Resource potential utilization in Sacred Groves of Visakhapatnam District, Andhra Pradesh, India.

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Abstract: Resource potential utilization in sacred groves of Visakhapatnam District, located in Eastern Ghats of Andhra Pradesh harbour rich plant diversity. The primitive tribal communities living in and around the sacred groves are endowed with rich traditional botanical knowledge pertaining to medicinal values of plant species. In the present study, we documented 122 vascular plant species of medicinal value used by the tribes. The paper deals with the resource potential utilization of the species. Over-exploitation and unscientific collection of some medicinal plants threatening the resource and warrants sustainable harvesting by the local communities.

Key words*:* Resource utilization, tribal people, sacred groves, Visakhapatnam District.

I. INTRODUCTION

Since the ancient days, setting aside pockets of forest lands has been the practice for centuries in India. To protect these biological resources more meaningfully, a religious tag was attached which served over the years as a key factor in genetic conservation through the mechanism of sacred groves.

Plants have tremendous potential to become renewable sources of high quality raw materials for industry as well as providing a wealth of genetic diversity which can be lead to the discovery of new things (Bartle, 1997).The state of Andhra Pradesh has 800 Sacred groves enumerated so far (Bhandary and Chandrasekhar, 2003) locally known as Pavithra-vanalu according to "WWF-AP", 1996. Nellore district occupies third place in having highest number of sacred groves (88) after Kurnool district (106) and Chittoor district (102).

Biodiversity of Sacred groves is preserved in mostly undisturbed condition probably due to certain taboos and religious beliefs (Lakshmi Narayana and Venkaiah 1998). Four Sacred groves of Nellore district namely Narasimha Konda, Stambala Kona, Siddulaiah Konda and Kona Malleswara kona were extensively explored for their flora with emphasis on plants of ethanobotanical importance and this analysis brought out 27 additions to the flora of Nellore district after Srinivasa Rao(2002).

II. STUDY AREA.

The geographical area of the Visakhapatnam district with an area of 11,161 sq. km. (4.1 % of the area of the state) is one of the north eastern coastal districts of Andhra Pradesh. It lies between 17°–15' and 18°– 32' Northern latitude and 18°– 54' and 83°– 30' in Eastern longitude. The district presents two distinct geographic divisions. 1. Plains division which is a strip of land along the coast and interior, 2. Hilly area of the Eastern Ghats flanking on North and West called Agency Division.

The District receives annual normal rainfall of 1202 mm. of which south – west monsoon accounts for 66.2% of the normal while north – East monsoon contributes 33.5% of the normal rainfall during 2005-2006. The rest is shared by summer showers and winter rains.

