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Research Article

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Natural Regeneration of Degraded Forests, Sample plot study at RFRC, Mulugu

M. Mamatha*

Dept. of Botany, Telangana University, Nizamabad (A.P.) *Corresponding Author E-mail: mamathal11@gmail.com

ABSTRACT

The preservation plot was laid out at Forest Research Centre, Mulugu and studies were undertaken from 1996-97 onwards. Studies by laying quadrants of 13M X 8M size for enumerating trees, shrubs and herbs + Regeneration respectively minimum 20 quadrants of each size speed randomly throughout preservation plots inspected. Length and breadth were so chosen to get a rectangular plot of 1:2. In the preservation plot Lagestromia parvifolia is the dominant species having maximum density per ha 7.05. frequency 100%, abundency 7.05 and Gymnosporia montana also showed density 3.55, frequency 100% and abundency 4.55 and it is followed Bachanania lanzan, Diospyros chroloxylan and Albizia amara. **Keywords:** preservation plot, sample plot study, Mulugu.

INTRODUCTION

Preservation plots, the miniature nature reserves are demarcated forests areas set aside for the preservation at forest in perpetuity permitting only such man (human) Interference as in necessary for their protection and maintenance. Following the recommendations of 3rd All India Silvicultural conference preservation plots in the representative areas of chief forest types were marked. By 1939, about 112 preservation plots were established throughout the country. When concept of preservation both a climatic and serial type was generated¹. In 1961 during the 10th All India Silviculturist conference, emphasis was laid on preservation of fine specimens of forests i.e. groups of outstanding trees, rare types of forests of botanical curiosity and patches of relict vegetations.

By 1991 the number of preservation plots increased to 309 in the country.187 in Natural forests and 122 in plantations covering the area of about 3500 hectares². Though networking of preservation plots has increased yet there are a number of forest types where preservation plots have not been laid. The National Commission on Agriculture in 1976 recommended that coverage of preservation plots should be increased to attain a fair percentage of all the recognized forest sub-types.

Preservation plots are ecological models of existing forest type and are important for studies of ecological succession recording diversity in plant population with time. Intense biotic interference in forests has wiped out no. of plant species and many of them are listed as endangered and rare ones. Biotic interference in forests cases remarkable changes in vegetation diversity and species composition. A periodic would be able to monitor record and throw light on such change.

MATERIALS AND METHODS

Preservation Plot in Mulugu (RFRC)

The Forest Research Center, Mulugu is located at Mulugu village, Mulugu Mandal of Medak district of Andhra Pradesh state. The center is about 46 km from Hyderabad on Rajiv Rahadari to Karimnagar. It is part of Mulugu Reserve forest in Siddipet range of Medak division. This preservation plot was established in 1996-1997 for 1.80 Hector.

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Climate condition			
Mean annual temperature	-	$30^{\circ}C$	
Maximum temperature	-	42° C to 43° C	
Minimum temperature	-	18 ⁰ C	
Annual rainfall	-	700 mm to 800 mm	
Rainy days	-	60 – 70 days	
Soil type	-	Sandy lome, Red loamy Soilup to	6" depth
		After six feet Murram is observed.	

In order to understand plant diversity preservation plot was laid out at Forest Research Centre, Mulugu and studies were undertaken from 1996-97 onwards. Studies by laying quadrants of 13M X 8M size for enumerating trees, shrubs and herbs + Regeneration respectively minimum 20 quadrants of each size speed randomly throughout preservation plots inspected. Length and breadth were so chosen to get a rectangular plot of 1:2³. All species above 2 m. tall recorded by measuring height for bush, shrubs species were below 2 m. The species were identified as per Forest flora of Andhra Pradesh⁴.

The Vegetation data were quantitatively analyzed for abundance, density and frequency The relative values of frequency, density and dominance. These quantities were summed to IVI of individual species⁵. The ratio of abundance to frequency of different species was determined for eliciting the distribution patterns. The ratio indicates Regular (<0.025), Random (0.0256 – 0.050) and contagious (>0.50) distribution⁶.

Frequency	=	Number of quadrants occurrence
		Total no. of quadrants studied
Abundanay	_	Total no of individual of all quadrants
Abundency	_	No. of quadrants occurrence
		1
Density	=	Total no. of individuals of all quadrants
		Total no. of quadrants studied

Mulugu Natural regeneration plot was established in 1996-97, it belongs to Siddipet range of Medak division, Andhra Pradesh. This area lies in attitude of $17^{0}N - 18^{0}N$ and longitude $78^{0}E$ and 78^{0} 30 east. The average rainfall is 700 to 800 mm temperature ranges from 18 to $43^{0}C$.Vegetation types as per Champion and Sheth's⁷ classification in dry deciduous miscellaneous scrub forest.

