International Journal of Botany Studies
ISSN: 2455-541X; Impact Factor: RJIF 5.12
Received: 17-09-2020; Accepted: 02-10-2020: Published: 17-10-2020
www.botanyjournals.com
Volume 5; Issue 5; 2020; Page No. 385-388

Ecological fact and flora of Chilphi valley in Kabeerdham, CG

Anil Kumar Singh Chauhan[1*], Neelam Tripathi[2], Vinod Kumar Soni[3]

[1] Anil Kumar Singh Chauhan (Research Scholar) Department of Botany, Sri Satya Sai University of Technology & Medical sciences, Sehore, Madhya Pradesh, India

[2] Neelam Tripathi (Head) Department of Botany, Sri Satya Sai University of Technology & Medical sciences, Sehore, Madhya Pradesh, India

[3] Vinod Kumar Soni (Asst. Professor), SOS Forestry and wild life, Baster University, Chhattisgarh, India

Abstract
Tropical forests of India are facing rapid loss in floristic diversity and resultant changes of vegetation necessitate the assessment of plant composition and diversity. The present study was conducted to assess the composition of native tree species of Chilphi Ghati Forest Reserve of Kabeer dham district, Chhattisgarh. Chilphi Ghati is deciduas tropical forest extending to covers an area of 200 Sq KM and lies between 22˚ 17′*18″*N latitude and 81˚ 05′41”E longitude. Simple random sampling methods were used to tree species composition and seedling status of tree species. A total of 24 tree genera under 21 families and 24 regenerating tree genera fewer than 24 families were recorded in the study area. Family Dipterocarpaceae the highest number of tree genera (61 genera) while family Dipterocarpaceae possessed the highest number (97 genera) for regenerating trees. The survey indicated that *Shorea robusta* is the most dominant tree species with the highest relative density (RD), relative frequency (RF) and importance value index (IVI).The native trees genera of this remnant forest need attention for immediate conservation programs to prevent further degradation of the forest.

Keywords: Ecological fact**,** forests, trees, reserve, regeneration, deciduas, seedling

Introduction
Historical and contemporary losses in forest cover associated with human activities occur in many regions of the world, particularly in tropical regions (Rudel & Roper 1997; Lamb, Erskine & Parrotta 2005). Extensive deforestation leads to forest within a fragmented landscape. In addition, forest fragments can be selectively logged, degraded by ground fires and overhunted. These local disturbances alter the ecological processes operating in the fragments and may have additive or interactive effects with fragmentation on forest community structure and function (Cochrane *et al*. 1999; Nepstad *et al*. 1999; Gascon, Williamson & Fonseca 2000; Laurance and Cochrane 2001).A comprehensive list of flora and fauna including all lower plants along with their present conservation status and recovery plan is needed for proper conservation and management of biodiversity in reserves. Habitat monitoring is, therefore important in the assessment of national biodiversity sustainability (Nath *et al*., 2000). In the past ecologists and taxonomists have been mostly concerned about the diversity of plants, and landscapes (Whittaker, 1975; Magurran, 1988). Forests represent the storehouse of diversity. Thus, the conservation of its diversity is insurance and investment in order to ensure sustainable improvement of agriculture, forestry and fisheries production. Conservation of biodiversity also sustains different services of forest ecosystems; as a buffer against harmful environmental changes, as a source of raw material for scientific and industrial innovation and as a matter of moral principle (IUCN, 1980). The plants grow in the communities in the environment. Each community is characterized by its Genera diversity, growth forms and structures, dominance succession trends etc. The numerical data give focus on the genera which are dominant in the communities. To know their dominance, certain analytical character such as frequency, densities, abundance of genera in a community are expressed in quantity. Different methods like quadrate method, line transect method, point frame method are mean to serve the purpose of analytical characters. Several ecologists made their contribution on ecological diversity (Chiarucci, et al. 2001), Cadott, et al. (2002), Mohammedb Adefa Seid1 and Giacomo Santini (2017), Erenso, et al. (2014), Aerts, et al., (2006), Wassie, et al., (2010), Gotelli and Colwell (2011). Graham and Duda (2011), Prusty and Sahoo (2015).

