Floristic analysis and phytosociological studies on trees of Perumal Malai hill, Salem, Tamil Nadu

Prabakaran R* and Greeshma V

PG and Research Department of Botany, Vivekanandha College of Arts and Sciences for women, Elayampalayam, Triuchengode-637205, Tamil Nadu, India

ABSTRACT

The study area Perumalmalai is situated in Southern Eastern Ghats. It is located between 78° 10' Longitude in East and 110° 70' Latitude in North. The flora enriched with 47 families, 89 genera and 106 species of angiosperm. The Vegetation includes different types of habit such a tree, shrubs, herbs, prostrate, climbers, stragglers, Lianas, Parasite. To investigate the tree Vegetation, quadrates was established and (20x20) were marked on either side at equal intervals for measuring tree diversity. The highest relative frequency recorded in *Wrightia tinctoria, Albizia amara, Diospyros montana* is lowest density (1.04 individuals/m2) followed by other trees such as *Grewia hirsuta.* The presentation and documentation this forest is crucial not only for maintaining the biodiversity, but also for meeting the basic of the human population.

Keywords: Floristic analysis; Perumalmalai; Phytosociological studies

INTRODUCTION

Diversity is envisaged as a macroscopic property of the community compassing both the number of species their composition and distribution of individuals between them Bishi and Swain (2000). India is recognized as a country uniquely rich in all aspects of species and genetic, biodiversity ecosystem.

The dynamic population growth together with increased agricultural extensification had intensified the deforestation problem. It is estimated that one out of 3 persons in India depends on forest as a source of food (Sha1983).

The rapid depletion of forest due to increasing human activities is increasing environmental degradation. The ecological effects are large scale forest loss includes decreased biodiversity. A sound understanding of the richness of species is necessary for appropriate conservation and restoration of the biological diversity. Vegetative ecology includes the investigation of species composition and sociological interaction of species in communities Mueller-Dombois and Ellenboro, (1974).

Phylosociological analysis of a plant community is an important aspect of ecological study of any piece of vegetation. It reveals the structure picture of the vegetation and help in analyzing the community dynamics of species composition and it is one of the major anatomical characters of Plant community. Thus the structure and nature of plant community of Perumalmalai is determined by phylosociological analysis.

MATERIALS AND METHODS

The study area perumalmalai is situated in Southern Eastern Ghats. It is located between 78 ⬚ 10' Longitude in East and 110 ⬚ 70' Latitude in North of Salem District. The study area present of South-West of Salem City. It is about 26 Km away from the city. The area is an isolated hill and very close to Kanjamalai hills, the vegetation is dry tropical deciduous thorn forest as like that of Kanjamalai hills and the soil is red. The name itself reveals (Perumal-deity, malai-hill) deity perumal in the temple, situated at top of the hill. The hill is completely stone fenced.

Phytosociological methods

To investigate the tree vegetation, quadrate was established. The aim of this quadrate was to document the tree vegetation (Brook house *et. al* 1996). The adequacy number of sample plots was decided in experimental site. The species was calculated in Relative density, Relative dominance, Relative frequency and Important value index (IVI).

RESULT AND DISCUSSION

Flora of Perumalmalai carried out in 2010. The region falls under tropical monsoon North East retreating monsoon. The average annual rainfall ranges from 65 to 51.2 cm. The average maximum temperature is about 35.30 C. The minimum temperature is about

---

* Corresponding Author
Email: discoverypraba@gmail.com
Contact: +91-9443334893

Table 1: List of trees in the study area

S.NO	BINOMIAL	FAMILY
1	Albizia amara (Roxb.)Boivin	Mimosaceae
2	Albizia lebbeck (L.)Benth.	Mimosaceae
3	Ailanthus excelsa Roxb.	Simarubaceae
4	Anona squamosa L.	Annonaceae
5	Azadirachta indica Adr.Juss.	Meliaceae
6	Bambusa arundinacea (Rezt.)Willd	Poaceae
7	Borassus flabellifer L.	Areaceae
8	Commiphora berryi (Arn.)Engl.	Burseraceae
9	Chloroxylon swietenia D.C.	Rutaceae
10	Delonix elata (L.)Gamble	Caesalpineaceae
11	Diospyros ebenum J.Koening ex Rezt	Ebenaceae
12	Diospyros Montana Roxb.	Ebenaceae
13	Ehretia ovalifolia Wight.	Boraginaceae
14	Euphorbia antiqourum L.	Euphorbiaceae
15	Ficus religiosa L.	Moraceae
16	Holoptelia integrifolia (Roxb.)Planchon	Ulmaceae
17	Premna serratofolia L.	Verbenaceae
18	Pithecellobium dulce (Roxb.)Benth.	Mimosaceae
19	Santalum album L.	Santalaceae
20	Tamarindus indica L.	Caesalpineaceae
21	Wrightia tinctoria (Roxb.)R.Br.	Apocynaceae
22	Zyziphus mauritiana Lam.	Rhamnaceae
23	Zyziphus trinervia Roxb.	Rhamnaceae

24.40 C. The maximum relative humidity ranges from 81. The minimum relative humidity is 74. During this period, collections were made in different seasons of the year.

The flora enlisted 47 families, 89 genera and 106 species of angiosperms. The plants were listed with alphabetical order, binomial, Vernacular name, family, habit. The Vegetation is typical dry tropical deciduous thorny forest. Among species enlisted dicot recorded 97 species, and monocot recorded 9 species.

In dicot polypetalae dominate with 43 species, and gamopetalae with 33 species and monochlamydea with 21 species. Among the families recorded euphorbiaceae dominate with 12 species, followed by acanthacae with 7 species, amaranthaceae with 5 species and 23 families representing with single species.

