

# **Introduction to the Tropical Dry Evergreen Forest**

By

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Each region of the world has a vegetation type that has, over countless eons, evolved as the plant community most suited to the environmental conditions of the area. The Tropical Dry Evergreen Forest (TDEF) is the indigenous forest of the coastal seaboard of South East India. Historically the forest extended from Vishakapatnam to Ramanathapuram as a belt of vegetation between 30 and 50 km wide, bordered on one side by the sea and on the other side by a forest that becomes increasingly deciduous as one moves inland.

It contains over 160 woody species of which around 70 are found within the pristine climax forest. This is predominantly composed of trees and shrubs that have thick dark green foliage throughout the year. There are six vegetative elements: trees, shrubs, lianas, epiphytes, herbs, and tuberous species. In the pristine state these components weave together to form a complex diverse habitat that is home to a myriad of animal species, mammals, birds, reptiles, amphibians, insects, as well as a host of microbes.

When one includes all of the herbaceous species that grow in a variety of ecological niches within the range of the forest the number of species approaches 1000, of which over 600 have a recorded use for mankind either medicinally, culturally or in religious rituals.

The relevance of the forest today lies both within its vast botanical wealth, and also its ability to ameliorate the environmental conditions that are steadily deteriorating due to the expanding population and increase of consumer lifestyles. However there is hardly any of this forest that remains free from human interference, the vast majority of forests in the area are little more than degraded thorny thickets, lacking the inherent nobility of the climax vegetation. It is the intention of this booklet to draw attention to the TDEF and put forward the case for its conservation.

## ***The Vegetation***

The forest when in its pristine state is a tightly woven matrix of vegetation about 6m high with the occasional emergent rising above the canopy to 10 meters. The trees and shrubs of the forest exhibit many characteristics that are similar, indicating a form of convergent evolution. They are evergreen, responding to the rains with a flush of new leaves. The leaves are mostly simple, thick and waxy, with a size around 6cm by 3cm. The flowers are small, 1 cm in diameter, often white with a perfume, the season for them is generally between February and August. The fruits are small and fleshy, ripening mainly between April and September. The habit of the trees is generally to have around two meters of clean trunk, and then to branch. In some species buttressing is found. The overall height of the trees is between 4 and 7 meters. The trees are slow growing, the wood is dense and hard, in the main thorns are absent although in this particular instance there are some notable exceptions.

Some of the common species exhibiting all or most of these characteristics are *Atalantia monophylla*, *Diospyros ebenum*, *Drypetes sepiaria*, *Garcinia spicata*, *Glycosmis mauritiana*, *Ixora pavetta*, *Lepisanthes tetraphylla*, *Manilkara hexandra*, *Memecylon umbellatum*, *Syzygium cumini*.

*Pterospermum suberifolium* is also an integral part of the climax forest, but it is the common emergent, and has many different physiological features which are probably due to the environmental conditions it experiences above the canopy. Its leaves are larger, thinner, white hairs beneath, the flowers are larger and the seeds are wind blown.

Other important vegetative components of the forest are the climbers/liana (eg. *Combretum ovalifolium*, *Capparis zeylanica*) and also the orchids that are both epiphytic (eg. *Vandia tessellata*) and pseudobulbous (eg. *Eulophia epidendreaea*). The lianas can be up to 30cm in girth and can extend over 10 or more tree canopies. They do not follow the vegetative characteristics of the trees and shrubs, and this might indicate that they are signs of disturbance. The orchids are rarely found in the forests now as these are the most vulnerable species to disturbance.

### ***The Animals***

In present times the highly degraded state of the forest, and the high human population pressure means that the larger predatory mammals can no longer be found in the region. However it is still surprising the number of small mammals that hang on especially in the larger reserve forests of the area. It is thought that the pangolin, the honey badger are still to be found, and in much larger numbers the porcupine, the hedgehog, the fox and the mongooses reside in the forests. In specific areas (Point Calimere) the black buck and the chital are found, and the bonnet macaque is resident in most forests.