Materials and Methods
The study was conducted in the remnant forest of Chilpi Ghati under Maikal valley, Kabeerdham district, Chhattisgarh India. It lies approximately at the intersection of 22˚ 17′*18″*N latitude and 81˚ 05′41”E longitude at west Chhattisgarh. Chilpi valley forest reserve is bounded by degraded hills with a tribal settlement on the West. Geologically, the area belongs to the Pliocene and Miocene epoch of the tertiary period. The area is irregularly rugged and consists of a series of ridges and valleys running from north to south.

The average temperature of the study area ranges from 19.9 °C to 30.3 °C, while the average annual rain fall is about 2900 mm and average annual relative humidity is about 78 %. The climate of this region is characterized by mainly three distinct seasons: a hot, humid summer from March to June; a cool, rainy monsoon season from June to October, and a cool, dry winter from October to March.

A stratified sampling design was used to inventory the tree Genera of forests ecosystems in the Maikal hilly region of

Chhattisgarh. Seven forest beats were selected and each plot was subdivided into 20 m × 20 m quadrates for further study. Importance value index for each species was also computed and it was expressed as the sum of relative density, relative dominance, and relative frequency of species in and among plots (Curtis 1959). The study area was visited prior to the field work in 2018, to have a general idea of the site, topography, accessibility and species composition. A complete stratified random quadrate sampling method was adapted for this study. The common tree Genera were identified directly in the field. The collected specimens were identified and species names were checked following Prain (1903), Heinig (1925), Raizada (1941), Sinclair (1956), Siddiqui *et al*. (2007), and Ahmed *et al*. (2008).

Result and discussion

The study recorded a total of 24 tree Genera belonging to 21 families in chilpi ghati Forest Reserve. Among the families, Dipterocarpaceae the highest (61 Genera) number of Genera followed by Combretaceae (12 Genera), Fabaceae (11 Genera), Anacardiaceae (09 Genera), Sapotaceae (08 Genera), Laadiya (05 Genera), Combretaceae (03 Genera) Families Bhawarmal, Mgrtaceae, Annonaceae, Phyllanthaceae and Saplndoideae possessed 02 Genera, Lecythidaceae, Poaceae, Tiliaceae, Moraceae, Dhobnin, Kalmi, and Malvaceae The remaining families possessed 01 Genera each (Table 01).

Table 1: Vegetation of Chilpi forest range, Chhattisgarh

S. No.	Local Name	scientific name	Family
1	Amla	*Phylanthus Emblica*	Phyllanthaceae
2	Baans	*Bambusa Valgaris*	Poaceae
3	Bhawarmal	*Hemiltonia suaveolens*	Rubiaceae terica
4	Bija	*Petrocarpus Marsupiaum*	Fabaceae
5	Binsa	*Adhatoda Vasica*	Acanthaceae
6	Char	*Buchanania Cochinchinensis*	Anacardiaceae
7	Dhamin	*Grewia Tillifolia*	Tiliaceae
8	Dhawra	*Anogeissus Latifalia*	Combretaceae
9	Dhobin	*Dalbergia paniculata*	Leguminosae
10	Dumar	*Ficas Recemosa*	Moraceae
11	Ghari	*Garuga pennata*	Burseraceae
S. No.	Local Name	Scientific Name	Family
12	Harra	*Torminalia Chebula*	Combretaceae
13	Jaamun	*Syzygium Cumini*	Mgrtaceae
14	Kalmi	*Mitragyna parvifolia*	Rubiaceae
15	Kari	*Milusa Tomentosa*	Annonaceae
16	Kosum	*Schleichera Oleosa*	Saplndoideae
17	Kumhi	*Careya Arborea*	Lecythidaceae
18	Ladiya	*Lagerstroemia parviflora*	Lythraceae
19	Mahua	*Madhuca Indica*	Sapotaceae
20	Saja	*Termenalia Tomentosa*	Combretaceae
21	Sal	*Shorea Robusta*	Dipterocarpaceae
22	Semhar	*Bombox Ceiba*	Malvaceae
23	Sure	*Boswella serrata*	Burseraceae
24	Tinsa	*Ougeinia Dalbergioides*	Fabaceae

