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Ecological studies of vegetation of Piprahi forest of Rewa District (M.P.), India

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Abstract
Plant ecology is defined as the study of organisms in reciprocal relationship with their environment. Therefore forest ecology should be the study of a forest in reciprocal relationship with its environment. The definition is however inadequate in practical forestry and since forests are to meet both physical and economic needs of the population forest ecology combines in itself of all these factors that affect both natural and economic importance of forest. Forest management is not known in plant ecology, becomes an important environmental factor in forest ecology. Biodiversity has become most important aspect of present day world. Large areas of forests, particularly in districts like Rewa, have been converted in to cultivated areas. The present studies were made to evaluate ecological studies of vegetation of Piprahi forest of Rewa district. The trees were measured for their Frequency, Density, and basal area and then IVI of trees was calculated with the help of calculating relative value of frequency, density and basal area.

Keywords: Ecology, vegetation, Piprahi forest, Rewa

Introductions
Forest dose not comprise of tree alone. In any natural forest, shrubs, climbers and grasses grow in different proportion along with tree, and are very important components of the forest ecosystem. In the past shrubs and bushes have been meeting the fuel-wood requirements of the local population both from the forests as well as those found growing on the village waste land and field boundaries. But due to repeated cutting for fuel wood, fodder and other purpose they are under great pressure. As a result we see that these shrubs have almost disappeared from the village wastelands and many forest areas adjoining habitation. Forest is one of the most predominant geographic features of this planet in which we live and influence the lives of human beings in many ways. They moderate local climate, reduce soil erosion, regulate the stream flow, improve ground water conditions, improve condition of floods, increase precipitations, provide shelter to the wide variety of fauna and flora, supply food, fuel and shelter to the human population, support a number of industries and provide remarkable opportunities for recreation. Some of these influences can be evaluated in terms of money value in Rupees but others are not, but are equally important. These aspect of influences are; - Climate, temp., wind, humidity, precipitation; forest and soil conditions; water table, and erosion etc.
The entire crop of the Rewa forest Division is mostly middle aged in nature. The range has been visited between July 2020 to December 2021 in various seasons to understand the natural composition vegetation and trend is change due to increasing urbanization in rural is change due to increasing urbanization in rural areas. Detailed phyto-sociological study of forest Piprahi has been made. In selected forest the study has been made by laying down ten suitable quadrates in forest to highlights the trends in change of community due to increased influence of man and his domestic animals. The present studies were made to evaluate ecological studies of vegetation of Piprahi forest of Rewa district. The trees were measured for their Frequency, Density, and basal area and then IVI of trees was calculated with the help of calculating relative value of frequency, density and basal area.

Review of Literature
Work on rare medicinal plants has not been very regular or effective but it has only been sporadic and was given secondary position in survey and taxonomical studies in the past, In India only work carried out by Botanical survey of India; FRLHT and various reports and documents has been published on conservation, assessment and management of threatened

species by Mueller-Domboic, & Ellenberg, D.H. (1974) [1], Aim and Methods of Vegetation Ecology. Red Data book was bought out by Botanical survey of India, which is followed by second and third volume (Nayar and Shastry 1987-1990) [2]. Ordination method in Ecology (Anderson, 1971) [3]. Name changes in flowering plants of India and adjacent region (Bennett, 1986) [4]. Studies of Teak plantation and mixed natural forest in Madhya Pradesh (Chaubey, *et al.* 1988) [5]. Medicinal Plants (India) Karki (2002) [6]. Principal and practice of ayurvedic medicine. Biotech Book. Delhi (Khory, 2004) [7]. Ecological diversity and its Measurement. (Magurran, 1988) [8]. Flora of Madhya Pradesh (Mudgal *et al.* 1997) [9]. Phenology of some tree and shrub species of social forestry, Rewa (Mishra and Gupta, 2004) [10] and Floristic composition and vegetation types of Rewa district in Madhya Pradesh: An overview (Shukla *et al.* 2010) [11].

Materials and Methods

For phytosociological studies in all the forest Piprahi of Rewa division, the quadrate methods were used. In each forest 10 quadrates laid down for tree & shrubs. The size of quadrates for trees were 10 m. sq. and for shrubs, 5m. sq. and these were determined by the species area curve. The quadrates for shrubs were laid down inside the bigger quadrates of tree. There was a gap of ten meters between two quadrates of trees.

Basal was calculated from the perimeter which was measured at a breast height or below the first branching which ever was less.

Relative Frequency, Relative density and relative dominance were calculated by the following formulas (Phillips, 1959 and Misra, 1968) [12-13].

$$Basal\ area = \frac{(Circumference\ at\ breast\ height)^2}{12.56}$$

$$Frequency\ (\%) = \frac{No.\ of\ sampling\ plots\ in\ which\ the\ species\ is\ present}{Total\ No.\ of\ plots\ sampled} \times 100$$

$$Density\ (Ha^{-1}) = \frac{No.\ of\ individuals\ of\ the\ species}{Total\ area\ sampled\ (ha)}$$

$$Abundance = \frac{No.\ of\ individuals\ of\ the\ species}{No.\ of\ sampling\ plots\ in\ which\ the\ species\ in\ present}$$

$$Relative\ Basal\ area = \frac{Basal\ area\ of\ the\ species}{Basal\ area\ of\ all\ the\ species} \times 100$$

$$Relative\ frequency = \frac{Frequency\ of\ the\ species}{Frequency\ of\ all\ the\ species} \times 100$$

$$Relative\ Density = \frac{Density\ of\ the\ species}{Density\ \ of\ all\ the\ species} \times 100$$

$$Relative\ abundance = \frac{Abundance\ of\ the\ species}{Abundance\ of\ all\ the\ species} \times 100$$

IVI (of trees) = Relative basal area + Relative frequency + Relative density. Importance value Index (IVI) was calculated by adding the values of Relative Frequency, Relative Density and Relative Basal area.

