

NATURAL VEGETATION TYPES OF SRI LANKA

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According to the most recent estimate of the Survey Department, the natural vegetation of Sri Lanka covers 24.9 per cent of the land area. It comprises different vegetation types which can be described in various ways. However, the following classification according to the climatic zones is widely used. (Table I). In addition, there are other plant communities such as grasslands, Savannah forests, Mangroves and other coastal communities which are not peculiar to any climatic zone.

Table 1

Different Vegetation Types of Sri Lanka according to
Climatic Zones

Vegetation Type	Climatic Zone
Tropical Wet Evergreen forests/ Tropical Rain forests.	Wet Zone
Tropical Montane forests	Wet Zone
Intermediate Zone forests	Intermediate Zone
Dry mixed Evergreen forests	Dry Zone
Tropical Thorn forests	Arid Zone

Tropical Wet Evergreen Forests/Tropical Rain Forests

This forest type is the climax vegetation of the wet zone occurring in the South — Western sector of the country. It extends from coast to the mid elevations of about 1500 m. This area receives an

annual rainfall of 2500 mm. — 5000 mm. with no moisture deficit period. The mean temperature is about 28°C. The area is humid, with relative humidity varying from 75% — 85%. The soil type is the Red, Yellow Podzolic.

Rain forests are complex vegetation structures. The vegetation is dense and well packed growing luxuriantly under the favourable climatic conditions. The plant density of this forest type is very high. A great diversity of species and a high proportion of endemics have been reported from the Tropical Wet Evergreen Forests.

Vertical stratification is very distinctive. The tallest trees or the emergents are scattered and do not form a continuous canopy. The main species are *Dipterocarpus zeylanicus* (Hora), *Dipterocarpus hispidus* (Bu—Hora) and *Shorea* which may reach a height of 45 m. The canopy well packed with tree crowns may reach 25–30m. in height. The dominant canopy species are the *Mesua nagassarium* (Batu—na), *Chaetocarpus castanocarpus* (Hedawaka), *Anisophyllea cinnamomoides* (Welipiyanne), *Myristica dactyloides* (Malaboda) and *Shorea* species. The sub canopy and the understorey layers are prominent below the canopy.

Below the understorey is the layer of shrubs, treelets and saplings. The ground is covered with many species of mosses, ferns, and herbs. The woody climbers twine around trees and climb up to the canopy. Epiphytic orchids and ferns are common at all levels of the vertical structure.

Among the large trees, columnar tree boles are typical. Branching (when present) begins quite high while a considerable number of species are unbranched. The large trees are supported by plank buttresses specially because of the shallow root systems. Some species have even developed stilt roots for support. Another noteworthy feature of the rain forest is the driptips of the leaves. This elongated leaf may probably be an adaptation to drain off the excess moisture which constantly collects on the leaf surface. Flowers and fruits arise directly from the main trunk or branches. This phenomenon known as 'cauliflory' is peculiar to rain forests. Young leaves develop bright colours for protection from harmful

turbid in some protected areas viz Sinharaja, Hiniduma Kande and Kanneliya.

Tropical Montane Forests

This forest type occurs in the South — West slopes of the mountain ranges above 1500 m. in the wet Zone. This area also receives an annual rainfall of 2500 mm. — 5000 mm. with no moisture deficit period. The mean temperature is about 20° with occurrence of frost frequently in higher peaks.

The vertical structure of this vegetation type is less prominent with a low number of strata. The trees are of much smaller stature reaching only

Table 2
Extents of Forests in Sri Lanka

Vegetation type	Percentage Forested with respect to the Total Land Area in each Zone	Percentage Forested with respect to the Land Area of the whole Island
Tropical Wet Evergreen Forests/Tropical Rain Forests	9.1	1.45
Tropical Montane Forests	17.8	1.54
Intermediate Zone Forests	1	Negligible
Dry Mixed Evergreen Forests	30.3	21.97

radiation. The nutrients of rain forests are mainly accumulated in the biomass. The shallow root systems are well adapted to absorb nutrients released to the soil by decomposition of organic matter and weathering. A symbiotic association between tree roots and fungi referred to as mycorrhizae further facilitates nutrient absorption. This rapid cycling ultimately leads to impoverishment of forest soil.

