



STUDIES ON FLORISTIC DIVERSITY ANALYSIS OF TROPICAL SEMI EVERGREEN FOREST OF NARASAPUR, MEDAK DIST, TELANGANA STATE, INDIA

Vijaya. S

Department of Botany

Tara Govt. College (A), Sangareddy, T.S.

Abstract:

The present paper aimed to study the floristic diversity of Narasapur Reserve Forest dominated forest of Telangana State. Floral diversity patterns of vascular plant species were studied along with the geographical gradients in the Areas of tropical regions of Narasapur Reserve Forest. Narasapur Reserve Forest is located in and around Narasapur town in Medak District. The area of the block is 1752.33 hectares. Vegetation data were sampled from two moist evergreen and deciduous forest fragments. The patterns of plant diversity were evaluated on the basis of species richness as the total number of species at each site and species change between and within sites and in relation to vegetation structure. During the field trips and research it is found the field area is inhabited by various types of plants like *Tecton grandis*; *Terminalia arjuna*; *Ficus recemosa*; *Terocarpus marspium*; *Annona squamosal*; *Aerva lanata*; *Crotalaria juncea* etc. A total of 66 species belonging to 35 families were recorded. The quantitative features such as density and importance value index of species varied greatly. In the present study the diversity index of shrubs and herbs were found to be higher than the tree species. The forest has very thick canopy and many hillocks. The concentration of dominance was recorded highest in the tree species. The presence of low number of higher girth class of tree species and higher number of the saplings and seedlings indicates that the present forest is young exhibiting frequent regeneration.

Key words: Evergreen Forest, Narasapur Reserve Forest, deciduous, forests, floristic diversity, and species diversity

Introduction:

Tropical forests constitute the most diverse plant communities on earth. These forests are disappearing at alarming rates owing to deforestation for extraction of timber and other forests products. Especially in NE India shifting cultivation operation are most obvious causes of forests disturbances. The problem with the chronic form of forest disturbance is that plants or ecosystem often do not get time to recover adequately because the human onslaught never stops (Singh 1998).

An obvious approach to conserve plant biodiversity is to map distributional patterns and look for concentrations of diversity and endemism (Gentry 1992). Further, management of forest requires understanding of its composition in relation to other forests, the effects of past impacts on the present status and the present relationship of the forest with surrounding land uses (Geldenhuys and Murray 1993).

A complete list of the hundreds of plant species utilised by humans throughout history illustrates their importance in health, economy, housing, clothing, and food (Rizwana, *et. al* 2006). Regional floristic investigations are important to determine the species distribution, floristic variability, and economic worth of a community, as well as to evaluate the community's conservation status in any region (Sundriyal, 2003). One of the most important national and global problems is the need to conserve biodiversity for future generations while also attempting to understand and record traditional knowledge about resource management methods (Nehal *et. al*, 2004).

Across the world, 25 hot-spots have been identified on the basis of species endemism and degree of threat through habitat loss (Myers *et al.* 2000). Out of these, two are confined to India sub-continent (i.e. western ghat/ SriLanka and Indo-Burma). The present study site falls within the Indo-Burma hot-spot.

The Narasapur reserve forest is situated in and around the town of Narasapur in the Medak district. The forest is categorised as a southern tropical dry deciduous forest with a high level of flora richness. Majority of the block's topography is gradually rolling in small hillocks. The block serves as the primary feeder for Pandivaagu, a large creek that flows into Narasapur Lake and supplies irrigation to neighbouring communities. The area's soil is mostly red with low fertility, with some sandy, acidic, and black cotton soils composed of clay loams and silty clays.

Methods and Materials:

The present work in plant diversity in the Narasapur forest is based on intensive explorations by the author during the year 2018-2019 and also on the analysis of collected specimens. Field trips were conducted during different months of a year covering most area of the forest and collected the plant species and every attempt was made to study the habit, habitat flowering season of the plants collected. So far the number of plants have been identified and still many have to be identified.

