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Phytodiversity Conservation of Kona Malleshwarakona Sacred Grove Veligonda Hills

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ABSTRACT

Sacred groves are climax forests and are the only representatives of natural or near-natural vegetation. These are dedicated to deities or ancestral spirits worshipped by local tribes along with surrounding plants and trees. These are ecosystems by themselves and perform all the ecological functions. Kona malleshwarakona Sacred grove is one of the important sacred groves in Nellore district. The present paper deals with the phytodiversity of the above grove used by local tribes. This paper deals with the 320 plant species over 90 families 247 are dicotyledons 4 are peterdophytes 64 are monocotyligons.

KEY WORDS: *Sacred Grove – Deities – Tribes –Kona malleshwarakona- phytodiversity*

INTRODUCTION

Sacred groves (SGs) are small groves that vary in size from a few hectares to a few kilometersprotected by local communities as being the sacred residences of local deities and sites for religioculturalrituals. They serve as valuable storehouses of biodiversity. They are part of biological heritages and systems that has helped to preserve the representative genetic resources existing in thesurrounding regions for generations. Sacred groves are the important places in which biodiversity ispreserved in mostly undisturbed condition because of certain taboos and religious beliefs. They areancient natural sanctuaries that have supported thegrowth of several interesting and rare species of flora and fauna. The sacred groves harbor genotypes offuture importance that may be very vital for breeding programmes. The institution of sacred groves dates back to the pre-agrarian hunting-gathering phase of human civilization, and is known to thrive in most parts of India (Kosambi, 1962).

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 eneumerated so far (Bhandary and Chandrasekhar, 2003) locally known as Pavithra-vanalu. According to “WWF-AP”, 1996 88 groves were identified nellore district.. The strands in the Sacred groves were more diverse, had high basal area and showed fewer signs of disturbances than the Natural forest land. This supports the view that local communities afford better protection and management to Sacred groves (Ravi Prasad Rao, 1998). Biodiversity of Sacred groves is preserved in mostly undisturbed condition probably due to certain taboos and religious beliefs (Lakshmi Narayana and Venkaiah 1998).Ethno botanical wealth of sriharikota island of Nellore studied and reported 18 plant species of high medicinal importance (Savithramma and Basha 2002). This scenario motivates use to explore the medicinal Flora of Penchalakona Sacred grove which is studied by Basha et-al (2012) the second largest of the district after Narasimha Konda Sacred grove. Yanadis, yerukalas tribes living in this sacred grove.

GENERAL PATTERN OF VEGETATION

After a few showers of rain by about the middle of June, the land is covered by a num ber of sprouting grasses. Borreria articularis (L.f.) Will., Bulbostylis barbata (Rottb.) Cl., Cleome aspera Koenig, Hybanthus enneasper mus (L.) F. Muell., fndigofera linnaei Ali, Tribulus terestris Linn., are found among grasses. In the second half of monsoon, grasses grow fairly tall. Apluda mutica Linn., Chloris barbata Sw., Cymbopogon martinii (Roxb.) Wats., Eragrostis sp., Heteropogon contortus (L.) P. Beauv. ex R. & S., Perotis indica (L.) O. Kuntze etc. are often found in mixed or pure stands. Among these tall grasses a num ber of other plants are noticed namely A gera tum conyzoides Linn., Corchorus aestuans Linn., Croton bonplandianum Baill., Eclipta alba (L.) Hassk., Euphorbia hirta Linn., Phyl

lanthus asperulatus Hutch., Sida acuta Burm. f. etc. By the end of the monsoon or a little later most of the monsoon vegetation disap pears and those characteristics of the cold sea son appear. Some of the common ones are Andrographis echioides (L.) Nees, Anisomelis malabaricus R.Br., Barleria_ prionitis inn., Blumea sp., Elytraria acaulis (£.) Lindau, Helictropium indicum Winn., Lepidagathis mitis Dalz., Leucas aspera (Willd.) Sprang., Orthosiphon pallidus Royle ex Bth., ete.

The forests are mainly of two types. 1) dry deciduous on the hills and 2) scrub on the plains.

Vegetation of dry deciduous forests: The thick forests in the area are now subjected to significant disturbance by indiscriminate felling and fire operations for the sake of fuel. Therefore, there is every danger of these forests be ing reduced to scrub jungles in course of time. Trees do not seem to reach a good height and are stunted in growth.

The common trees of the forests are: Anog eissus latifolia (Roxb.) Wall. ex Bedd., Ery throxylon monogynum Roxb., Hardwickia binata Roxb., Lannea coromandelica (Houtt.) Merr., Manilkara hexandra (Roxb.) Dub., Strychnos nux-vomica Linn., Terminalia che bula Retz. etc.