The reptiles of the forest include the monitor lizard, the chameleon, and other lizards, as well as 19 species of snake, including the 4 venomous species of the plains, the cobra, the krait, and the two vipers.

The bird population of the forests has been estimated around 80 species, and in certain areas the trees provide valuable roosting sites for water birds at night. The bird population is made up of residents, who stay through out the year, and migrants who arrive with the rains and who often take advantage of the burgeoning insect population that is concurrent with the monsoon.

Less glamorous, but perhaps more important to the healthy functioning of an ecosystem is the insect population, and the other microfauna found within the leaf litter and humus layer. Little is known about these animals, but simple observations indicate a wealth that is yet to be studied. For example in the leaf litter of an undisturbed forest in a sacred grove, from an area of one square meter 5 species of spiders, 2 species of roaches, 2 species of ants, a bug and a cricket were found, all accounting for 368 individual specimens!

### ***The Forest and People***

The forests of the region have been intimately connected to humans for countless centuries. Prior to the Roman times, when trade was exchanged with the coastal communities, civilization has been recorded in the area. And even before these times the coastal area would have attracted fishermen and the light sandy soils would have been accessible to primitive agricultural tools and crops.

In recent history, that is the last two hundred years these forests have been treated as a harvestable resource, and this has lead to their degradation. However even in today's highly degraded state they still remain a vast repository of natural resources. It has been recorded that almost all the local species have a use. Four hundred species of trees, shrubs and herbs are utilized in traditional

medicine practiced by the villagers from householders and midwives to specialists treating bone fractures, poisonous bites and eye ailments.

In India, modern medical health systems can only offer primary health care for up to 30% of the rural population. Plant based indigenous health systems can help with providing real health security as they are very much alive and are evolving and adapting to modern needs. This information on bio-resource use represents a valuable record for posterity and also a phenomenal bank of information that can be drawn upon to resolve current predicaments.

As well as providing possibilities for the material and medical needs of the population the forest also provides for the spiritual. In fact the only pristine areas of forest left are around temples as sacred groves. The temples are often dedicated to the god Iyanar, and although all of these groves are suffering from disturbance, within from pilgrims and at the edges from surrounding farmers they still provide a setting for many stories that are told concerning the past.

### ***The Future of the Forest***

The possibility to conserve, protect and actually restore the Tropical Dry Evergreen Forest still exists today. Work has been carried out, researching the forest, establishing which species go to make up the matrix of the mature forest, collecting information as to when each species flowers and fruits, and developing techniques to germinate and raise the species in nurseries to plant out either as enrichment plantings in already existing forest, or to rehabilitate bare and barren land.

The next step needs to be taken, but still many questions need to be addressed. The future of this forest is dependant upon the local population rediscovering the respect that was once held for the forest, recognizing the role that it can play in the needs and necessities of today's ever changing society. We need to work within these areas, ensure that the basic needs of the people are taken care for, and help to strengthen the community so that they can take care of the forest themselves.

At a principle, fundamental level the forest provides for the foundation of the surrounding communities. It can enhance the water holding capacities of the soil, ensuring that the ground water resource is secure. It provides a home for the pollinators and predators of pests that can help support sustainable agricultural practices. And perhaps most importantly it provides a link with where we came from, the way nature developed a covering for this particular land, and where our ancestors walked and evolved their ideas about who we are and the way we should conduct ourselves.

Strategies need to be developed on many levels, to address the different possibilities for the conservation of the TDEF. Ways of involving the whole community from government, through business, and on to academic institutions and NGO's, and all the way via schools to the local public. Be it management and development plans for the existing reserve forests, encouraging corporations to plant TDEF within their compounds, designing forests for planting with the local communities and schools, or simply creating an awareness about the existence of a beautiful forest under threat within the population at large. The work needs to commence soon, so that we can get there sooner rather than later.