



STATISTICAL ANALYSIS OF FLORA OF BHANDARA DISTRICT (MS) INDIA .

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ABSTRACT:

Bhandara district is well known Lake District of east Vidarbha region of Maharashtra and is located at 21.17° N 79.65° E. The floristic survey was conducted from 2005 to 2011 for angiosperms in different seasons of Bhandara district which is comprised in seven tahsils as Lakhni, Sakoli, Lakhandoor, Pauni, Bhandara, Mohadi and Tumsar. During the floristic exploration of the district total 906 species, 10 subspecies, 26 varieties and 02 forma belongs to 547 genera and 137 families were studied. Most of plant specimens collected and studied on their flowering and fruiting stage. The herbarium sheets prepared during the floristic exploration are stored in herbarium of Dharampeth M. P. Deo Memorial Science College, Nagpur.

Keywords: Floristic, Angiosperms, Species, Subspecies, Genera, Families.

INTRODUCTION:

Throughout the ages, humans have relied on nature for their basic needs, for the production of food, shelter, clothing, medicines, transportation, fertilizers, flavors and fragrances (Cragg and Newman, 2005). Hence, during the present investigation floristic survey of Bhandara district was carried out.

Earlier floristic work covering some parts of the district was by H. H. Haines (1916), who prepared Descriptive List of Trees, Shrubs and Economic Herbs of Southern Circle-Central Provinces, that includes Bhandara district, nearly a century ago and till date his work is most preferred in many of the research organizations.

Moreover, in earlier findings 600 species of angiosperms comprising 360 genera and 100 families (Malhotra et al., 1981) before 30 years ago from the district when it was in combination with Gondia district. Unfortunately, 278 species i.e., less than 50% of flora from his findings was investigated from the different parts of the Bhandara district and the rest species were collected from the parts of the Gondia district. With this backdrop in mind the work was initiated with a view to inventories the floristic wealth of Bhandara district and bring out a

comprehensive flora of the district with its medicinal importance.

The present work is an outcome of extensive and intensive field collections covering all the different habitats and areas for six years from 2005 to 2011 reporting 906 taxa from 547 genera belonging to 137 families of Dicotyledones and Monocotyledones. It is also observed that major contribution from Northern and Western part's forest elements in the flora of the district. In northern part Tumsar tahsil and in Western part Pauni and Lakhandur tahsil and in the middle east Sakoli tahsil are rich in forest flora. Lakhni and Mohadi tahsils are with only few patches of the forest flora and rest of the areas found more or less with even distribution of the plant species.

METHOD AND MATERIAL:

Extensive and intensive field visits were conducted at regular intervals to different areas in the Bhandara district, in different seasons to study the flowering and fruiting period of the medicinal flora, during 2005-2011. Initially, field visits were organized twice a month in every tahsil of the district in first and second year and monthly field visits were undertaken in third and fourth year of study and in fifth and sixth year, single visit to each

tahsil were undertaken per two months. As a result of this it was possible to collect most of the flora in different seasons in reproductive stage. Also this helped in getting a fairly good idea about the seasonal changes of the vegetation.

During every field visit of the study area, the flora was observed in its natural habitat and geographical features of every place were noted down. The information regarding habit, habitat, morphology; colour and scent, if any, of flowers, fruits and seeds; type of soil; association, distribution and relative abundance of plant specimens with flowering and fruiting stage were furnished in field diary.

During the extensive and intensive field visits of proposed area specimens of each plant in flowering and fruiting stage were collected. Most of the collected materials were pressed in wooden portable plant press with old news papers and blotting papers in the field itself to avoid the deterioration of delicate parts of the plant materials collected. Other plant materials were collected in polythene bags provided with a cotton wool piece soaked in formalin for preservation of plants for longer time and saving them from getting spoiled. The same plant specimens were collected from different locality. This gave the idea about the different growth pattern in relation to change in edaphic and climatic factors in the area.

RESULTS AND DISCUSSION

Systematic study of the plant before its use in health care management is one of the prerequisite in the study of medicinal plants. Initial attempt was made during the course of research work, to explore the complete angiospermic taxa from the district and identified it with the help of floras. The flora of the district includes 906 species, 10 subspecies, 26 varieties and 02 forma belongs to 547 genera and 137 families (Table: 1.1.). The table shows the differential distribution of three subclasses Polypetalae, Gamopetalae and Monochlamydeae of Dicotyledones and Monocotyledones.

From the above Table: 1.1, the species belongs to the dicotyledones are thrice as many as monocotyledones species in the district. The dicotyledones species are found to be 76.24% and that of monocotyledones species are 23.76%.

Also the total flora of the district is classified on the basis of habit, this indicate the herbaceous species are more dominant over climbers/twiners/lianas and trees. (See Table: 1.2). Also it is observed that the members of Polypetalae are dominant than the members of Gamopetalae, Monochlamydeae and Monocotyledones.