The following are occasional trees: Albizzia amara Boivin, Dalbergia paniculata Roxb., Madhuca logifolia (Koenig) Macbride, Spon dias pinnata (L.f.) Kurz., Vitex altissima Lf.

Buchanania angustifolia Roxb., Vitex leuco xylon Linn.f. etc., are rare.

The hedges along footpaths in the forests are commonly represented by Barleria prioni tis Linn., Carissa spinarum Linn., Diospyros chloroxylon Roxb., Maba buxifolia (Roxb.) Pers., Memecylon edule Roxb., Meytenus emarginata (Willd.) Ding Hou, Tarenna asia tica (L.) Alston, Xeromphis spinosa (Thunb.) Keay, Zizyphus xylopyrus (Retz.) Willd.

The following are a few of the common climbers on large shrubs: Ampelocissus tomen tosa (Heyne ex Roth) Planch., Dioscorea oppositifolia Linn., D. pentaphylla Linn. var. linnaei Pr. & Burk, Hemidesmus indicus (L.) Schultes, Pergularia daemia (Forsk.) Blatt. & McC. and Rivea_ hypocrateriformis (am.) Choisy. etc.

Derris scandens (Roxb.) Bth., MHugonia mystax Linn., Pterolobium indicum A. Rich., and Ventilago denticulata Willd. are occasiona! hanas noticed on tall trees.

Vegetation of scrub jungles: Scrub jungles in the area are commonly represented by Aca cia nilotica (L.) Del. subsp. indica (Bth.) Brenan, Bauhinia racemosa Lamk., Carmona retusa (Vahl) Masamune, Dodonaea viscosa (L.) Jacg., Euphorbia trigona Haw., Maba buxifolia Pers., Meytenus emarginata (Willd.) Ding Hou, Plectronia parviflora Bedd., Taren na asiatica (L.) Alston and Zizyphus xylopy rus (Retz.) Willd. ete.

Riparian and pond flora: Alangium salviifo lium (L4£.) Wang., Allophylus cobbe (L.) Raeusch., Flemingia strobilifera R. Br., Helic teres isora Linn., Homonoia riparia Lour., Mal lotus philippinensis (Lamk.) Muell.-Arg., Pterospermum heyneanum Wall. etc., form significant components of the vegetation in valleys along the water courses.

In some ponds and water-logged areas of the river Aponogeton natans (L.) Engler & Krause, Hydrilla verticillata Royle, Ottelia alis moides (.) Pers., Najas minor All. var. spin osa Rendle, Vallisneria spiralis Linn., etc., are found in abundance.

On the moist banks of rivers and along the wet margins of temporary ponds Bacopa mon nieri (L.) Wettstein, Phyla nodiflora (1.) Greene form brightly coloured dense mats of vegetation. Along with them several other common and noteworthy plants also are found growing. A few of them are Alternanthera sessilis (L.) DC., Ammannia baccifera Linn., A. multiflora Roxb., Bulbostylis barbata (Rottb.) Cl., Cleome aspera Koenig, Comme lina diffusa Burm. f., Cyperus tenuispica Steud., Eriocaulon quinquangulare Linn., Lud wigia perennis Linn., etc. At certain isolated localities Saccharum spontaneum Linn., forms a thick hedge along the water course.

In the dry ground of the river-bed and drying temporary ponds Argemone mexicana Linn., Glinus totoides Linn., Heliotropium supinum Linn. and Solanum surattense Burm. f. etc., form loose or dense patches. Other common plants are: Aerva lanata (L.) Juss., A. monsoniae Mart., Anisomelis malabaricus R. Br., Calotropis gigantea (L.) R. Br., Cassia auriculata Linn., Datura fastuosa Linn., Fim bristylis sp., Jatropha gossypifolia \inn., Leucas aspera (Willd.) Spreng., Vitex neg undo Linn., etc.

Vegetation along roadsides: Aegle mar melos (L.) Corr. Albizzia lebbek (L.f.) Bth., Azadirachta indica A. Juss., Derris in dica (Lam.) Bennett. Fiscus religiosa Linn., Limonia acidissima Linn., Sapindus emargi natus Vahl,

Syzygium cuminii Skeels., Thespe sia populnea Cav., etc., are common along roadsides either planted or growing wild.

A number of plants together form thick hedges along roadsides. Among them a few prominent and common ones being, Carissa carandas Linn., Diospyros chloroxylon Roxb., Euphorbia trigona Haw., Meytenus emarginata (Willd.) Ding Hou, Securinega virosa (Roxb. & Willd.) Pax. & Hoffm., Tarenna asiatica (L.) Alston, Zizyphus oenoplia Mill. etc., Ani somelis indica (L.) O.K., Barleria prionitis Linn., and Cassia auriculata Linn., are a few other common and attractive plants, by their brightly coloured flowers, among the roadside hedges.

