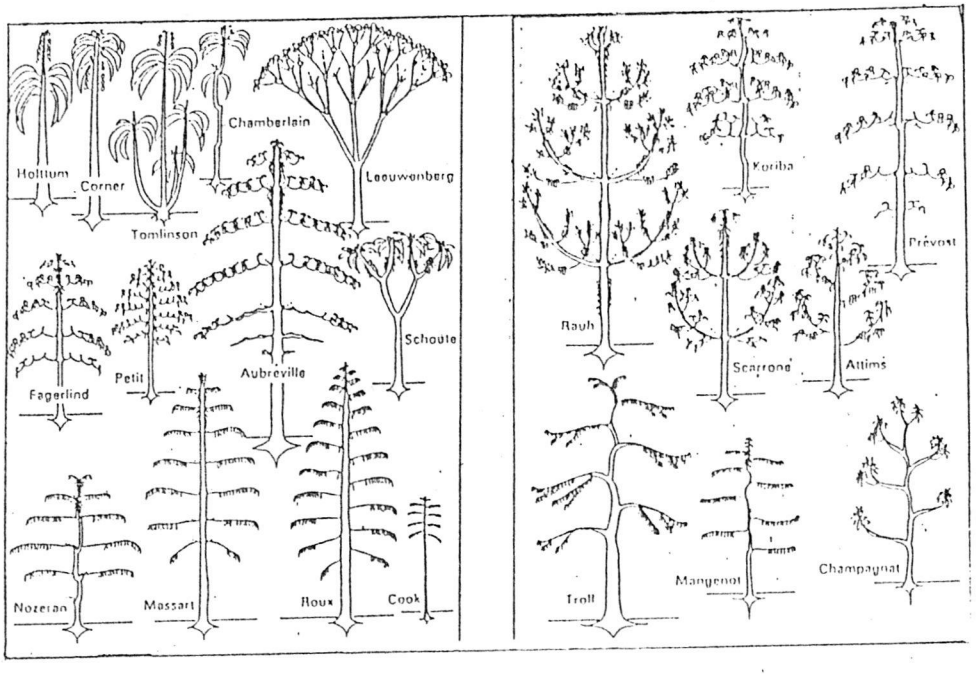
MANGROVES & RAINFORESTS

Programme Leader : Professor S Balasubramaniam

Venue : IFS Conference Hall,

Hantana Road, Kandy.

28th March, 1987.



Programme Director : *Professor Cyril Ponnamperuma*

Programme Coordinator : *Professor Kapila Dahanayake*

Programme Editor : *Daya De Silva*

TODAY'S PROGRAMME

10.00 am - 11.00 am	*Rain Forests, by* *Professor S. Balasumbramaniam*
11.00 am - 11.30 am	*T E A*
11.30 am - 12.30 pm	*Mangroves of Sri Lanka, by* *Dr. K.H.G.M. de Silva*
12.30 pm - 1.15 pm	*L U N C H*
1.15 pm - 3.15 pm	*Laboratory work and Video-presentation - environmental monitoring equipment, organisms of rain forests and mangroves* *Dr. Padma Kumari de Silva* *Mrs. Sunethra Dharmasiri* *Mr. K.B. Ranawana* *Mr. L.R. Perera*
3.15 pm - 4.00 pm	*Tea and Discussion*
4.00 pm - 4.30 pm	*Quiz*

End of Day's Programme

Tropical Evergreen Rain Forests - I

by

S. Balasubramaniam

The tropical predominantly evergreen moist forest in the humid hot equatorial lowland climate, commonly called the wet evergreen rain forest is the most luxuriant and species rich forest ecosystem in the world. The most striking feature of a tropical rain forest is the large number of species constituting tree layer or stratum. Tropical rain forests are found in the Amazon Basin, the Congo Basin and in the Indo-Malayan Realm. In East Kalimantan an analysis of a 1.6 hectare plot of primary rain forest showed the presence of 209 species of trees with diameters at breast height (DBH) greater than 10 cm (Kartawinata et al. 1981). Other studies show that there are at least 100 woody species per hectare. Ennumeration at the Sinharaja, showed the presence of over 211 woody species in the MAB Reserve (Gunatilleke et al. 1985). In the East Kalimantan plot the 209 species belonged to 125 genera and 44 families (See Table 1).

In the Indo-Malayan region tree species belonging to the family dipterocarpaceae (Hora/Dun family) frequently dominate the canopy stratum of the lowland wet evergreen forests. In Trinidad the upper storey consists mainly of Mora excelsa (Leguminosae/Fabaceae). Large floristic differences exist between the rain forests of South America, Africa and Asia. Palms are completely absent from the African rain forests.