RESULT AND DISCUSSION

In the preservation plot *Lagestromia parvifolia* is the dominant species having maximum density per ha 7.05. frequency 100%, abundency 7.05 and *Gymnosporia montana* also showed density 3.55, frequency 100% and abundency 4.55 and it is followed *Bachanania lanzan*, *Diospyros chroloxylan* and *Albizia amara*.

This forest was characterized by a preponderanie of random distribution, the variety of regular distribution, it is evident from the ratio abundance to frequency (A/F) *Bauchnania lanzan, Diospyrus chloroxylon* and *Diospyrus melanoxylon* species are shows regular distribution. *Lagestromia parviflora, Cassia fistula, Lannea coramondalica* and *Anogeissus latifolia* species were showed contagious (>0.50). Where the other species characteristic random distribution.

The occurrence of contagious distribution in natural vegetation. According to Odum⁸ clumped (contagious) distribution in the commonest pattern in nature. Random distribution occurring in uniforms environments and the regular distribution in areas where several competitions between the individuals exists. In the area main shrubs species are *Dodonaea viscose* and *Gymnesporia montana* are regenerating.

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	Table 1: Calculation of frequency %, abundance, and density of various species																										
	1										2										3	4	5	6	7	8	9
S.No.	Name of Species	1	2	No 3	9. of	indi 5 (vidi	als 8	in 9	eacl	h Q 11	uad 12	ran 13	14	(8M 15 1	X 6 1	131	M) 18	19	20	Tot. No. of Indv. of all quadrant	No. of Quad. of occurrence	Tot. No. of Qud. Studied	Frequency % Col. 4/5 X 100	Abun dance Col 3/4	Density Col. 3/5	Abundancy/ Frequency (A/F)
1	Accasia leucophloea (Roxb.) Willd.	-	-	-	-	- 1		-	1	1	-		•	*	-	-	-	-	-		3	3	20	15	1.00	0.15	0.066
2	Aegle marmelos (L.) Corr.	-	-	-	-			-	-	-	-	-	-	-	-	-	1	1	-	-	2	2	-do-	10	1.00	0.10	0.10
3	Albizia amara (Roxb.) Boiv.	-	1	1	3	1 2	2 1	6	1	-	3	2	4	1	1	-	1	-	1	4	29	15	-do-	75	1.933	1.45	0.026
4	Anogeissus latifolia Perr.	-	4	4	-		1	-	1	1	-	-	-	-	- 1	2	-	-	4	-	5	4	-do-	20	1.25	0.25	0.062
5	Annona squamosa L.	-	-	4	-			1	1	-	-	-	-	-	-	-	1	-	-	-	7	4	-do-	20	1.75	0.35	0.087
6	Azadirachta indica A. Juss.	-	1	2	3		4	-	-	-	-	-	2	1	-	-	1	-	1	2	13	7	-do-	35	1.857	0.65	0.053
7	Bauhinia racemosa Lam.	-	-	-	-	- 1	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1	1	-do-	5	1.00	0.05	0.200
8	Buchnania lanzan Spr.	1	3	1	3	1 3	1 -			1	2	-	-	4	1	-	-	-	1		21	11	-do-	55	1.909	1.05	0.034
9	Calophyllum enophyllum L.	-	-	-	-		-	-	-	-	2	-	-	-	2	-	-	-	1	÷	5	3	-do-	15	1.667	0.25	0.111
10	Dalbergia paniculata Roxb.	1	3	2	1	1 .	2		-	-	-	-	-	-	-	-	-	1	-	-	8	6	-do-	30	1.333	0.4	0.044
11	Cassia fistula	-	1	-	-	1 1	1	2	-	1	1	-	-	2	1	-	-	2	2	-	15	11	-do-	55	1.364	0.75	0.024
12	Diospyrus chloroxylon (Roxb.)	-	2	1	1	1 1		2	2	2	1	2	-	2	1	-	-	-	3	1	22	14	-do-	70	1.571	1.10	0.022
13	Diospyrus melanoxylob (Roxb.)	-	-	-	-			-			-	-	-	-	- 1	1	-	-	-	4	1	1	-do-	5	1.00	0.05	0.20
14	Dodonaea viscose	-	-	-	÷.		-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	1	-do-	5	1.00	0.05	0.20
15	Dolichandrone falcata Seem.	-	-	-	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-do-	5	1.00	0.05	0.20
16	Grautia flavescenes Juss.	-	-	-	-	1 .		-	-	-	-	-	-	-	-	-	-	-	-	4	1	1	-do-	5	1.00	0.05	0.20
17	Gymnosporia montana (Roth.) Benth	-	4	-	1		1	-	-	-	2	-	2	3	-	-	-	-	1	1	11	7	-do-	35	1.571	0.55	0.044
18	Holarrdena pubescens Wall. Ex G.Don.	-	1	1	-	- 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	-do-	15	1.00	0.15	0.066
19	Lannea coromandelica (Houtt.) Mann.	-	-	-	-	2 -	3	-	1	2	2	1	÷	-	3	-	-	4	-	1	19	9	-do-	45	2.111	0.95	0.046
20	Lagestromia parviflora Roxb.	8	7	5	9	13 1	2 14	1 5	3	11	13	8	8	3	6 9	9	9	9	8	7	167	20	-do-	100	8.35	8.35	0.083
21	Madhuca langifolia (Koen.) Manchbr.	-	-	3	-	1 -	-	-	-	-	-	-	1	-	1	-	-	-	-	-	6	4	-do-	20	1.50	0.3	0.075
22	Santalum album L.	-	-	-	1	-		-	-	-	-	-	-	-	-	-	-	-	-		1	1	-do-	5	1.00	0.05	0.20
23	Schefflera stellata (Gaertn.) Harms.	-	1	4	÷	- 1			1	-	-	-	÷	-	-	-	-	-	-	÷	3	3	-do-	15	1.00	0.15	0.066
24	Semicarpus Anacardium L.	-	4	4	-		3	-	-	4	-	-	2	-	-	-	-	-	-	4	3	1	-do-	5	3.00	0.15	0.2
25	Soymida febrifuga (Roxb.) A. Juss.	-	-	-	-				-	-	-	-	1	-	-	-	-	-	-	-	1	1	-do-	5	1.00	0.05	0.20
26	Tectona grandis L.	-	1	-	1	- 1	-	1	-	-	-	1	1	1	-	-	-	-	-	7	7	7	-do-	35	1.00	0.35	0.028
27	Terminalia alata Heyne ex Roth.	1	2	12	-			3	-	-	1	-	-	-	-	-	-	-	-	1	20	6	-do-	30	3.333	1.00	0.111
28	Ziziphus xylopyrus (Retz.) Willd.	2	1	-	1		5 -	-	5	7	1	1	2	2	1	- 1	2	1	2	+	33	14	-do-	70	2.357	1.65	0.33