On these hedges many twiners and climbers were noted belonging to the families, Ascle piadaceae, Convolvulaceae, Menispermaceae, Papilionaceae and Vitaceae. Among them the common ones are Cissus quadrangularis Linn., Cocculus hirsutus (L.) Diels, Gymnema syl vestre (Retz.) R. & S., Pergularia daemia (Forsk.) Chiov., Teramnus labialis Spreng., Tylophora indica Merr.

Several herbs are found growing in the undergrowth. e.g., Aerva lanata (L.) Juss., Andrographis echioides (L.) Nees, Asystasia eangetica T. Anders., Boerhavia diffusa Linn., Elytraria acaulis (L.f.) Lindau, Hibiscus ova lifolius (Forsk.) Vahl, Justicia diffusa Wild., Orthosiphon pallidus Royle ex Bth., Pavonia zeylanica Cav. Vegetation in cultivated fields: From the moist cultivated fields a number of plants were collected. Some of the common and prostrate herbs are Borreria articularis (L.f.) F. N.Will., Cleome aspera Koenig, Hybanthus en neaspermus (L.) F. Muell., Indigofera cordt folia. Heyne ex Roth, Merremia_ tridentata Hallier, Mollugo nudicaulis Lam., Tribulus ter restris Linn., etc. Several other common but, erect plants also were noticed in these fields. To mention a few: cyperaceous plants, Fcli pta alba (L.) Hassk., Euphorbia hirta Linn., Geniosporum tenuiflorum (L.) Merr., Micro cocca mercurialis Bth., Phyilanthus asperu latus Hutch., P. simplex Retz. etc. After the harvest, from the drying fields several plants were collected. A few of the common ones are: Achyranthes aspera Linn., Cleome_ vis cosa Linn., Corchorus aestuans Linn., Croton bonplandianum Baill, Eclipta alba (L.) Hassk., Emilia sonchifolia (L.) DC., Heliotro pium indicum Linn., Leucas aspera (Willd.) Spreng., Sida acuta Burm. f., Tridax procum bens Linn. etc.

Plant parasites in the area: Dendrophthoe falcata (L.f.) Etting, Viscum-articulatum Burm. f. are common stem parasites in forests usually found on Anogeissus latifolius (Roxb.) Wall. ex Bedd. and Hardwickia binata Roxb., Cassytha filiformis inn., is another common twinning stem parasite in scrub jungles noticed on Carissa spinarum DC., Striga angustifolia (Don) Saldanha, is a frequent root parasite on grasses in the area.

ENUMERATION OF PLANTS

The plants are enumerated in accordance with Bentham and Hooker's system of classic fiction with some delimitations of families according to Hutchinson (1960). The name of the plant is followed by a note on relative abundance, flower coloured by the tribal population of the grove.

MATERIALS AND METHODS:

The entire area of the sacred grove is thoroughly studied by repeated visits in different seasons of the year 2011–2013 covering pre-monsoon, monsoon and post-monsoon seasons. It helps in observing the different developmental stages of medicinal 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 were processed in accordance with the methodology adopted by Jain and Rao (1977). The plant species are given in alphabetical sequence with other details such as botanical name, vernacular name, family, habit in **Table-I.**

IDENTIFICATION OF PLANTS:

The plant species were collected from the forest with the help of practitioners and identified using the Gamble volumes (1915-1936) and local floras as well as through comparison with identified specimens deposited in the herbarium of N.B.K.R medicinal plant research center Department of Botany Vidya Nagar**.**

CONCLUSION:

Phyto diversity constitute a large segment of the flora which provides raw materials for use by numerous pharmaceutical industries. The present study will be useful for researchers in the field of Ethnobotany, Ethnomedicine, Taxonomy, and Pharmacology for further studies. The tribals and local people who reside near and around the sacred groove still depend on the mediflora to cure various ailments. Recently Forest Department released 55 Lakhs for the cultivation of medicinal plant Garden in the Sacred grove and this study may be useful in the development of that garden. The study also aims at creating mass awareness among the citizens of the non-tribal main stream society so as to release the sustainability of the biodiversity of sacred grove. Numerous anthropogenic activities like developmental projects, eco-tourism, modernization, urbanization, overexploitation, over grazing are the major threats for the sacred grove. This recognizes the need to conserve its biological resources. Sacred groves depict cultural, traditional, sociological, biological, economical values and are the chief method of in-situ conservation of biodiversity.

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