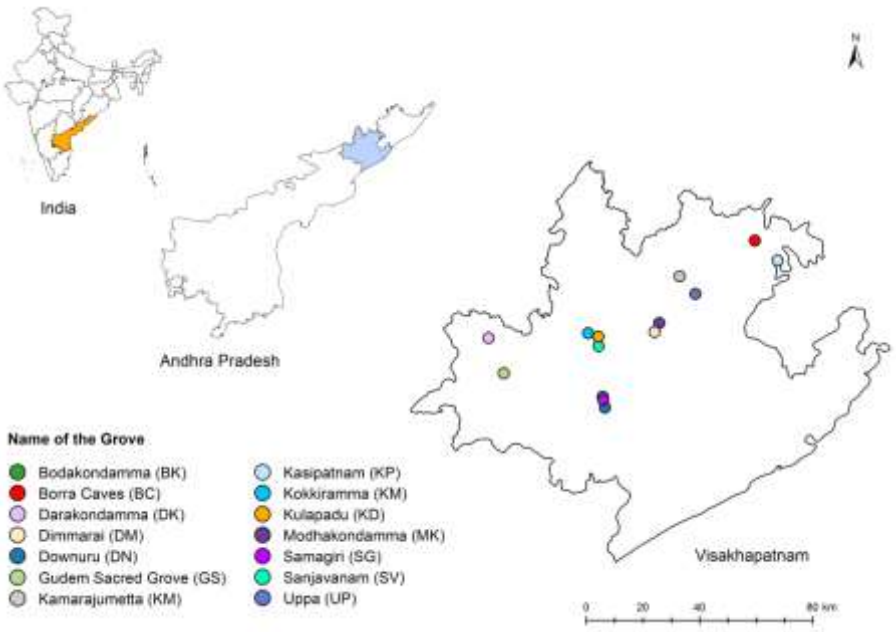


Figure showing. Map of Study area

III. MATERIAL AND METHODS

Resource potential utilization studies were carried out during 2014 to 2017 to cover 14 selected sites (Site-1-Modhakondamma Sacred grove, Site-2-Bodakondamma Sacred grove, Site-3-Darakondamma Sacred grove, Site-4-Downuru Sacred grove, Site-5-Dimmarai Sacred grove, Site-6-Sanjavanam Sacred grove, Site-7-Uppa Sacred grove, Site-8-Kasipatnam Sacred grove, Site-9-Kokkiramma Sacred grove, Site-10-Borra Sacred grove, Site-11-Kulapadu Sacred grove, Site-12-Samagiri Sacred grove, Site-13-Gudem Sacred grove, Site-14-Kamarajumetta Sacred grove). The entire area of the fourteen sacred groves sites are thoroughly studied by repeated visits in different seasons of the year 2014–2017 covering pre-monsoon, monsoon and post-monsoon seasons. It helps in observing the different developmental stages of plant species like vegetative, flowering and fruiting stages. The plant specimens were collected, identified with the help of Flora of Presidency of Madras Gamble 1967, Hooker 1897. During the field work, the specimens collected for the preparation of herbarium was processed in accordance with the methodology adopted by Jain and Rao (1977).

IV. RESULT AND DISCUSSION

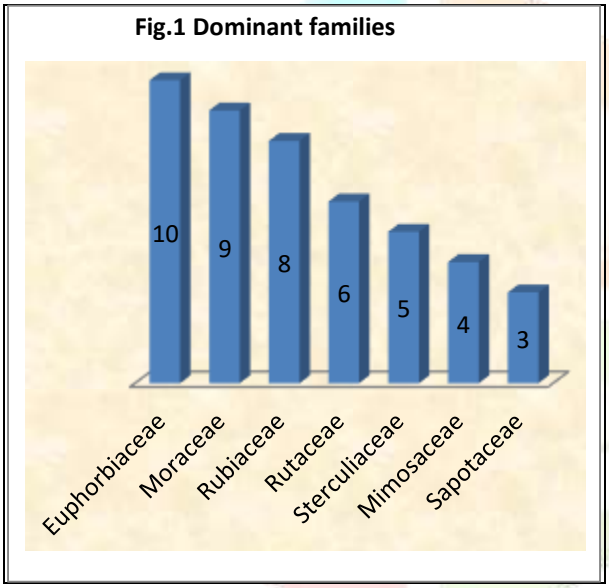
The tribal people living around 14 Sacred grove forest fragments are dependent for their basic needs on non-timber forest products (NTFPs) especially medicinal plants, of the 122 tree taxa recorded from the study area, 37 taxa possess one use value (Table 1). These comprise 30.32% of the total recorded tree taxa of study area. Of the 122 tree taxa, 39 taxa (31.9%) yield edible fruits (eaten both by humans and animals), 31 (25.40%) have timber value, 95 (77.86%) are with medicinal value, 21 (17.21%) with fuel wood value, 14 (11.47%) with fodder value and 41 taxa (33.60%) of other uses (Fig.`1). With regard to the number of species found within families, Euphorbiaceae is the most diverse tree family in samples, being represented by 10 species, followed by Moraceae (9 species), Rubiaceae and Fabaceae (8 species), Rutaceae and Combretaceae (6 species), Sterculiaceae and Meliaceae (5 Species). Five families Verbenaceae, Mimosaceae, Flacourtiaceae, Caesalpiniaceae and Anacardiaceae represented by 4 species, four families Annonaceae, Combretaceae, Ebenaceae, Rutaceae represented by 6 species, three families Sapotaceae, Ebenaceae and Annonaceae represented by 3 species, Eight families Ulmaceae, Tiliaceae, Sapindaceae, Dilleniaceae, Burseraceae, Bombacaceae, Bignoniaceae and