The climate is drier climates, with warm, humid weather and cool, cold season. The average temperature varied between From 24.15°C in January to 35.9°C in May, the temperatures vary from 24.15°C to 35.9°C. Average lowest temperature were 12.5°C. During January (August). The average monthly rainfall was 4.5 mm (January) to 196 millimetres (July). The annual rainfall average is 1245 millimetres the air's average relative humidity ranged from 61.5 percent in February to 82.8 percent in March. (July). The soils in the research region were sandy. Texture, as well as being acidic in character. The Field trip was conducted undertaken between 2018-2019.

The sites were divided into just three divisions for the study of plant biodiversity, depending on topography and altitude. One 250 x 40 m transect containing five (10 x 10 m) randomly laid quadrats has been used to sample each section. Species of trees, shrubs, and plants were collected and classified from each quadrat.

Results and Discussion:

Floristic variety is significant. A total of 66 species (40 trees and 26 shrubs) were identified, having 21 tree families and 17 shrub families identified. (Table-1&2) Among families, Anacardiaceae (2 species) Apocynaceae (1 species) Boraginaceae (1 species) Bursaraceae (1 species) Calophyllaceae (1 species) Ceasalpinaceae (2 species) Combretaceae (4 species) Ebenaceae (1 species) Euphorbiaceae (1 species) Fabaceae (7 species) Lythraceae (1 species). Malvaceae (3 species) Mimosaceae (2 species) Moraceae (4 species) Myrtaceae (1 species). Olacaceae (1 species) Rubiaceae (4 species). Sapotaceae (1 species) Sterculiaceae (1 species) Verbenaceae (1 species). Shrubs identified 26 species Amaranthaceae (1 species). Annonaceae (1 species). Arecaceae (1 species). Asteraceae (2 species). Caesalpinaceae (4 species). Caryophyllaceae (1 species). Celastraceae (2 species). Ebenaceae (1 species). Euphorbiaceae (1 species). Fabaceae (4 species). Malvaceae (2 species). Mimosaceae (1 species). Rhamnaceae (1 species). Rubiaceae (1 species). Teliaceae (1 species). Verbanaceae (2 species). Verbenaceae (1 species) (Table 3and 4) (Fig-I and II)

Several researchers in tropical forests have reported higher numbers of species than the 66 species recorded in the present study (Chowdhury *et al.* 2000 (85 species), Fox *et al.* 1997 (94 species), Kadavul and Parthasarathy 1999 (59 species), Khera *et al.* 2001 (92 species), Pande 1999 (52 species), Uma Shanker 2001 (87 species), and the number of species recorded in the present study (66 species) is lower than the value reported by Mekail *et al.* 1997 (148 species)] in different forest types

