

Analysis of vegetation and floral diversity of Shahdol District, Madhya Pradesh, India

¹ Shruti Gautam, ² SK. Mishra

¹ Research Scholar - Botany Deptt, Pt. S.N.S. Govt. P.G. College, Shahdol, Madhya Pradesh, India

² Prof. & Head Botany Department, Pt. S.N.S. Govt. P.G. College, Shahdol, Madhya Pradesh, India.

Abstract

Present paper deals the vegetational analysis of Shahdol district. During present study records a total of 568 plants species which are distributed in 353 genera and 105 families. The plants are found in different life forms. Therophytic vegetation is dominant.

Keywords: Analysis, Vegetation, Floral diversity, Shahdol, Madhya Pradesh

1. Introduction

The biodiversity found on earth today consisting of many millions of distinct biological species which is the product of nearly 3.5 billion years of evolution. During this past 3.5 billion years, a wide variety of plants came into existence, flourished and then vanished due to various reasons. India is twelfth mega biodiversity nation in the world and has the richest floristic diversity and harbors 17000 flowering plants. Himalaya and Western Ghat is the two hottest hotspot in India. Knowledge of forest structure and floristic are necessary for the study of forest dynamics, plant animal interactions and nutrient cycling (Reddy and Pattnaik, 2009) [1]. It is therefore necessary to have proper knowledge regarding the various species of plants inhabiting of any particular area at that particular time period (Joshi *et al.*, 2004) [2]. The vegetation and flora of Shahdol district is rich and diverse. Shahdol District is situated in the north-eastern part of the Madhya Pradesh provinces of India. Its area becomes short due to division of the district on 15-08-2003. The area of the district is 5671 km². It is surrounded by Anuppur in the southeast, Satna & Sidhi in the north and Umaria in the west. The district extends 110 km from east to west and 170 km from north to south. This district is situated between 22°38' N latitude to 24°20' N latitude and 80°28' E Longitude to 82°12' E longitude. The District is located in the north-eastern part of the Deccan Plateau.

1.1 Vegetation: Forest of Shahdol district is classified into Sal forest and Mixed forest.

1.2 Sal Forest: Sal (*Shorea robusta*) is the dominant component of Sal forest. Sal is associated with *Albizia lebbach*, *Anogeissus latifolia*, *Lagerstroemia parvifolia*, *Madhuca longifolia*, *Terminalia elliptica*, *Terminalia belleria*, *Terminalia arjuna*, *Soymida fabrifuga*, *Lannea coromandeliana*, *Butea monosperma*, *Lagerstroemia parvifolia*, *Anogeissus latifolia*, *Boswellia serrata*, *Buchnanania cochinchinensis*, *Hardwickia binata*, *Acacia catechu*, *Acacia nilotica*, *Vitex nergundo*.

Middle story is occupied by *Acacia catechu*, *Buchnanania cochinchinensis*, *Catunarangeum spinosa*, *Dendrocalamus strictus*, *Wrightia tinctoria*. The common smaller trees and

shrubs are *Helicteres isora*, *Gardenia latifolia*, *Holarrhena antidysenteria*, *Woodfordia fruticosa*, *Nyctanthus arbor-tristis*, *Maytenus emarginata*, *Mimosa hamata*. The common woody climbers found in the area are *Capparis zeylanica*, *Cocculus hirsutus*, *Cryptolepis buchanani*, *Milletia extensa* and *Bauhinia vahlii*.

Ground cover of the forest is dominated by annual herbs. Common plants of these category are *Acanthospermum hispidum*, *Alysicarpus spp. pubescences*, *Alysicarpus rugosus*, *Alysicarpus monilifer*, *Senna Tora*, *Senna occidentalis*, *Crotalaria medicaginea*, *Indigofera cordifolia*, *Rungia repens*, *Bidens biternatea*, *Corchorus aestens*, *Xanthium strumarium*, *Ocimum americanum*, *Ocimum canum*, *Zornia gibbosa*, *Enecostema axillare*, *Phyllanthus fraternus*, *Phyllanthus amarus*, *Sida cordifolia*, *Hibiscus abelmoschatus*, *Alternanthera bettzickiana*, *Alternanthera tenella*, *Typha angustifolia*, *Hygrophilla auriculata*.

Some common sedge is *Cyperus spp.* *Fimbristylis spp.*, and *Scirpus spp.* Common grasses are *Apluda mutica*, *Aristida adscensionis*, *Brachiaria eruciformis*, *Cenchrus ciliaris*, *Cynodon dactylon*, *Cynodon dactylon*, *Dichanthium aristatum*, *Echinochloa colonum*, *Heteropogon contartus*, *Themeda laxa*. *Seteria pumila*.

Common herbaceous climbers are *Cissempeles pareira*, *Tinospora cordifolia*, *Ipomoea pestrigradis*, *Ipomoea hederifolia*, *Pergulia daemia*.