Although once extensive, this forest has presently been reduced to 1.45 per cent of the land area of the whole island. (Table 2). It still exists undis-

about 13 m. in height at canopy level. The appearance of trees is twisted and gnarled particularly at the branches. Dense, spreading crowns of the canopy trees are flat topped. Leaves of many tree species are leathery and very small. The main tree species of the plant community are *Elaeocarpus glandulifer* (Thittha veralu), *Elaeocarpus serratus* (Honda—Veralu), *Mastixia tetrandra* (Diya—Thaliya), *Michelia nilagirica* (Sapu) and *Calophyllum walkeri* (Batu—keena).

Below the canopy layer are the small tree species *Cinnamon* sp. (Kurundu) and *Rhododendron*

arboreum (Maha-Ratmal). The dense undergrowth comprises shrubs viz. *Psychotria nigra*, *Strobilanthes* sp. and hill bamboos. Epiphytes, orchids and lichens are in abundance. The lichen, *Usnea barbata* commonly known as "Old man's beard" hangs down from the branches of trees. The ground layer consists of many herbs.

This vegetation type occupies only 1.54% of the total land area at present. The protected areas of Hakgala, Horton plains and Adams peak ranges are well known for Tropical Montane Forests.

Dry Mixed Evergreen Forests

This forest type is the climax vegetation of the plains of the dry zone which covers about 2/3rd of the island. The mean annual rainfall of this area varies from 1250 mm. – 1900 mm. The North-East monsoon brings rain from October to January with a pronounced dry period from June to September. The soil type is reddish brown earth.

The forest canopy is open and inferior in height. Vertical stratification is absent. Emergent dominants rise about 3 m. above the canopy level. Most of the emergents are deciduous comprising, *Chloroxylon swietenia* (Burutha), *Vitex pinnata* (Milla), *Berrya cordifolia* (Halmilla) and *Adina cordifolia* (Kon). The canopy consists mainly of evergreen species reaching a height of 20 – 25 m. Common canopy species are *Drypetes sepiaria* (Wira), *Berrya cordifolia* (Halmilla) and *Diospyros ebenum* (Kaluwara). The forest gets an evergreen appearance even when the other species have shed leaves mainly because of *Drypetes sepiaria* (Wira).

Most of the plant species exhibit xeromorphic adaptations. Epiphytes, and mosses are absent in this plant community. The forest soils are relatively rich in plant nutrients.

Although this plant community is the most extensive of the natural vegetation types in Sri Lanka it is fast dwindling. The present extent is 21.9% of the total land area.

Tropical Thorn Forests

It is the typical vegetation of the arid areas in the North-West and South-East sectors of the island. The annual rainfall is less than 1250 mm. mainly deriving from the North-East monsoon. A long moisture deficit period of 4–7 months is experienced from March to September.

The forest is a low, open, thorny scrub with isolated trees. All the species exhibit thick leaves, thorns and other xeromorphic adaptations. The common species are *Carissa spinarum* (Heen karamba) *Zisypus* sp. (Eraminiya), *Acacia* sp. and *Dichrostachys cinera* (Andara). The tree species are stunted. The main tree species of this plant community are *Salvadora persica* (Maliththan), *Manilkara hexandara* (Palu) and *Drypetes sepiaria* (Wira).

Thorn forests can be found in the coastal areas of Mannar and Hambantota districts.

Intermediate Zone Forests

These semi evergreen forests are the climax vegetation in the low and mid country intermediate zone. The species composition of this plant community is somewhere between the wet evergreen forests and the dry mixed evergreen forests. The common tree species are *Melia Dubia*, *Filicium decipiens* (Pihimbiya), *Bombax ceiba*, *Artocarpus lakoocha* (Kanagona), *Mangifera zeylanica* (Etamba) etc. These natural forests have virtually disappeared to negligible proportions below 1% of the total land area. Degraded patches of forests can still be found at Barigoda in Kurunegala and Daragoda in Moneragala districts.

Tropical Savannah Forests

These forests are found on the eastern slopes of the central hills. They are dominated by grasses while trees are scattered. Grasses are tall and may reach about 2 m. in height. Fires break out frequently in this plant community as the grasses

are highly inflammable. The dominant grass species is *Imperata cylindrica* (Illuk). Trees are stunted and may reach a height of 7 m. The tree species are fire resistant comprising mainly of *Careya arborea* (Kahata), *Terminalia belerica* (Bulu), *Terminalia chebula* (Aralu) and *Phyllanthus embelica* (Nelli). Patches of this forest type can still be found in Mahiyangana, Bibile and Welleya areas.