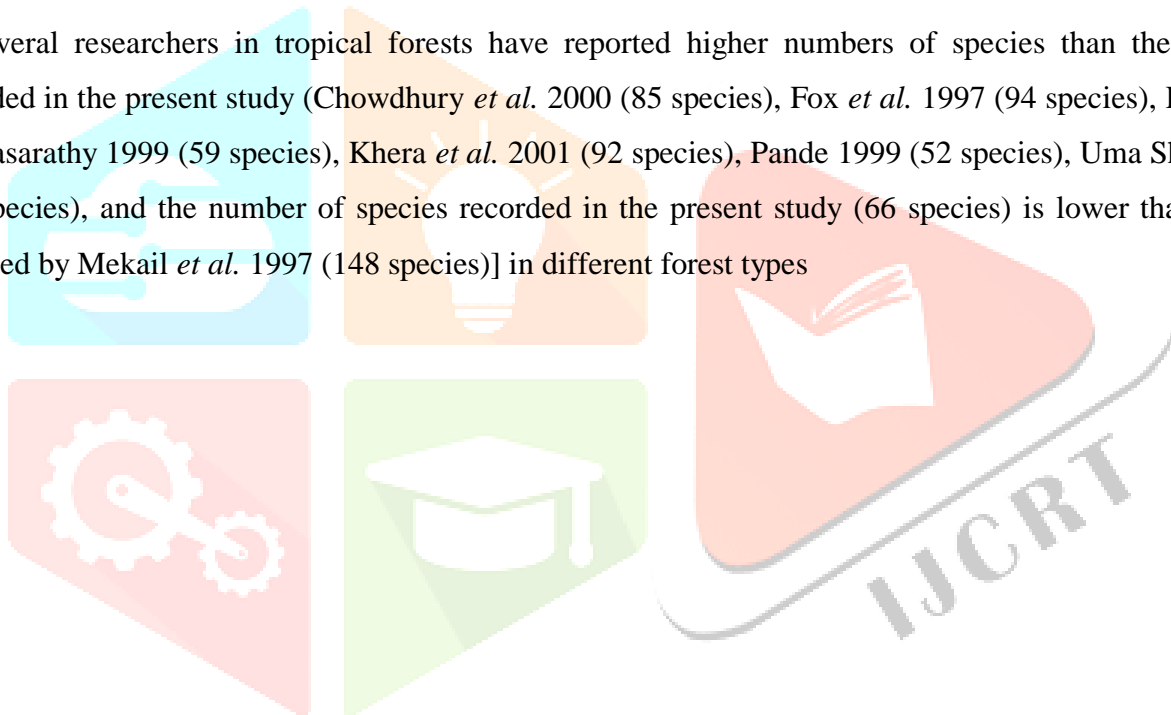


Table -1 LIST OF TREES – SOME IMPORTANT EXAMPLES

Sl.No.	Botanical Name	Vernacular Name	Family
1	<i>Albizia amara</i>	Narlenga	Mimosaceae
2	<i>Albizia lebback</i>	Chinduga	Mimosaceae
3	<i>Bombox ceila</i>	Buruga	Malvaceae
4	<i>Boswelvia serrata</i>	Guggilam	Bursaraceae
5	<i>Butea monosperma</i>	Moduga	Fabaceae
6	<i>Cassia fistula</i>	Rela	Ceasalpinaceae
7	<i>Cordia obliqua</i>	Iriki	Boraginaceae
8	<i>Aegle marmelos</i>	Maredu	Rutaceae
9	<i>Dalbergia paniculata</i>	Kondapachari	Fabeceae
10	<i>Azadiracta indica</i>	Vepa	Meliaceae
11	<i>Disospyros melanoxylon</i>	Tuniki	Ebenaceae
12	<i>Dalbergia latifolia</i>	Shesham	Fabaceae
13	<i>Buchnia latifolia</i>	Morripandu	Moraceae
14	<i>Calophyllum inophyllum</i>	Ponna	Calophyllaceae
15	<i>Hardwickia binata</i>	Yepi chettu	Ceasalpinaceae
16	<i>Holarrhena pubescens</i>	Kondamalle	Apocynaceae
17	<i>Givotia moluccana</i>	Konda puniki	Euphorbiaceae
18	<i>Gardenia gummifera</i>	Chittamaali	Rubiaceae
19	<i>Lagerstroemia parviflora</i>	Chinangi	Lythraceae
20	<i>Lannea coromandelica</i>	Ajashrunge	Anacardiaceae
21	<i>Limonia elephantum</i>	Velaga	Rutaceae
22	<i>Madhuca latifolia</i>	Ippa	Sapotaceae
23	<i>Ficus bengalensis</i>	Marri	Moraceae
24	<i>Morinda pubescens</i>	Maddi chettu	Rubiaceae
25	<i>Sterculia urens</i>	Tapsi	Sterculiaceae
26	<i>Syzygium cumini</i>	Nerudu	Myrtaceae
27	<i>Tectona grandis</i>	Tekku	Verbenaceae
28	<i>Terminalia arjuna</i>	Tellamaddi	Combretaceae
29	<i>Terminalia paniculata</i>	Putta nallamaanu	Combretaceae
30	<i>Terocarpus marsupium</i>	Yegisa	Fabaceae
31	<i>Tamarindus indica</i>	Chinta chettu	Fabaceae
32	<i>Terminalia chebula</i>	Karaka	Combretaceae
33	<i>Terminalia tomentosa</i>	Nallamaddi	Combretaceae
34	<i>Ximenia americana</i>	Nakkera	Olacaceae
35	<i>ficus carica</i>	Tellabittlu	Moraceae
36	<i>ficus remosa</i>	Medi	Moraceae
37	<i>Semecarpus anacardium</i>	Nellajeedi	Anacardiaceae
38	<i>Pongamia pinnata</i>	Kanuga	Fabaceae
39	<i>Acacia nilotica</i>	Nallatumma	Fabaceae