1.3 Mixed Forest: Salai forest and Khair forest included under mixed forest. In Anjan forest is mixed with *Acacia catechu*, *Hardwickia bipinnata*, *Butea monosperma* Salai forest are dominated by *Boswellia serrata* along with other element like *Cochlospermum religiosum*, *Diospyros melanoxylon*. 30 percent Khair forest is covered by *Acacia catechu* associated with *Phyllanthus emblica*, *Terminalia bellerica*.

Certain vegetation is found in cracks and crevices of old wall. Few of them are *Chloris virgata*, *Lindenbergia indica*, *Kikxia ramosissima* and *Oplismenus burmanni*.

Some members of Hedge vegetation are *Clerodendron inerme*, *Clerodendron phlomidies*, *Opuntia elatior*, *Dioscorea bulbifera*, *Euphorbia nerifolia*.

1.4 Aquatic Vegetation

There are numerous ponds, Rivers, Tank, Ditches, Lakes, where unique type of aquatic flora is found. Some are free floating or submerged and some are marshy habitats. Common aquatic plants are *Eichornia crassipes*, *Lemna minor*, *Pistia stratiotes*, *Spirodella polyrhiza*, *Hydrilla verticillata*, *Nymphaeae nouchalli*, *Nymphoides hydrophylla*, *Potamogeton crispus*, *Sagittaria sagittifolia*, *Ceratophyllum demerseum*, *Utricularia aurea*, *Trapa natan*.

2. Material and Methods

The plant exploration work was conducted in Shahdol region to document the floral diversity during the year 2014-2016. Intensive and extensive plant survey had been carried out covering almost all habitats in different season. The vegetation and distribution pattern of the plants were studied. Standard method had been followed for plant collection and herbarium preparation (Jain and Rao 1977) [3]. Plant species were identified with the help of flora and Keys and other available literature (Hooker 1892-1897 [4]; Ray 1984 [5]; Mudgal *et al.*, 1977 [6]; Singh *et al.*, 2001 [7]; Hains 1921-1924 [8]; Sainkhediya and Ray, 2014 [9]). Some plant specimen were examined and identified from BSI Central circle, Allahabad. The entire plant specimen was deposited in Botany Department of Pt. S.N.S. Govt. P.G. College, Shahdol (M.P.).

3. Results and Discussion

During the present outcome the Angiospermic flora of Shahdol distt has been completed. It is the central place of Baghelkhand region. Total 568 plants species have been described (table 1).

The species described here are spread over 105 families and 276 genera of dicotyledons and 89 families and 77 genera of monocotyledons. The dicot, flora accounts for 76.41% while monocotyledons constitutes only 23.59%. So far as their species distribution is concerned table no. 1 gives an analysis of such a distribution.

Table 1: Percentage of families, genera and species

	Families		Genera		Species	
	No.	%	No.	%	No.	%
Dicot.	89	84.76	276	78.19	434	76.41
Monocot.	16	15.24	77	21.81	134	23.59
Total	105	100	353	100	568	100

Largest family: Dicot: Fabaceae
 Monocot: Poaceae
 Largest genus: Dicot: Ipomoea
 Monocot: Cyperus,

A careful perusal of table 1 reveals that the largest family is Poaceae with 90 species in monocots followed Leguminosae with 72 species and Asteraceae 36 species.

The ratio among Monocot to Dicot with respect to families, genera and species and families to genera and genera to species with respect to Dicot, Monocot and total have been given in Table 2. It is apparent from the data that the ratio of monocot to dicot with respect to families is higher than with respect to genera and species while the ratio of families to

genera and genera to species with respect to monocot is higher than with respect to dicot and total.

Table 2: Ratio among various groups / taxa

	Group/ Taxa	Ratio
Monocot to Dicot	Families	1:5.56
	Genera	1:3.58
	Species	1:3.24
Families to genera	Dicot	1:3.10
	Monocot	1:4.81
	Total	1:3.36
Genera to species	Dicot	1:1.57
	Monocot	1:1.74
	Total	1:1.60

The comparative status of families, genera and species in India, Madhya Pradesh and Shahdol district have been presented in Figs. 1, 2 and 3.