Twenty dominant families based on number of genera and species in Bhandara district are given in Table: 1.3 and Table: 1.4.

Poaceae is a dominant family in genera as well as in species, in the district. The second largest / dominant family in the district is Papilionaceae while on third position in dominance is occupied by Asteraceae. Also twenty dominant genera in the district are given in Table: 1.5.

The flora of the district is more or less uniform in most of the areas except few variations due to climatic changes or ecological factors. Some of the taxa were seen very few in number are considered as rare taxa, the others found in restricted areas and are considered as infrequent or occasional and the taxa found in most of the parts of the district are treated as frequent or common. Distribution of the species in these three categories with respect to its habit is shown in **Table: 1.6.**

The rare plants of the district with its total number of taxa, includes climbers (17.86%), then Trees (15.48%) , Herbs (11.36%) and Shrubs (0.9%).

CONCLUSION:

Floristic exploration of the district provides complete angiosperm plant wealth. The flora includes herbs, shrubs, trees, climbers, twiners and lianas. The most dominant flora includes herbs which are 58.28 % of total angiosperm flora. The species belonging to dicotyledons are more common as compared to monocotyledons. Poaceae family found largest

among the angiosperms with respect to total number of genera and species and the family Papilionaceae among the dicotyledons. While the *Ipomoea* is the largest with respect to total number of species. Out of total angiosperm flora studied 12.58% flora found rare in its occurrence in the district.

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Taxa	Family	Genera	Species	Subspecies	Varieties	forma
Dicotyledones	108	422	691	09	22	02
1 Polypetalae	64	192	327	06	09	00
2 Gamopetalae	30	179	272	02	05	02
3 Monochlamydae	14	51	92	01	08	00
Monocotyledones	29	125	215	01	05	00
TOTAL	137	547	906	10	27	02

Table: 1.1 Distribution of the angiospermic taxa

Sr. No.	Habit	Number of taxa	Percentage
1	Herbs	528	58.28%
2	Climbers /twiners/ lianas	111	12.25%
3	Undershubs and shrubs	112	12.36%
4	Trees	155	17.11%

Table: 1.2 Taxa based on habit

Sr. No.	Name of the Family	No. of Genera
1	Poaceae	54
2	Papilionaceae	41
3	Asteraceae	35
4	Acanthaceae	21
5	Euphorbiaceae	17
6	Rubiaceae	15
7	Scrophulariaceae	14
8	Cyperaceae	12
9	Lamiaceae	12
10	Apocynaceae	12
11	Malvaceae	11
12	Cucurbitaceae	11
13	Amaranthaceae	11
14	Convolvulaceae	09
15	Asclepiadaceae	09
16	Verbenaceae	08
17	Liliaceae	08
18	Araceae	08
19	Caesalpiniaceae	07
20	Mimosaceae	07

Table: 1.3 Twenty dominant families based on number of Genera.

Sr. No.	Name of the Family	No. of Species
1	Poaceae	96
2	Papilionaceae	78
3	Asteraceae	47
4	Euphorbiaceae	39
5	Cyperaceae	35
6	Malvaceae	29
7	Convolvulaceae	28
8	Acanthaceae	26
9	Scrophulariaceae	25
10	Caesalpiniaceae	25
11	Lamiaceae	24
12	Rubiaceae	23
13	Cucurbitaceae	17
14	Amaranthaceae	15
15	Mimosaceae	14
16	Commelinaceae	14
17	Apocynaceae	13
18	Verbenaceae	13
19	Moraceae	13
20	Boraginaceae	12

Table: 1.4 Twenty dominant families based on number of Species.

Sr. No.	Name of the Genera	No. of Species
1	<i>Ipomoea</i>	13
2	<i>Cassia</i>	12
3	<i>Cyperus</i>	12
4	<i>Ficus</i>	10
5	<i>Crotalaria</i>	10
6	<i>Euphorbia</i>	10
7	<i>Lindernia</i>	09
8	<i>Linum</i>	09
9	<i>Blumea</i>	08

10	<i>Fimbristylis</i>	08
11	<i>Indigofera</i>	08
12	<i>Phyllanthus</i>	08
13	<i>Eragrostis</i>	07
14	<i>Leucas</i>	07
15	<i>Bauhinia</i>	06
16	<i>Citrus</i>	05
17	<i>Sida</i>	06
18	<i>Vigna</i>	06
19	<i>Acacia</i>	05
20	<i>Alysicarpus</i>	06

Table: 1.5 Twenty dominant Genera based on number of Species.

Sr. No.	Habit	Distribution		
		Frequent	Infrequent	Rare
1	Herbs	320	148	60
2	Undershshrubs and Shrubs	64	38	10
3	Climbers, Twiners, & Lianas	65	26	20
4	Trees	76	55	24
TOTAL		525	267	114

Table: 1.6: Distribution of the taxa based on occurrence.