40	<i>Pterospermum acerifolium</i>	Teermaan	Malvaceae
----	---------------------------------	----------	-----------

Table 2. Plant Species diversity of Trees in Narasapur forest

Sl.No	Name of the family	Number of species
1	Anacardiaceae	2
2.	Apocynaceae	1
3	Boraginaceae	1
4	Bursaraceae	1
5	Calophyllaceae	1
6	Ceasalpinaceae	2
7	Combretaceae	4
8	Ebenaceae	1
9	Euphorbiaceae	1
10	Fabaceae	7
11	Lythraceae	1
12	Malvaceae	3
13	Mimosaceae	2
14	Moraceae	4
15	Myrtaceae	1
16	Olacaceae	1
17	Rubiaceae	4
18	Sapotaceae	1
19	Sterculiaceae	1
20	Verbenaceae	1

FIG-2 PLANAT NUMBER OF SPECIES DIVERSITY OF TREES IN NARASAPUR FOREST

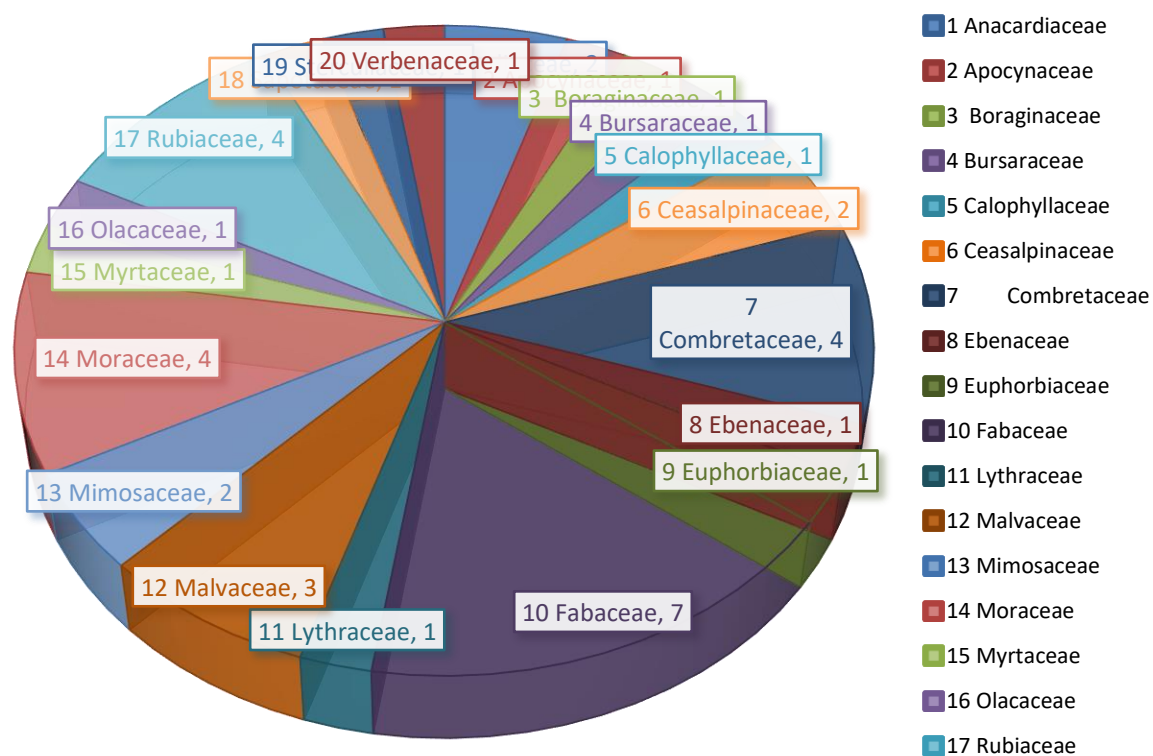


Table-3 List of shrubs - some important examples

S.No.	Botanical Name	Vernacular Name	Family
1	<i>Acalypha indica</i>	Muripenda	Euphorbiaceae
2	<i>Aerva lanata</i>	Pindikura	Amaranthaceae
3	<i>Ageratum conyzoides</i>	Adavi pudina	Asteraceae
4	<i>Annona squamosa</i>	Seethalphalam	Annonaceae
5	<i>Arbus preicatorius</i>	Gurivinda	Fabaceae
6	<i>Cassia auriculata</i>	Tangedu	Caesalpinaceae
7	<i>Cassia tora</i>	Pedda kasinda	Caesalpinaceae
8	<i>Catunaregam spinnosa</i>	Marrga	Rubiaceae
9	<i>Caesalpinia bonduie</i>	Gachakai	Caesalpinaceae
10	<i>Crotalaria juncea</i>	Janumu	Fabaceae