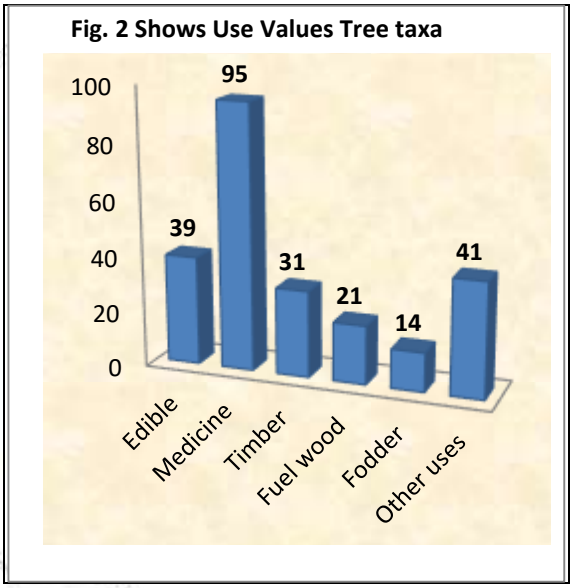
Apocynaceae represented by 2 species, twenty families represented by single species (Table-1). Within the family Moraceae, *Ficus* is the most common genus, being represented by 8 species, whilst the combretaceae and Ebenaceae were dominated by the genus *Terminalia*, *Diospyros* (4 and 3 species) respectively.

Our findings are comparable with studies in other deciduous forests in India. Kadavul & Parthasarathy (1999) and Chittibabu & Parthasarathy (2000) recorded 42 - 47 and 26 - 56 tree

Species per ha, respectively, in deciduous forests of the Kolli and Kalrayan hills in Tamil Nadu. Sukumar *et al.* (1992) have reported 31 woody species from the Mudumalai tropical deciduous forests of Tamil Nadu, while Sagar *et al.* (2003) have reported 49 tree species in dry forests of the Vindhyan hill ranges in northern India.

Many forest species yield edible fruits, leaves and tubers, which are of great economic importance. The analysis in this regard indicates that 39 taxa (31.9%) yield edible fruits (eaten both by humans and animals). *Albizia procera, Annona reticulate, Antidesma acidum, Artocarpus heterophyllus, Bauhinia malbarica, Bauhinia racemosa, Bombax ceiba, Buchanania lanzan, Caryota urens, Crateva magna, Dillenia indica, Dillenia pentagyna, Diospyros melanoxylon* and *Diospyros montana* etc,.





A total of 95 (77.86%) tree taxa reported from the study area have medicinal value. Significant medicinal plants include *Aegle marmelos, Alangium salvifolium, Albizia amara, Albizia procera, Anogeissus latifolia, Antidesma acidum, Atalantia monophylla, Bauhinia malbarica, Bauhinia racemosa, Bischofia javanica, Bombax ceiba, Buchanania lanzan, Callicarpa arborea, Callicarpa tomentosa, Careya arborea, Cassia fistula, Ceiba pentandra, Chloroxylon swietenia* and *Chukrasia tabularis etc,*.

A total of 31 (25.40%) tree taxa reported from the study area have timber value. Significant yielding plants include: *Albizia chinensis, Albizia procera, Artocarpus heterophyllus, Bridelia Montana, Careya arborea, Caryota urens, Chloroxylon swietenia, Dalbergia latifolia* and *Dalbergia paniculata etc,*.

A total of 21 (17.21%) tree taxa are prominently used as fuel wood in the study area. Significant taxa include: *Albizia odoratissima, Anogeissus acuminata, Bridelia airy-shawii, Buchanania lanzan, Chukrasia tabularis, Diospyros melanoxylon, Diospyros Montana, Diospyros sylvatica* and *Ficus microcarpa etc,*.

A total of 14 (11.47%) tree taxa are prominently used as fodder use in the study area. Significant taxa include: *Aegle marmelos, Artocarpus heterophyllus, Bauhinia malbarica* and *Diospyros melanoxylone* etc,.

A Total of 41 taxa (33.60%) of other uses like fiber, gums, dyes and oils etc., Significant taxa include: *Albizia amara, Albizia chinensis, Albizia odoratissima, Albizia procera, Anogeissus latifolia, Buchanania lanzan, Callicarpa arborea, Caryota urens, Casearia elliptica , Casearia graveolens , Cassia fistula, Ceiba pentandra, Dalbergia latifolia, Dillenia indica, Eriolaena hookeriana , Erythrina suberosa , Erythrina variegate, Euphorbia antiquorum, Firmiana colorata, Garuga pinnata* and *Gmelina arborea* etc,.

V. CONCLUSION

It is very important to conservation of these plants in view of tribal belief and traditions in order to protect the forest and its biodiversity. This forest is in great danger caused by humans. They afforest much are under the name of development, then it has no meaning by saying sustainable development. Selfish people damaging many plants under the name of growth and development. For improving their degraded condition, it is suggested that the local people living inside and around the sacred groves need to be taken into confidence, so that long-term conservation goals can be achieved.

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