80%). Bigeneric 4th position 17 (14.04%). Trigeneric and Tetrageneric families occupying 5th position 11 (9.09%). Trigeneric and

tetrageneric families constitute comparatively less proportion (9.09%).

F. Floristic Composition at Genus Level :

At the generic level the monospecific genera constitute 63.15% followed by bispecific genera 19.29%, penta-multispecific 6.14%, Tetraspecific 5.78% and Trispecific 5.61%. The trispecific constitute comparatiely less number (Table-8). This analysis clearly reveals the species diversity in the present area.

G. Monotypic Families :

Alangiaceae, Alismataceae, Aristolochiaceae, Balanitaceae, Bombacaceae, Burmanniaceae, Creatophyllaceae, Elaeganaceae, Elatinaceae, Hydrophyllaceae, Lauraceae, Lecythidaceae, Loganiaceae, Magnoliaceae, Martyniaceae, Musaceae, Myrsinaceae, Nelumbonaceae, Onagraceae, Papaveraceae, Pedaliaceae, Plumbaginaceae, Portulacaceae, Potamogetonaceae, Punicaceae, Santalaceae, Simaroubaceae, Taccaceae, Tetramelaceae, Tristichaceae, Typhaceae.

H. Families with Ten or More Genera :

The families with 10 or more genera are Poaceae (66), Asteraceae (45), Fabaceae (37), Acanthaceae (23), Rubiaceae (18), Cyperaceae and Scrophulariaceae (17), Lamiaceae (14), Orchidaceae (12), Malvaceae (11) and Convolvulaceae (09).

Families with 10 or more species are Poaceae (140), Fabaceae (100), Asteraceae (68), Cyperaceae (69), Acanthaceae (52), Lamiaceae and Orchidaceae (32), Rubiaceae (31), Malvaceae (29), Convolulaceae (25) and Schrophulaceae (23).

Table-1. Showing the number and percentage of Dicotyledons and Monocotyledon Families, Genera and Species

Classes	Number of families	Number of genera	Number of species
Dicotyledoneae			
Polypetalae	57.00	190.00	375.00
Gamopetalae	29.00	193.00	335.00
Monochlamydeae	15.00	53.00	99.00
Total	101.00	436.00	809.00
Perecentage	83.40	76.40	72.62
Monocotyledoneae			
Total	20.00	134.00	305.00
Percentage	16.50	23.50	27.38
Total of Dicotyledoneae and Monocotyledoneae	121.00	570.00	1114.00

Table-2. Ratio and Percentage of Monocots & Dicots

Rank	Number		Total	Ratio	Perecentage	
	Monocots	Dicots	Number	Monocots- Dicots	Monocots	Dicots
Families	20	101	121	1 : 6.05	16.50	83.40
Genera	134	436	570	1 : 4.25	23.50	76.40
Species	305	809	1114	1 : 2.65	27.19	72.62

Table-3. Comparative Statement of Genus - Species of different areas

Rank / Area	Number Genera : Species	Ratio Genus : Species
Igatpuri forest	570 : 1114	1 : 1.95
Nashik district	512 : 952	1 : 1.85
Bombay presidency	944 : 2337	1 : 2.50
Maharashtra state	1081 : 3025	1 : 2.70

Table-4. Comparative position of Ten dominant Families in the Flora of present and adjacent areas

Family	Igatpuri forest	Nashik district	Bombay Presidency excluding Sind	Maharashtra state
Poaceae	01	02	02	01
Fabaceae	02	01	01	02
Asteraceae	04	03	06	05
Cyperaceae	03	04	04	03
Acanthaceae	05	05	03	04
Orhidaceae	06	08	08	06
Lamiaceae	06	07	10	09
Rubiaceae	07	09	07	08
Malvaceae	08	10	--	--
Convolvulaceae	09	--	09	--
Scrophulariaceae	10	--	--	10

Table-5. Ratio of Family - Genus – Species

Group / Rank	Family : Genus		Genus : Species		Family : Species	
	Number	Ratio	Number	Ratio	Number	Ratio
Monocot	20 : 134	1 : 6.7	134 : 305	1 : 2.2	20 : 305	1 : 15.25
Dicot	101 : 436	1 : 4.3	436 : 809	1 : 1.8	101 : 809	1 : 8.00
Total	121 : 570	1 : 4.7	570 : 1114	1 : 1.9	121 : 1114	1 : 9.20

Table-6. Ten dominant families with Number of genera and species

Sr. No.	Family	Number of Genera	Number of Species
01	Poaceae	66	140
02	Fabaceae	37	100
03	Asteraceae	45	68
04	Cyperaceae	17	69
05	Acanthaceae	23	52
06	Orhidaceae	12	32
07	Lamiaceae	14	32
08	Rubiaceae	18	31
09	Malvaceae	11	29
10	Convolvulaceae	09	25
11	Scrophulariaceae	17	23

Table-7. Number and percentage of families with reference to genera

Sr. No.	Families	Number	Percentage
01	Monotypic	31	25 . 62
02	Monogenric	21	17 . 36
03	Bigeneric	17	14 . 04
04	Trigenric	11	9 . 09
05	Tetrageneric	11	9 . 09
06	Penta-multigeneric	30	24 . 80
	Total	121	100 . 00

Table-8. Number and Percentage of genera with reference to species

Sr. No.	Families	Number	Percentage
01	Monospecific	360	63.15
02	Biospecific	110	19.29
03	Trispecific	32	5.61
04	Tetraspecific	33	5.78
05	Penta or multi-specific	35	6.14
Total		570	100.00

I. Monotypic Genera :

Actinodaphne, Ailanthus, Alangium, Argemone, Aristolchia, Balanites, Bergia, Bombax, Burmannia, Careya, Ceratophyllum, Dalzellia, Elaeagnus, Embelia, Ensete, Hydrolea, Ludwigia, Martynia, Michelia, Mitreola, Nelumbo, Plumbago, Portulaca, Potamogeton, Punica, Santlum, Sesamum, Tacca, Tetrameles, Typha, Wiesneria,

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