Int. J. Pure App. Biosci. **2 (3):** 243-245 (2014) ISSN: 2320 – 7051 Table 1: Calculation of frequency %, abundance, and density of various species

REFERENCES

- 1. Anonymous, A report Vol. IX NCA, Govt. of India, Ministry of Agriculture, New Delhi. (1976)
- 2. Brower J., Zar J. and Endle C. Field and laboratory methods for general ecology, 3rd ed., W.C. Brown publishers, U.S.A. (1990)
- 3. Khullar Pankaj, Conservation of biodiversity in natural forests through preservation plots. A historical perpective, *Indian Forester*. **118** (5): 327-337 (1992)
- 4. Brower J., Zar J., and Endle C. Field and laboratory methods for general ecology, 3rd ed., W.C. Brown publishers, U.S.A. (1990)
- 5. Reddy R.D, Prasad M.K. and Venkaiah K. *Forest Flora Andhra Pradesh* (Vernacular names) Hyderabad. (Forest Department of Andhra Pradesh) (1991)
- 6. Curtis J.T. and R. P. Mcintosh The interrelations of certain analytic and synthetic phytosociological character. *Ecology*, **31**: 434-455 (1950)
- 7. Curtis J.T. and Cottam G. *Plant Ecology Work Book. Laboratory field reference manual*, Burgess publishing (Minnisota) Co. 193 (1956)
- Champion and Seth S.K. (1951) Manual of Instruction on Experiments, Preservation plots, Protected trees, statistical sample plots, Linear increment plots and Annual Research Reports, Superintendent, Printing and Stationary Allahabad. Plant Diversity in Preservation plot of Orrisa by Tropical Forest Research Institute (ICFRE), Jabalpur, India, 1998.
- 9. Odum E.P., Fundamentals of Ecology. (1971)

Mamatha, M.