11	<i>Decaschitia crotonifolia</i>	Kondagoggu	Malvaceae
12	<i>Dichristachys cinera</i>	Velthuru	Mimosaceae
13	<i>Grewia hirsuta</i>	Cheema chipuru	Teliaceae
14	<i>Maytenus emarginata</i>	Chinni tuppa	Celastraceae
15	<i>Hibiscus lobatus</i>	Atakanaara	Malvaceae
16	<i>Indigofera linnaei</i>	Yerra palleru	Fabaceae
17	<i>Cassia occidentalis</i>	Adavi tangedu	Caesalpinaceae
18	<i>Diospyros melanoxylon</i>	Tuniki	Ebenaceae
19	<i>Gymnosporia spinnosa</i>	Dante chettu	Celastraceae
20	<i>Lantana camara</i>	Sisakammari	Verbenaceae
21	<i>Polycarpaea corymbosa</i>	Bommasaari	Caryophyllaceae
22	<i>Phoenix loureiri</i>	Eetha chettu	Arecaceae
23	<i>Pulicaria wightiana</i>	Adavi chamanthi	Asteraceae
24	<i>Butea superba</i>	Theega moduga	Fabaceae
25	<i>Vitex negundo</i>	Nalla vavili	Verbanaceae
26	<i>Zizypus Sps.</i>	Regu Chettu	Rhamnaceae

Table-4. Plant species diversity of Shrubs in Narasapur forest

Sl.No	Name of the family	Number of species
1	Amaranthaceae	1
2.	Annonaceae	1
3	Arecaceae	1
4	Asteraceae	2
5	Caesalpinaceae	4
6	Caryophyllaceae	1
7	Celastraceae	2
8	Ebenaceae	1
9	Euphorbiaceae	1
10	Fabaceae	4
11	Malvaceae	2
12	Mimosaceae	1
13	Rhamnaceae	1
14	Rubiaceae	1
15	Teliaceae	1
16	Verbanaceae	2
17	Verbenaceae	1