Results and Discussion

Table 1: Value for different parameters, recorded for different tree species of Piprahi forest of Rewa district (M.P.).

S No.	Name of species	No. of quadrats	No. of trees	Density	Frequency	BA	RF	RD	R.BA	IVI
1.	*Acacia catechu*	3	4	0.18	2.97	109.01	2.97	1.64	0.43	5.04
2.	*Anthocephalus chinensis*	2	2	0.09	1.98	19.99	1.98	0.82	0.07	2.87
3.	*Azadirachta indica*	3	6	0.27	2.97	183.43	2.97	2.47	0.72	6.16
4.	*Bauhinia variegatia*	5	16	0.72	4.95	1332.03	4.95	6.59	5.3	16.84
5.	*Cassia fistula*	7	22	1	6.93	313.59	6.93	9.15	1.24	17.32
6.	*Cordia macleodii*	6	10	0.45	5.94	1040.23	5.94	4.1	4.13	14.17
7.	*Embelica officinalis*	10	7	0.31	9.9	2244.5	9.9	2.83	8.93	21.66
8.	*Ficus benghalensis*	3	3	0.136	2.97	29.99	2.97	1.24	0.119	4.329
9.	*Ficus glomerata*	1	4	0.18	0.99	11.45	0.99	1.64	0.045	2.675
10.	*Ficus religiosa*	2	3	0.136	1.98	22.68	1.98	1.24	0.09	3.31
11.	*Machuca indica*	3	6	0.27	2.97	227.58	2.97	2.47	0.9	6.34
12.	*Magnifera indica*	3	3	0.136	2.97	443.99	2.97	1.24	1.76	5.97

13.	*Melia azadirach*	2	3	0.136	1.98	29.99	1.98	1.24	0.119	3.339
14.	*Nyctanthus arbortristis*	2	2	0.09	1.98	571.68	1.98	0.82	2.27	5.07
15.	*Pongamia glabra*	3	7	0.31	2.97	110.2	2.97	2.83	0.43	6.23
16.	*Ricinus communis*	2	2	0.09	1.98	113.31	1.98	0.82	0.45	3.25
17.	*Shorea robusta*	10	75	3.4	9.9	3641.48	9.9	31.12	14.48	55.5
18.	*Sizigium cumini*	2	2	0.09	1.98	70.34	1.98	0.82	0.27	3.07
19.	*Tamarindus indica*	8	16	0.72	7.92	1053.89	7.92	6.59	4.19	18.7
20.	*Terminalia arjuna*	9	10	0.45	8.91	6616.75	8.91	4.1	26.32	39.33
21.	*Terminalia bellerica*	5	20	0.9	4.95	4838.2	4.95	8.23	19.25	32.43
22.	*Terminalia chebula*	10	19	0.86	9.9	2108.21	9.9	7.87	8.38	26.15
	Total	101	242	10.924	99.99	25132.5 2	99.99	99.87	99.89 3	299.75 3

B.A- Basal Area, R.F- Relative Frequency, R.D- Relative Density, R.BA- Relative Basal Area, IVI- Importance Value Index

From the table no 1 observation indicates that *Shorea Robusta* had highest density and maximum IVI of 3.4 and 55.5 respectively. Thus the most important tree in the village area is *Shorea Robusta*. This is because the *Shorea Robusta*, all of them are of larger girth. This fact indicates that the *Shorea Robusta* tree, because of their economic value, have been selectively, left uncut, during the cutting of trees in the forest, while the forest were was converted in to cultivated fields, It is interesting also to note a good IVI value of 39.33 for *Terminalia arjuna*. The species is little affected by animals through grazing or trampling and thus become more abundant in cleared forest areas. Minimum IVI of 2.675 for *Ficus glomerata* is recorded in the survey.

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References

1. Muller-Dombois, Ellenberg DH. Aims and Methods of Vegetation Ecology. John Wiley and sons, London; c1974. p. 547.
2. Nayar MP, Shastry ARK. Red data book of Indian Plants. BSI Calcutta; c1987-90. p. 1-2-3.
3. Anderson AJB. Ordination methods in Ecology, J. Ecol. 1971;59:713-726.
4. Bennett SSR. Name change in flowering plants of India and adjacent regions. Trisear Publishers; c1986. p. 722.
5. Chaubey OP, Prasad R, Mishra GP. Studies of teak plantation and mixed natural forest in Madhya Pradesh. J. Trop. For. 1988;4:22-35.
6. Karki M. Medicinal plants (India). The international development research center Canada, Project SARO/ CEFOR; c2002.
7. Khory RN. Principal and practice of Ayurvedic medicine. Biotech Books. Delhi; c2004.
8. Magurran AE. Ecological Diversity and its Measurement. Princeton University Press, New Jersey; c1988. p. 145-146.
9. Mudgal V, Khanna KK, Hajra PK. (eds.). Flora of Madhya Pradesh, Calcutta; c1997. p. 2.
10. Mishra RM, Gupta P. Phenology of some tree and shrub species of social forestry, Rewa (M.P.). J. Trop. Forest. 2004;20(1&2):33-37.
11. Shukla AN, Kumar B, Srivastava SK. Floristic composition and vegetation types of Rewa district in Madhya Pradesh: An overview. Ann. Forest. 2010;18(2):283-296.
12. Phillips EA. Methods of vegetation Study. Henery Holt and Co. Inc., New York; c1959. p. 107.
13. Misra R. Ecology Workbook. Oxford & IBH publishing Co., Calcutta; c1968.