Whereas seedlings status of 24 Genera were recorded belonging to 21 families in the chilpi valley forests. Among the families, Dipterocarpaceae the highest (97 Genera) number of Genera regenerating tree Genera. The remaining families Ebaneaceae 84 Genera, Reday 76 Genera, Lamiaceae 50 Genera, Dhanbahir 43 Genera Fabaceae 38 Genera, Chindi 35 Genera, Rubiaceae 21 Genera, Gentianaceae 20 Genera, saplndoideae16 Genera, Raharrtiy 15 Genera, Mgrtaceae 12 Genera, Anacardiaceae and Ladiya 10 Genera, Senha 07 Genera, Hari and Mahul bela 05 Tiliaceae and Dhamin 04 Genera, Combretaceae and Surteli 03 Genera, Sitalati and Sure 02 Genera and Myrtaceae possessed 01 Genera (Table- 2).

Table 2: Details of Regenerating plants Genera in the study site

S. No.	Local Name	Scientific Name	Family
1	Amrud	*Psidium guajava*	Myrtaceae
2	Char	*Buchanania lanzan*	Anacardiaceae
3	Chhind	*Phoenix acaulis*	Palmeae
4	Chirata	*Swertia chirata*	Gentianaceae
5	Datranga	*Ehretia laevis*	Burseraceae
6	Dhamin	*Grewia tillifolia*	Tiliaceae
7	Dhanbahir	*Cassia fistula*	Fabaceae
9	Jamun	*Syzygium cumini*	Mgrtaceae
10	Kosum	*Schleichera oleosa*	Saplndoideae
11	Ladiya	*Lagerstroemia parviflora*	Lythraceae
12	Mahul bela	*Bauhinia vahlli*	Legumiosae Caesalpiniaceae

S. No.	Local Name	Scientific Name	Family
13	Menhar	*Randia dumetorum*	Rubiaceae
14	Raharatiya	*Moghania semilata*	Papilionaceae
	Reday	*Carodetom viscosum*	Verbenaceae
16	Saja	*Termenalia tomentosa*	Combretaceae
17	Sal	*Shorea robusta*	Dipterocarpaceae
18	Senha	*Chrysopogon montanus*	Poaceae
19	Sitalati	*Dioscorea angunia*	Dioscoreaceae
20	Sure	*Boswella serrata*	Burseraceae
21	Surebela	*Pueraria tuberosa*	Papililonasae
22	Surteli	*Sehima nervosum*	Poaceae
23	Tendu	*Diospyros melanoxylon*	Ebaneaceae
24	Tulsa	*Ocimum tenuiflorum*	Lamiaceae

Natural forests are diverse in function and form, dynamic and important both economically and ecologically. Careful management of forest ecosystem will pave way for sustained use of existing flora but limited forest resources. The present study gives an idea about tree composition and regeneration status in forest of Chilpi Ghati Forest Reserve, A total of 24 tree Genera were recorded belonging to 21 families and 24 regenerate genera were recorded belonging to 24 families from Chilpi forest Reserve during the study. It has been observed that there exists a great demand and supply gap of fuel wood and other associated timber in this study area. The diameter of all trees greater than or equal to 165 cm and total height were measured using diameter tape (made in India). The common tree genera were identified directly in the field. The collected specimens were identified and field data were compiled and analyzed for density, relative density (RD %), frequency, relative frequency (RF %), abundance, relative abundance (RA %) and Importance Value Index (IVI) according to Moore and Chapman (1986), Shukla and Chandel (1980) and Dallmeier *et al.* (1992).