FIG-1 PLANT NUMBER OF SPECIES DIVERSITY OF SHRUBS IN NARASAPUR FOREST

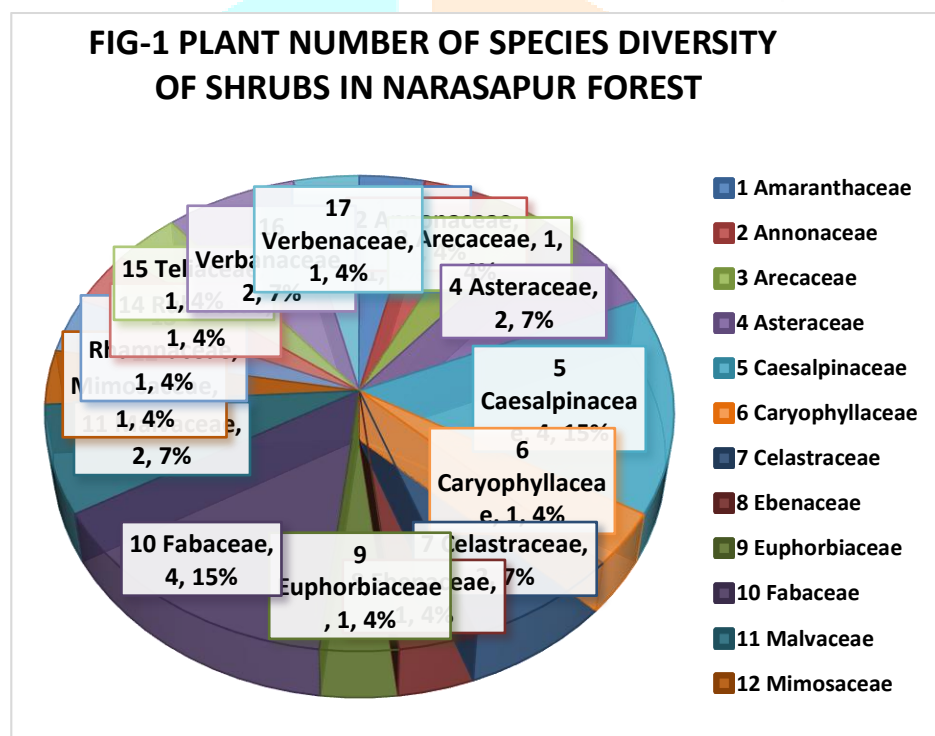




Plate-1 (A, B, C and D) Showing photographs during a field trip to Narasapur Forest in Telangana's Medak District, coordinator demonstrated the ability to identify trees and shrubs by their common names.

Reference:

- Chowdhury, M.A.M., M.K. Auda & A.S.M.T. Iseam. (2000). Phytodiversity of *Dipterocarpus turbinatus* Gaertn. F. (Garjan) undergrowths at *Dulahazara garjan* forest, Cos'B Bazar, Bangaladesh. *Indian Forester* 126: 674-684.
- Fox, B.J., E.T. Jennifer, D.F. Marelyn & Carole Williams. (1997). Vegetation changes across edges of rainforest remnants. *Biological Conservation* 82: 1-13.
- Geldenhuys, C.J. & B. Murray. (1993). Floristic and structural composition of Hanglip forest in the South Pansberg, Northern Transvaal. *South African Forestry Journal* 165: 9-20.
- Gentry, A.H. (1992). Tropical forests biodiversity, distributional patterns and their conservational significance. *Oikos* 63: 19-28.
- Kadavul, K. & N. Parthasarathy. (1999). Structure and composition of woody species in tropical semievergreen forest of Kalayan hills, Eastern Ghats, India. *Tropical Ecology* 40: 247-260
- Khera, N., A. Kumar, J. Ram & A. Tewari. (2001). Plant biodiversity assessment in relation to disturbance in mid elevation forest of central Himalaya, India. *Tropical Ecology* 42: 83-95.
- Mekail, O., S. Lars, H. Greger, Z. Olle & H. Janolof. (1997). Habitat qualities versus long-term continuity as determinants of biodiversity in boreal old-growth swamp forests. *Biological Conservation* 81: 221-231.
- Myers, N., A. Russell, C. Mittermelert, G. Mittermelert, A.B. Gustavo, da Fonseca & Jennifer Kents. (2000). Biodiversity hotspots for conservation priorities. *Nature* 24: 853-858.

- Nehal, A.F.; Majila, B.S and Kala, C.P (2004). Indigenous knowledge systems and sustainable management of Natural Resources in a high altitude society in Kumaun Himalaya India. *J. Hum. Ecol*, 16 (1):33-42
- Pande, P.K., J.D.S. Negi & S.C. Sharma. (1996). Plant species diversity and vegetation analysis in moist temperate Himalayan forests. Abstracted in First Indian Ecological Congress, New Delhi. 27-31 Dec. 1996.
- Rizwana, A. Q, Ahmad, I, Ishtiaq, M (2006). Ethnobotanical and Phytosociological studies of Tehsil Gujar Khan District Rawalpindi. *Asian journal of Plant Sciences* 5 (5): 890-893
- Singh, S.P. (1998). Chronic disturbance, a principal cause of environmental degradation in developing countries. (Editorial). *Environmental Conservation* 25: 1-2.
- Sundriyal, M., Sundriyal, R., C., (2003). Underutilized edible plants of the Sikkim Himalaya: Need for domestication. *Current Science*, 85(6) 731–736
- Uma Shanker. (2001). A case of high tree diversity in sal (*Shorea robusta*) dominant lowland forest of eastern himalaya: Floristic composition, regeneration and conservation. *Current Science* 81: 776-786.