The trees in a rain forest reach a height of 50-60 metres. Three stories are usually recognisable in a rain forest+ an upper canopy layer, a middle or sub canopy layer and a lower storey of young trees (pole trees), treelets and shrubs. The rain forest is multistoried or multilayered. The detailed structure of forests vary from site to site and generalizations should be treated with caution. The boles of trees are tall and slender and branching begin high up in the crown. Trees of various diameter classes are found in a natural forest. Some trees have butresses but the root system is usually confined to the upper layers of soils. Most species are mycotrophic. Dipterocarpaceae have ectotrophic mycorrhiza while the other tree families in the rain forest of Sri Lanka have endotrophic vesicular-arbuscular mycorrhizas (de Alwis & Abeynayake 1980). Cauliflory and ramiflory is common in rain forest trees. The leaves of many rain forest species have drip tips.

More than 70% of all species of plants growing in a rain forest are Phanerophytes (trees). Besides the number of species, the number of individuals of some of the species is also very high in dense tropical rain forests. Some species reach the canopy by climbing on trees. Many of these climbers are woody vines or lianas. In Sri Lanka the following woody vines may be encountered in a rain forest Entada zeylanica (Puswel), Dalbergia championii (Bambarawel), Coscinium fenestratum (Weniwel) etc. Besides lianas there are root climbers like Piper sp. (wild pepper), Freycinetia spp., (root climbers of the family Pandanaceae)

and Ficus diversiformis (Moraceae). Calamus ovoides and Calamus zeylanica are climbing cane palms but they are usually more abundant in gaps and forest clearings. The rural people living within the forest and along forest margins usually harvest cane (wewel), kitul (Caryota urens, fish tail palm) and many medicinal plants (weniwel, walenasal, tebu etc.) to supplement their income. The damage caused to the forest ecosystem by these people is minimal compared to illicit timber poachers.

Besides trees, shrubs and lianas there are many epiphytes in the lowland rain forests of Sri Lanka and other tropical countries. Ferns, orchinds, Medinella sp. (Melastomaceae) etc. are common in Sri Lanka. The rain forests of South America are rich in epiphytic ferns, orchids and bromeliads (epiphytes belonging to the pineapple family).

The herb layer or ground layer is usually poor in species and is not well developed in rain forests. In Sri Lanka a rosette plant called Acranthera ceylanica is usually found in the dense shade of the forest floor. The terrestrial fern Lindsaea caudata and seedlings of canopy tree species are usually found in the herb layer. Plants belonging to the ginger family are also common in the ground layer of rain forests. Heterotrophic flowering plants, saprophytes or parasites also occur in rain forests but they are not so conspicuous as lianas and epiphytes. A large variety of Synusiae are found in rain forests and except for the tree species they have not been well

studied by scientists Mosses and Hymenophyllous (filmy) ferns while present in lowland rain forests become more abundant in the montane rain forests or cloud forests of the tropics.

In Sri Lanka patches of lowland rain forests are still found at Gilimale, Kanneliya and Sinharaja. At Sinharaja the rain forest serves as a watershed for two important rivers, the Kalu Ganga and Ginganga. The rain forests exhibit great species diversity and it is natures gene bank. Several cultivated plants have their wild relatives in the rain forest (wild cardamom, wild nutmeg, wild durian etc.). The rain forests are source of important hard wood timbers, fruit trees, resin bearing trees and medicinal plants.

Not only woody plants but almost all groups of animals and plants show their greatest diversity in the tropics and many have been reported from rain forests. Rain forests occur on terrain dissected with steep slopes and valleys. This gives rise to considerable environmental heterogeneity and many community types. Some forest communities occur on alluvial plains, peat swamps or river margins. Others on ridge tops and slopes. This provides a range of habitats for animals. The plants of the rain forest are dependent on animals for pollination, dispersal etc. The tropical rainforest is a highly complex and fragile ecosystem.

Clear felling, selective logging or shifting agriculture (Chena) in areas occupied by rain forests lead to rapid alterations

and usually deterioration of the land. The land is then abandoned and it gets colonized by Dicranopteris linearis (kekilla) Lycopodium cernuum (badalwanessa), Hedyotis fruticosa (Weraniya), Melastoma malabathricum (Maha Bowitiya), Macaranga peltata (Kenda) and Trema oreintale (Geduma). It may take years for the degraded land to be reforested. Once the land is invaded by secondary species like Kekilla and weraniya, it is extremely difficult to get tress established Pinus caribaea has been successfully grown in some Kekilla lands but these plantations are prone to fire. Moreover the soil gets compacted and during heavy rains there is excessive runoff and frequent landslides. Microclimate gets altered and creates many problems for people living in these areas. Management and upgrading of such degraded sites is an important area of study and research and needs the attention of scientists, planners and politicians.