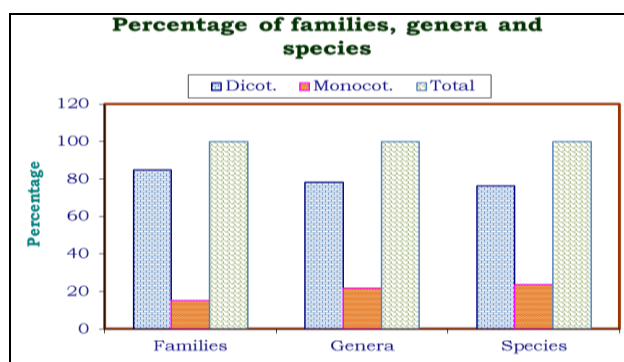


Fig 1

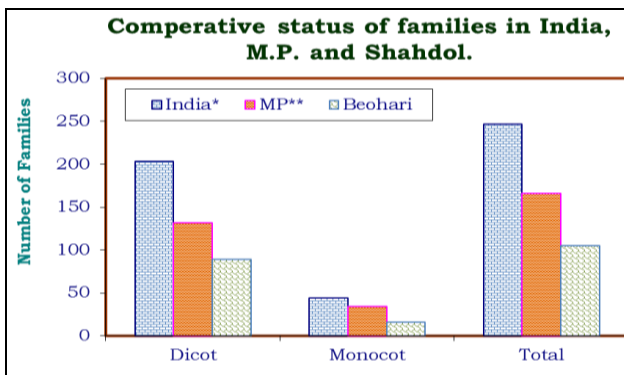


Fig 2

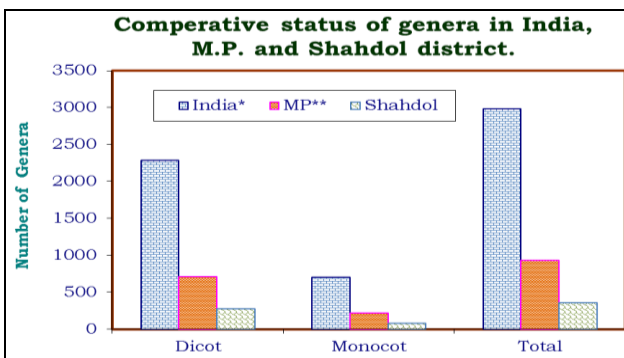


Fig 3

Table 3: Comparative status of Dominant families in India, Madhya Pradesh and Shahdol

S. No.	India*	Madhya Pradesh**	Shahdol
1.	Poaceae (263)	Poaceae (100)	Poaceae (43)
2.	Orchidaceae (184)	Asteraceae (72)	Leguminosae (34)
3.	Asteraceae (166)	Fabaceae (66)	Asteraceae (26)
4.	Fabaceae (133)	Acanthaceae (33)	Acanthaceae (17)
5.	Rubiaceae (113)	Orchidaceae (23)	Scrophulariaceae (10)
6.	Acanthaceae (92)	Euphorbiaceae (27)	Euphorbiaceae (10)
7.	Euphorbiaceae (84)	Rubiaceae (25)	Labiatae (09)
8.	Apiaceae (72)	Scrophulariaceae (25)	Apocynaceae (08)
9.	Lamiaceae (72)	Lamiaceae (21)	Amaranthaceae (08)
10.	Brassicaceae (64)	Asclepiadaceae (17)	Cyperaceae (08)

* Karthikeyan, 2000 ** Khanna *et al.* 2006

The data presented in Fig. 3 reveals that Poaceae (90spp.) is the most dominant family in the district followed by Leguminosae (72 spp.), Asteraceae (36 spp.), Cyperaceae (23 spp.), Euphorbiaceae (19spp.), Amaranthaceae (17spp.), Convolvulaceae (16 Spp.), Labiateae (15 Spp.), Scrophulariaceae (14 Spp.), Malvaceae (11 Spp.)

4. Acknowledgements

The authors are greatly indebted to the authority of Pt. S.N.S. Govt. P.G. College, Shahdol (M.P.) who permitted to carry out this work.

5. References

1. Reddy S, Patinaik C. An assesement of Floristic diversity of Gandharmardan Hill ranges, Orissa, India. Bangladesh Journal of Plant Taxonomy. 2009; 16(1):29-35.
2. Joshi P, Pande HC, Pande PC. Flora of Mandla and adjoining localities in Chaoli district of Garhwal Himalaya. Indian Journal of Forestry. 2004; 27:397-403.
3. Jain SK, Rao RR. A Handbook of Field and Herberium Method, Today and Tomorrows. (Oxford and IBH Publishing company, New Delhi, 1977.
4. Hooker JD. Flora of British India (BSI Publication, Calcutta, India, 1892-1897, 1-7.
5. Ray GP. Grasses of Madhaya Pradesh (BSI Publication, Allahabad, India, 1984.
6. Mudgal V, Khanna KK, Hajara PK. Flora of Madhaya Pradesh (BSI Publication, Calcutta, India, 1977.
7. Singh NP, Khanna KK, Mudgal V, Dixit RD. Flora of Madhaya Pradesh (BSIPublication, Calcutta, India, 2001.
8. Haines HH. The Botany of Bihar and Orissa (BSI Publication, Calcutta, India, 1921-1924, 1-3.
9. Sainkhediya J, Ray S. Analysis of Vegetation and Floral Diversity of Nimar Region, Madhya Pradesh, India, Indian Journal of Plant Sciences, 2014; 3(3): 102-109.