It was also reported that most of the regenerated seedlings could not survive due to human interference especially fuel wood collectors. In order to maintain the species diversity of the study area, an ecologically sound management system is desirable with minimum disturbance. There is need to have inventory, information system, research and development network and a framework of legal provisions for identification, assessment and monitoring of biodiversity to make this forest functionally viable. At the same time, further investigation is required to increase the understanding and development of appropriate silvicultural practices suite to the wide variety of situations in which the study area is situated.

It has been observed that there exists a great demand and supply gap of fuel wood and other associated timber in this study area, which ultimately increases the pressure of pilferage and illicit felling of trees from forest. It was also reported that most of the regenerated seedlings could not survive due to human interference especially fuel wood collectors. In order to maintain the species diversity of the study area, an ecologically sound management system is desirable with minimum disturbance.

Conclusion

The present study provides findings of the Floristic inventories and vegetation and regenerated analysis of the tropical dry deciduous forest of the Chilpi forests, showed that although tree density was high, The forest harbors high biodiversity and the regeneration process of the forest seems to be high biodiversity. There is need to have inventory, information system, research and development network and a framework of legal provisions for identification, assessment and monitoring of biodiversity to make this forest functionally viable. At the same time, further investigation is required to increase the understanding and development of appropriate silvicultural practices suite to the wide variety of situations in which the study area is situated.

References

1. Aerts R, Van Overtveld K. Species composition and diversity of small Afromontane forest fragments in northern Ethiopia. Plant Ecology. 2006; 187:127-142.
2. Bonham CD. Measurements for terrestrial vegetation, 2nd ed. Chichester, West Sussex, UK, 2013, 246 pp
3. Buba T. Impacts of Different Tree Species of Different Sizes on Spatial Distribution of Herbaceous Plants in the Nigerian Guinea Savannah Ecological Zone. Scientifica, 2015, 1-9.
4. Chiarucci A, Wilson JB. Structure and floristic diversity in permanent monitoring plots in forest ecosystem of Tuscany. Forest ecology and Management. 2001; 141:201-210.
5. Erenso F, Maryo M, Abebe W. Floristic composition, diversity and vegetation structure of woody plant communities in Boda dry evergreen montane forest, west Showa, Ethiopia, Int. J Biodivers. Conserv. 2014; 6(5):382-391.
6. Berendse F, Van Ruijven J, Jongejans E, Keesstra SD. "Loss of plant species diversity reduces soil erosion resistance of embankments that are crucial for the safety of human societies in low-lying areas," Ecosystems. 2015; 18(5):881-888.
7. Lieskovsk´y J, Kenderessy P. "Modelling the effect of vegetation cover and different tillage practices on soil erosion in vineyards: a case study invr´able (Slovakia) usingWATEM/SEDEM," Land Degradation and Development. 2014; 25(3):288-296.
8. Poulos HM, Camp AE. Topographic influences on vegetation mosaics and tree diversity in the Chihuahuan Desert Borderlands. Ecology. 2010; 91(4):1140-51.
9. Redowan M. Spatial pattern of tree diversity and evenness across forest types in Majella National Park, Italy, Forest Ecosystems, 2015, 2:24.
10. Robert E Ricklefs, Fangliang H. Region effects influence local tree species diversity. Proc Natl Acad Sci USA113. 2016; (03):674-679.
11. Seitz S, Goebes P, Song Z. "Tree species identity and functional traits but not species richness affect interrill erosion processes in young subtropical forests," SOIL Discuss. 2015; 2(1):701-736.

12. Tripathi KP, Bajrang Singh. Species diversity and vegetation structure across various strata in natural and plantation forests in Katerniaghat Wildlife Sanctuary, North India Tropical Ecology. 2009; 50(1):191-200.
13. Wassie A, Sterck FJ, Bongers F. Species and structural diversity of Church forests in a fragmented Ethiopian highland landscape, J Veg. Sci. 2010; 21:938-948.
14. Whittaker RH. Evolution of diversity in plant communities Brookhaven Symp Biol. 1969; 22:178-95.