Grasslands

Grasslands can be found in all climatic regions. However it does not form a true climax in any of these regions. Of the grasslands, the most extensive and the best known are the patana grasslands, occurring in the wet zone. These are two types, the dry patanas and the wet patanas. Dry patana grasslands are extensive and distributed between 500–1500 m. The surface of the soil is dry, enhancing periodical fires. The dominant grass species are the *Cymbopogon na* (Mana) *Themeda tremula* and *Imperata cylindrica* (Iluk). The wet patana grasslands are smaller in extent, occurring at high elevations above 1500 m. At high elevations, the penetration of solar radiation is quite low through the clouds overcasting the sky. Wet patanas are frequently subject to strong winds and ground frost. The soils are wet and water logged. The organic matter accumulates in soil making it blackish in colour as the decomposition is minimal. The dominant grass species are *Chrysopogon zeylanicus*, *Arundinella villosa* and *Pollinia* sp. *Rhododendron arboreum* (Maharatmal) and several herb species are scattered in the grassland. An endemic bamboo, *Arundinaria densifolia* (Bata) colonises the permanently wet sections. The best known wet patana grassland is at Horton plains.

The other wet zone grasslands, Thalawa and Kekilla fernlands can be described as low country grasslands occurring below 1500 m. This vegetation is the result of soil impoverishment following forest clearing, shifting cultivation and regular burning. Thalawa grasslands can be found in Galle and Kalutara districts. Kekilla fernlands are

dominated by the fern *Dicranopteris linearis* (Kekilla). These can be found in Ratnapura and Kalutara districts.

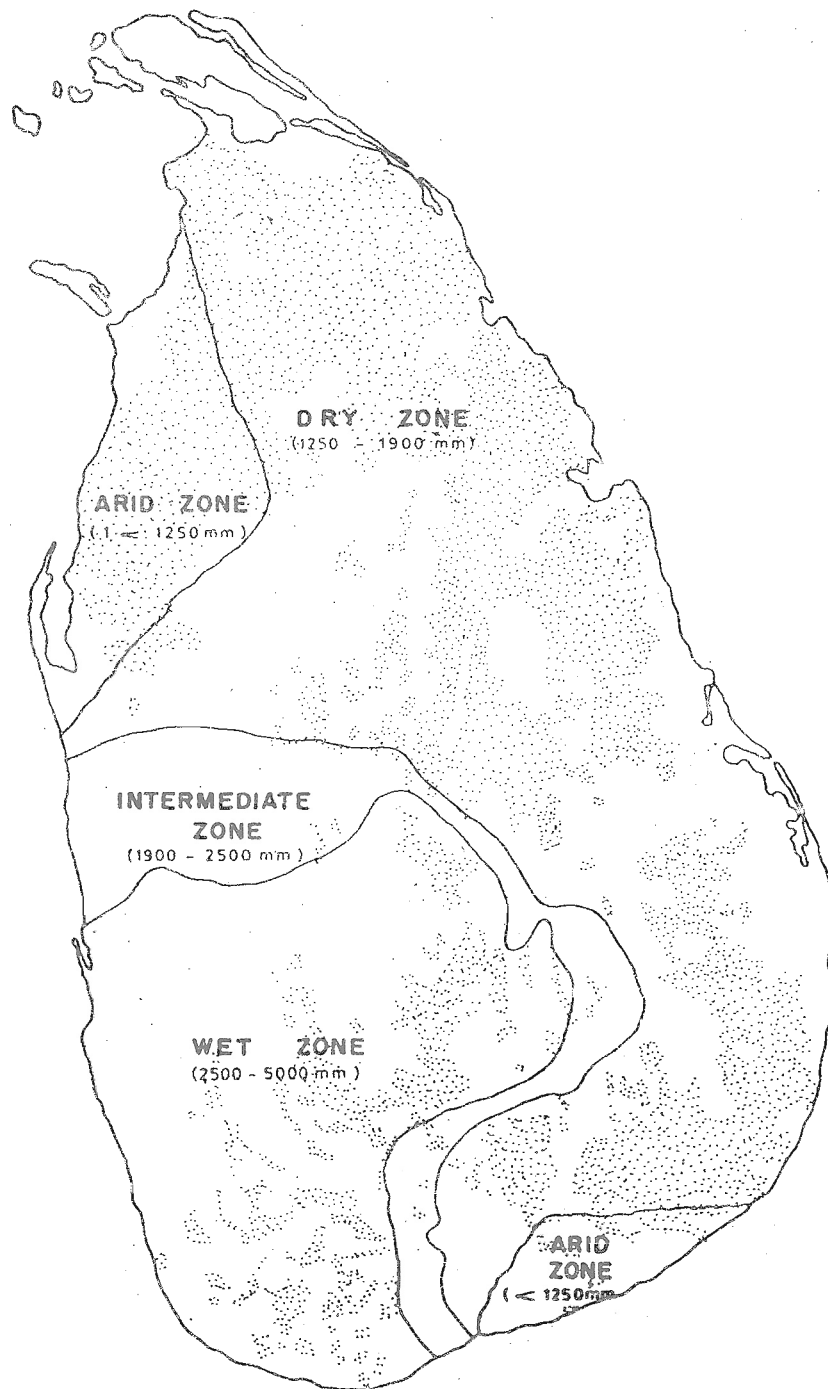
The dry zone grassland types are the dry Damana and wet Villu. Damana grasslands also are the result of forest clearing and burning. These can be found in Polonnaruwa, Manampitiya and Gāloya areas. Wet Villus occur in wetlands in the beds of abandoned reservoirs, large water holes and the flood plains of rivers, notably the Mahaweli Ganga. The period and the extent of flooding determines the ecology of the Villu system. Soil is saturated with water. The plant community comprises, grasses, hydrophytes and trees. The grass species of *Cyanodon dactylon*, *Panicum repens* and *Brachiaria* species dominate the grassland.