Habit

The vegetation recorded different type of habits, it includes herbs with 44 species (41.5%), trees with 24 species (22.6%), prostrate with 6 species (5.6%), climber with 6 species (5.6%), straggler with 3 species (2.83%), parasite with 2 species (1.8%), and lianas with single species were recorded in the study area. To find out the tree diversity of perumalmalai adequate number of quadrate were plotted in 20 x 20 mt. area.

The list of trees species were listed in Table.1. A few important trees like *Wrightia tinctoria*, *Azadiracta indica*, *Premna serratifolia*, *Chloroxylon swietenia*, *Diospy-* *ros montana*, *Diospyros ebenum*, *Zizyphus trinervia*, *Zizyphus mauritiana* etc., were found in the study area.

Relative Frequency

The highest relative frequency among trees is found in *Wrightia tinctoria, Abizia amara* and *Azadiracta indica* is 16.12 each. Followed by other trees *like Chloroxylon swietenia, Premna Serratifolia* and *Grewia hirsuta* has least Rf value each 3.22 individuals/m2.

Relative density

The highest relative density among trees is found in *Wrightia tinctoria* (**47.9 individuals/m2),** followed by other trees such as *Azadirachta indica, Chloroxylon swietenia.* The least Relative dominance was recorded in *Grewia hirsuta* and *Diospyros Montana(*1.04 individuals /m2.)

Relative dominance

The highest relative dominance among trees is found in *Wrightia tinctoria* (49.56 individuals/m2), followed by other trees such as *Azadirachta indica and Albizia amara*. The least Relative dominance were recorded in *Grewia hirsuta* (0.598 individuals/m2)

Important value index

Important value index represents the extent of dominance of a species in the community. The highest important value index among trees is shown by *Wrightia tinctoria*, followed by *Azadirachta indica*, *Albizia amara* and *Chloloxylon swietenia*. The highest basal area is 80 recorded in *Azadirachta indica* tree and lowest basal

Table 2: Density and diversity indices of some tree species

S. No	Botanical Name	Total No	NPS	RD	RDom	SF	RF	IVI
1	Wrightia tinctoria	46	5	47.9	49.56	100	16.12	213.52
2	Albizia amara	25	5	26	27.3	100	16.12	169.4
3	Azadirachta indica	30	5	31.2	38.5	100	16.12	185.8
4	Premna serratifolia	9	4	9.375	9.217	80	12.90	111.4
5	Chloroxylon swietenia	20	4	20.83	15.24	80	12.90	128.9
6	Diospyrous montana	1	1	1.04	1.237	20	3.22	25.49
7	Ehretia ovalifolia	3	3	3.125	1.955	60	9.67	74.75
8	Zizyphus trinervia	7	3	7.29	5.865	60	9.67	82.82
9	Grewia hirsuta	1	1	1.04	0.598	20	3.22	24.85

NPS: No.of plots which species occur; RD: Relative Density; RDom: Relative Dominance; SF: SpeciesFrequency; RF: RelativeFrequency; IVI : Important value index.

area is 15 recorded in *Grewia hirsuta*.(Table 2)The low basal area of trees is may be due to light demanding species to colonize and establish.

The diversity of trees is fundamental to forest biodiversity, because trees provide resources and habitat structure. As human activities keep escalating ever increasing population, ecosystem near human settlements becomes fragile. Hence documenting tree diversity in forest sites and they're by emphasizing the need for return generation. Understanding the ecology of tree species is central to sustainable forest management and conservation (Pinand *et al.,* 1999). The Presentation and documentation this forest is crucial not only for maintaining the biodiversity, but also for meeting the basic needs of the human populations.

ACKNOWLEDGEMENT

REFERENCES

Galv PK, Raewa SS, Chaudhary BL, Anitajain, Phytosociological studies on the grass land community of Southern Aravalli hills of Rajasthan. Indian forest, 2005, 131:943-952.

Hishi N, Swain SL, Diversity of herbaceous layer in a dry deciduous forest floor of Orissa, J Ecobiol, 2000, 12: 217-222.

Ishnava K, Ramarao V, Parabia MH, Kothari IL, Mohan JSS, Plant diversity and its present status in Little Rann of Kach, Gujarat, India, Journal of economic and Taxonomic botany, 2008,32:302-310

Krishanaprasad, Rajagopal VT, Yogeshkant, Badarinath KVS, A quantitative measure for forest area rehabilitation using IRS-IC. LISS-111 satellite data, J Ecobiol, 1998, 10:37-41

Kursad ozkan, Environmental factors as influencing vegetation communities in Acipayam district of Turkey, J Environ Biol, 2009, 30:741 – 746.

Mandra, Datra B, Vinaya ghate, Changing floristic diversity of Karaj hill, Pune, Geobios, 2006, 33:133-136

Maya S, Sarojini Menon V, Sreedharan Nair G, Economic importance of river vegetation of Kerala a case study, J Econ Taxon, 2003, 27:796-803.

Pandey RP, Diwakar PG, An integrated checklist Flora of Andaman and Nicobar Island, India, Journal of economic and Taxonomic Botany, 2008,32:403-500.

Saravanan GP, Gurunathan N, Senthil kumar R, Assessment of floral diversity in the Kothagiri hills of Western Ghats, J Ecobiol, 2009, 24:373-381.

Selvaraj G, Muthuchelian K, Monitoring plant diversity of Palani hills (Western Ghats) Southern India, Eco Env and cons, 2005, 11:183-194

Sena lster L, Ferht gobulak, Effect of stand types on understanding vegetation, J Environ Biol, 2009, 30:595-600.

Sook KK, Meiti TC, Pangging G, Singh B, Dominant indigenous agro forestry system of biodiversity rich North Lakhimpur district of Assam, India, J Ecobiol, 2000, 12:189-198.