Mangrove Forests

Mangrove forests occur along sheltered, inter-tidal coast lines in association with lagoons and mouths of rivers, where the areas are subjected to frequent inundations with saline water. The special community is governed by edaphic factors. Sri Lankan mangroves are less diverse and poorly developed. None of the mangrove species is endemic. This plant community consists of true mangroves and mangrove associates. True mangrove species are *Rhizophora*, *Bruguiera*, *Avicennia*, *Xylocarpus*, *Ceriops* etc. Mangrove associates comprise *Cerbera manghas* (Kaduru), *Acanthus ilicifolius*, *Sonneratia alba* (Kerala) etc.

In the areas where mangroves grow, the soils get water logged resulting in poor aeration. The salinity level of water is usually high, fluctuating periodically. To counteract these drastic conditions mangroves have developed special adaptations. Special roots are developed to provide anchorage as mangroves live on a loose substratum. These special root types are the prop roots arising from the branches and stiltroots arising from the main stem. Excess salt is removed through the salt secreting glands. Xeromorphic adaptations are common to all mangroves to

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avoid water loss through transpiration. The cuticle of leaves is thick with extensive water storage tissues inside. Many species develop air breathing roots or pneumatophores growing upwards from the soil surface. Exchange of air takes place through the openings of the roots. Viviparity is exhibited by many mangroves to meet the hostile conditions of the environment. The seed germinates while the fruit is attached to the mother plant. The young seedling with the well developed hypocotyl dislodges from the parent plant and floats on the water until it gets a foot hold in the soil. Mangroves are best represented in Negombo and Batticaloa lagoons.

Coastal Community

There are several coastal communities in Sri Lanka viz. Sea shore community, Sand dunes, Sea grass beds and Salt marsh vegetation. Only the sea shore community will be described here as it is the most extensive of the coastal communities. This vegetation type is found above the high tidal level of the seashore. Four zones can

be distinguished which are,

- (i) the bare area with no vegetation
- (ii) zone with low creeping vegetation
- (iii) zone of lowshrubs and littoral woodland
- (iv) creeping zone vegetation which binds the sand particles with spreading root systems.

Species like *Ipomoea pescaprae* (Binthamburu) and *Spinifex littorus* (Maha—Rawana—Ravula) dominate this zone. The low shrub zone is dominated by shrubs and herbs such as *Clerodendron inerme* and *Crotolaria retusa*. Littoral woodland comprises species like *Pandanus* (Wettakeiyya), *Calophyllum enophyllum* (Domba), *Barringtonia speciosa* (Mudilla), *Phoenix zeylanica* (Indi palm) and *Terminalia catappa* (Kottamba). This community is presently confined to a few patches on the coast.